Search history

Search 1: FT=(machining center* and cylindrical* and workpiece* and table*) (Results 618)

Search 2: 1. table* and roller* (Results 19871)

Search 3: (1) AND IPC=(B23 OR G05) (Results 555)

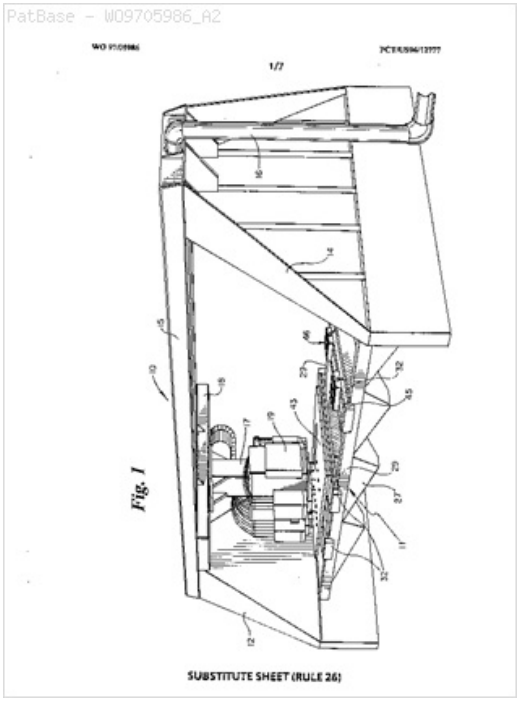
1) Family number: 10037005 (WO9705986A2)

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Title: MACHINING APPARATUS AND IMPROVEMENTS RELATING THERETO

Abstract: A machining apparatus for performing machining functions on a workpiece. The apparatus includes either individual or in combination, a locking mechanism for locking a workpiece support to a side rail, a locking mechanism for locking a support pod to a workpiece support, a tool head for a rotatable tool having juxtaposed bearings and a multi axis dust collection system.

Classifications:
International (IPC 8-9): B23B39/16 B23Q1/01 B23Q1/03 B23Q11/00 (Advanced/Invention);
B23B39/00 B23Q1/00 B23Q11/00 (Core/Invention)
International (IPC 1-7): B23Q
CPC: B23Q1/012 B23B39/162 B23Q1/032 B23Q11/0046
European: B23B39/16B1 B23Q1/01A B23Q1/03B B23Q11/00F1



Family:

Publication number	Publication date	Application number	Application date
WO9705986 A2	19970220	WO1996US12777	19960802
WO9705986 A3	19970313	WO1996US12777	19960802

Priority:
US19950001858P 19950803

Probable Assignee: KOMO MACHINE INC
Assignee(s): (std): KOMO MACHINE INC
Inventor(s): (std): KAUPHUSMAN SCOTT R ; MEHR STEVE C
Designated states: AT BE CH DE DK ES FI FR GB GR IE IT JP LU MC NL PT SE

2) Family number: 47479006 (JP2010253634A)

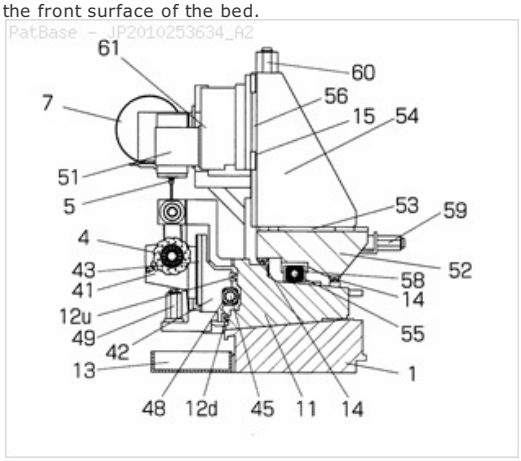
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Title: OPPOSITE DUAL-SPINDLE COMBINED LATHE

Abstract: PROBLEM TO BE SOLVED: To provide an opposite dual-spindle combined lathe equipped with cutter rests above and below a spindle axis, which has a bed in a simplified structure, well discharges cutting chips and cutting fluid falling from a machining position, and which has the cutter rest disposed below the spindle axis, lower parts of headstocks, and their guide structure all in compact form. SOLUTION: The bed has a horizontal upper surface and a vertical front surface. The headstock fixed to the bed is fixed on the vertical front surface of the bed; a moving headstock and a lateral moving block for the lower cutter rest can freely move by being guided by right and left guides fixed on the vertical front surface of the bed. The vertical guide for vertically guiding the lower cutter rest is fixed on the vertical front surface of a lower Z-axis

moving block. The headstock fixed to the bead is fixed, at the lower end of the back face thereof and height-intermediate position of the back face, on the front surface of the bed, and a space for passing the right and left guides and a feed screw through is formed between the lower back face of the headstock and the front surface of the bed.

Classifications:
International (IPC 8-9): B23B B23B11/00 B23B21/00 B23B25/00 B23B25/04 B23B3/10 B23B3/16 B23B3/18 B23B3/30 B23Q3/155 (Advanced/Invention);
B23B3/30 (Core/Non-invention)
CPC: B23B3/10 B23B3/30 B23B3/16 B23B25/00 B23Q3/15534



Family:

Publication number	Publication date	Application number	Application date
CN101869991 A	20101027	CN201010167383	20100427
CN101869994 A	20101027	CN201010167780	20100426
CN101869994 B	20140312	CN201010167780	20100426
IN01011DE2010 A	20130920	IN2010DE01011	20100427
IN01012DE2010 A	20130920	IN2010DE01012	20100427
JP2010253634 A2	20101111	JP20090108060	20090427
JP5468292 B2	20140409	JP20090108060	20090427
KR101689403 B1	20161223	KR20100036410	20100420
KR101689404 B1	20161223	KR20100038518	20100426
KR20100118066 A	20101104	KR20100036410	20100420
KR20100118079 A	20101104	KR20100038518	20100426
TW201038344 A	20101101	TW20100113174	20100427
TW201043361 A	20101216	TW20100113086	20100426
TWI499468 B	20150911	TW20100113086	20100426
TWI504453 B	20151021	TW20100113174	20100427

Priority:

JP20090108060 20090427

Probable Assignee: NAKAMURA TOME PRECISION IND

Assignee(s): (std)**:** NAKAMURA TOME PREC IND CO ; NAKAMURA TOME PREC INDUSTRY CO ; NAKAMURA TOME PREC INDUSTRY CO LTD ; NAKAMURA TOME PRECISION IND

Assignee(s): NAKAMURA TOME PRECISION INDUSTRY CO ; NAKAMURA TOME PRECISION IND CO LTD ; NAKAMURA TOME PRECISION INDUSTRY CO LTD JP ; NAKAMURA TOME PRECISION IND CO

Inventor(s): (std)**:** ISHIDA TAKUYA ; KOSAKU SUZUKI ; MIYAMORI CHIAKI ; MIYAMOTO TAKASHI ; SUZUKI KOSAKU ; TAKASHI MIYAMOTO ; MARUTANI ISHIDA ; KOMORI CHIAKI ; ISHIDA MARUTANI ; CHIAKI KOMORI

Inventor(s): TAKUYA ISHIDA ; CHIAKI MIYAMORI

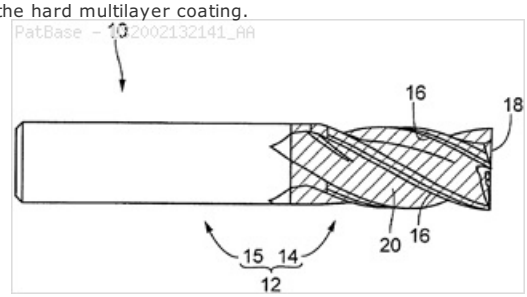
3) Family number: 28287006 (US2002132141A)

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Title: HARD MULTILAYER COATING, HARD MULTILAYER COATED TOOL INCLUDING THE HARD MULTILAYER COATING, AND METHOD OF FORMING THE HARD MULTILAYER COATING

Abstract: A hard multilayer coating which is to be disposed on a surface of a substrate, including at least one first coating layer and at least one second coating layer which are alternately superposed on each other, wherein each of the at least one first coating layer consists of (TixAl1-x)(CyN1-y) wherein 0.20 less than or equal to x less than or equal to 0.60, 0 less than or equal to y less than or equal to 0.5, while each of the at least one second coating layer includes CrN, and wherein one of the at least one first coating layer constitutes an outermost layer of the hard multilayer coating.

Classifications:
International (IPC 8-9): B23B27/14 B23B51/00 B23C5/10 B23C5/16 B23P15/28 B32B18/00 B32B9/00 C04B35/56 C04B35/58 C04B35/581 C23C14/06 C23C14/22 C23C16/44 C23C28/00 C23C28/02 C23C28/04 C23C30/00 (Advanced/Invention);
B23B27/14 B23B51/00 B23C5/10 B23C5/16 B23P15/28 B32B18/00 B32B9/00 C04B35/56 C04B35/58 C04B35/581 C23C14/06 C23C14/22 C23C16/44 C23C28/02 C23C28/04 C23C30/00 (Core/Invention)
International (IPC 1-7): B23B27/14 B23B51/00 B23C5/16 B23P15/28 B32B9/00 C23C14/06 C23C14/22 C23C16/44 C23C28/00
CPC: C23C28/044 C23C30/005 B23C5/10 B23C2224/24 C23C14/0641 C23C14/0664 Y10T428/24975 Y10T428/265
European: B23C5/10 B32B18/00 C04B35/581 C04B35/58H2C C23C14/06F C23C14/06G C23C28/04 C23C30/00B L23C224/24
US: 428/216 428/216S 428/336 428/697 428/698 428/698P



Family:

Publication number	Publication date	Application number	Application date
CH695498 A	20060615	CH20020000419	20020311
DE10210839 A1	20020919	DE20021010839	20020312
DE10210839 B4	20180705	DE20021010839	20020312

JP2002275618 A2	20020925	JP20010070822	20010313
JP3910373 B2	20070425	JP20010070822	20010313
US2002132141 AA	20020919	US20020091537	20020307
US7008688 BB	20060307	US20020091537	20020307

Priority:

JP20010070822 20010313

Probable Assignee: OSG CORP

Assignee(s): (std): OSG CORP

Assignee(s): OSG CORP TOYOKAWA

Inventor(s): (std): DOIHARA TAKAOMI ; TAKAOMI TOIHARA C CORP ; TAKAOMI TOIHARA C O OSG CORP ; TOIHARA TAKAOMI ; CORPORATION TAKAOMI TOIHARA C

Inventor(s): CORPORATION TAKAOMI TOIHARA C O OSG

Agent(s): OLIFF AND BERRIDGE PLC

4) Family number: 1535011 (US4629053A)

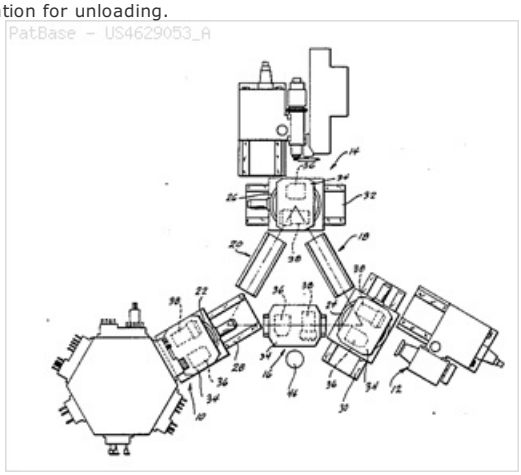
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Title: Closed loop machining system

Abstract: Three machine tools are positioned in spaced apart relationship at the corners of a triangle. Each machine tool has a worktable which is rotatably mounted on a corresponding bed for rotation about a corresponding vertical axis. Each worktable has guide means for slidably receiving a pallet carrying one or more workpieces. At least three workpiece transfer units are each positioned adjacent to the worktable of a corresponding machine tool for interaction therewith. Each workpiece transfer unit has guide means for slidably receiving a pallet and has a hydraulically actuated slide which engages the pallet and moves it along the guide means to transfer the pallet from one machine tool to the adjacent machine tool. One or more workpieces are clamped on each pallet. The pallets are introduced into the loop at an operator's station. The pallets carrying the workpieces are transferred from one machine tool to the next around the loop, having work performed on the workpieces at each machine tool, and finally, being returned to the operator's station for unloading.

Classifications:

International (IPC 8-9): B23B3/00 B23B39/00 B23B41/00 B23P23/00 B23Q41/02 B23Q7/00 B23Q7/14 (Advanced/Invention);
B23Q41/02 B23Q7/00 (Advanced/Non-invention);
B23Q41/02 B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23B3/00 B23B39/00 B23B41/00 B23P23/06 B23P7/00 B23Q39/00 B23Q39/02 B23Q41/00 B23Q41/02 B23Q41/04 B23Q7/00 B23Q7/05 B23Q7/14 B65G37/00
CPC: B23Q7/1426
European: B23Q7/14K
US: 198/346.1 198/465.2 198/748



Family:

Publication number	Publication date	Application number	Application date
AU197834847 A1	19790524	AU19780034847	19780406
AU500428 B1	19790524	AU19780034847	19780406
BE865785 A	19781009	BE19780186633	19780407
CA1092333 A1	19801230	CA19790322712	19790302
CH627680 A	19820129	CH19780003783	19780407
DE2814046 A1	19781012	DE19782814046	19780331
FR2386388 A1	19781103	FR19780010245	19780406
FR2386388 B1	19831110	FR19780010245	19780406
GB1586737 A	19810325	GB19780013737	19780407
JP1124820 C3	19821130	JP19780041157	19780407
JP53140682 A2	19781207	JP19780041157	19780407
JP57014945 B4	19820327	JP19780041157	19780407
NL172623 B	19830502	NL19780003753	19780407
NL172623 C	19831003	NL19780003753	19780407
NL7803753 A	19781010	NL19780003753	19780407
US4629053 A	19861216	US19810249931	19810401

Priority:

US19770786020 19770408 US19780965191 19781130 CA19790322712 19790302
US19810249931 19810401

Probable Assignee: KEARNEY AND TRECKER CORP

Assignee(s): (std): KEARNEY AND TRECKER CORP

Assignee(s): KEARNEY AND TRECKER TE WEST ALLIS WISCONSIN VER ST V AM CORP ; KEARNEY ET TRECKER CORP ; CITICORP USA INC ; DAILEY FRANK E

Inventor(s): (std): DAILEY FRANK E ; FURANKU II DAIREI ; DAILEY F E

Inventor(s): DAILEY F ; E DAILEY FRANK ; F E DAILEY ; FRANK E DAILEY

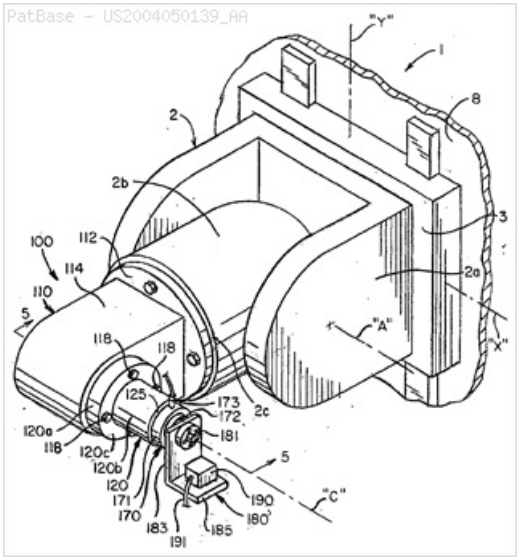
Agent(s): HA; GRIFFITH HACK; SHERMAN

5) Family number: 15900012 (US2004050139A)

Title: METHOD AND DEVICE FOR CALIBRATING ROTARY AXIS

Abstract: A present invention is for a device and method for measuring and calibrating the rotary motion of a rotatable machine member, such as a pivotable swivel member (2b) of a spindle (2) of a five-axis machine tool (1). The device includes an arm (110) mounted to the spindle, a housing (120) mounted to the arm, an optical encoder mounted internal to the arm and positioned therein to measure rotation about an axis extending lengthwise along the housing, which such axis is parallel to the axis about which the swivel member rotates. The device also includes a rotary table (170) mounted to the housing opposite the arm, the rotary table comprising a stator (171) fixedly mounted to the housing and a rotor (172) clampedly affixed to a shaft passing through the housing. The shaft is coupled to an input shaft of the encoder such that rotary movement of the rotor can be measured by the encoder. An electronic level (190) fixedly secured to the rotor, such as by a bracket (180). The encoder, the rotary table and the level are each electronically coupled to a control system which is adapted to obtain readings from the encoder and from the level and to command controlled rotation of the rotor relative to the stator.

Classifications:
International (IPC 8-9): B23Q1/54 B23Q17/22 B25J9/16 G01B21/24 G01C17/38 G05B19/401 (Advanced/Invention);
B23Q1/25 B23Q17/22 (Core/Invention)
International (IPC 1-7): B25J9/16 G01B19/42 G01B21/22 G01C17/38 G01C25/00 G05B19/401
CPC: B23Q1/5406 B23Q17/2233 G01B21/24 G05B19/401 G05B2219/37376 G05B2219/50027 G05B2219/50132
European: B23Q1/54A B23Q17/22C G01B21/24 G05B19/401 S05B219/37376 S05B219/50027 S05B219/50132
US: 702/92 702/92S 73/1.75 73/1.750P 73/1.79 73/1.790S 73/17.5 73/175 73/179 73/865.9 73/865.900S



Family:

Publication number	Publication date	Application number	Application date
AT402395 E	20080815	AT20010939606T	20010529
DE60134983 D1	20080904	DE20016034983	20010529
EP1301754 A1	20030416	EP20010939606	20010529
EP1301754 A4	20040602	EP20010939606	20010529
EP1301754 B1	20080723	EP20010939606	20010529
US2004050139 AA	20040318	US20030296368	20031103
US6925850 BB	20050809	US20010296368	20010529
WO0192825 A1	20011206	WO2001US17297	20010529

Priority:

US20000208152P 20000531 US20010296368 20010529 WO2001US17297 20010529 US20030296368 20031103

Probable Assignee: FIVES MACHINING SYSTEMS INC

Assignee(s): (std): COMER PAUL E ; PURTELL DAVID A ; MAGUS GMBH ; UNOVA IND AUTOMATION SYS INC ; SHIVASWAMY SATISH C

Assignee(s): UNOVA IP CORP ; WELLS FARGO BANK NATIONAL ASSOCIATION ; MAGUS INTELLECTUAL PROPERTY GMBH ; GENERAL ELECTRIC CAPITAL CORP ; MAG IAS LLC A DELAWARE LIABILITY CO LTD ; PURTELL DAVID ; SHIVASWAMY SATISH ; BURDALE CAPITAL FINANCE INC ; CINCINNATI MACHINE LLC ; COMER PAUL ; GENERAL ELECTRIC CAPITAL AGENT AS CORP ; FIVES MACHINING SYSTEMS INC

Inventor(s): (std): COMER PAUL ; COMER PAUL E ; PURTELL DAVID A ; SHIVASWAMY SATISH C ; PURTELL DAVID ; SHIVASWAMY SATISH

Agent(s): SHAW MATTHEW NIGEL ET AL; REISING ETHINGTON BARNES KISSELLE PC

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR US

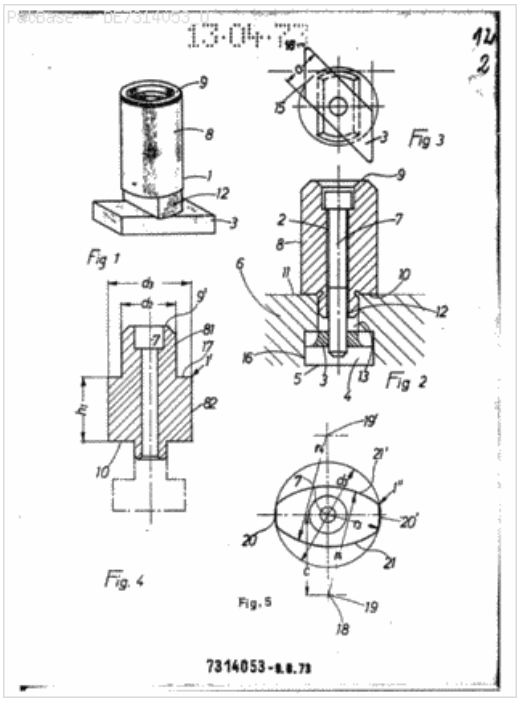
6) Family number: 16199013 (DE7314053U)

Abstract: Source: DE7314053U [DE] (Claim 1) 1. Richtanachlag zum Ausrichten von auf Spannplatten auszuspan- nenden Teilen, insbesondere fuer Spanntishe von Werkzeugmaschinen, mit einem Anschlagstueck, das mit unteren Schulterflaechen zu bei- den Seiten einer T-Nut auf der Oberseite der Spannplatte auf- sitzt, einen in den Nutenhala vorragenden und an dessen Seitenflaechen ausgerichteten Ansatz aufweist und mittels einer Spann- schraube senkrecht zur Ebene der Spannplatte gegenueber einer im verbreiterten Fussteil der T-Nut angeordneten Mutter verspannbar ist, dadurch gekennzeichnet, dass das anschlagstueck (1) wenig- atone eine senkrecht zur Ebene der Spannplatte angeordnete zylin- dttaohe Anschlagflaeche (8) aufweist.

Machine translation: (Claim 1) 1 Richtanachlag for aligning on chucks auszuspan-metal parts, especially for Spanntishe of machine tools, with a Anschlagstueck that with lower Schulterflaechen to at-the sides of a T-slot on the top of the clamping plate sits on, one in the Nutenhala projecting and whose Seitenflaechen oriented approach has and by a clamping screw perpendicular to the plane of the clamping plate opposite one in the enlarged foot portion of the T-groove arranged parent is clamped, wherein the anschlagstueck (1) little atone-one perpendicular to the plane of the clamping plate arranged cylindrical - dttaohe Anschlagflaeche (8).

Classifications:
International (IPC 8-9): B23Q16/00 B23Q3/10 (Advanced/Invention);
B23Q16/00 B23Q3/02 (Core/Invention)

International (IPC 1-7): B23Q3/18
CPC: B23Q3/102 B23Q16/001
European: B23Q16/00C B23Q3/10C



Family:

Publication number	Publication date	Application number	Application date
DE7314053 U	19730809	DE19730014053U	19730413

Priority:

DE19730014053U 19730413

Probable Assignee: HALDER E MASCH U WERKZEU

Assignee(s): (std): HALDER E MASCH U WERKZEU

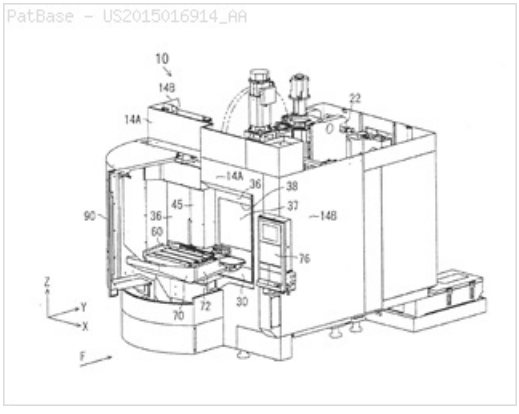
Assignee(s): HALDER E MASCHINEN UND WERKZEUGFABRIK

7) Family number: 55761014 (US2015016914A)

Title: VERTICAL MACHINING CENTER

Abstract: A vertical machining center includes a machining table on which a first pallet is placed and which moves in an X axis direction. A spindle head includes a spindle and moves in a Z axis direction. A rotary pallet exchanger exchanges the first pallet with a second pallet in a setup area. In a pallet rotational movement area, the first and second pallets are rotated. An oil pan is below the second pallet in the setup area, accommodates a part of the pallet rotational movement area, and includes a cutout portion. Space exposed to the cutout portion forms a cutout area. A door partitions a machining area from the setup area. An amount of offset in the X axis direction from the axial center of the spindle to the rotational center of the pallet exchanger is equal to or less than a width of the first pallet.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/66 B23Q11/00 B23Q11/08 B23Q7/00 B23Q7/02 B23Q7/14 (Advanced/Invention)
CPC: B23Q7/1431 Y10T29/5196 Y10T409/30392 B23Q1/66 B23Q11/0891 Y10T409/306104
US: 1/1 409/173



Family:

Publication number	Publication date	Application number	Application date
CN104994991 A	20151021	CN201280027053	20120810
CN104994991 B	20160629	CN201280027053	20120810
DE602012017502 D1	20160602	DE201260017502T	20120810
EP2801439 A1	20141112	EP20120882722	20120810
EP2801439 A4	20150422	EP20120882722	20120810
EP2801439 B1	20160420	EP20120882722	20120810
JP2014024319 A1	20160721	JP20130553182T	20120810
JP5497972 B1	20140521	JP20130553182T	20120810
US2015016914 AA	20150115	US20140494184	20140923
US9073157 BB	20150707	US20140494184	20140923
WO14024319 A1	20140213	WO2012JP70547	20120810

Priority:

EP20120882722 20120810 WO2012JP70547 20120810 US20140494184 20140923

Probable Assignee: YAMAZAKI MAZAK CORP

Assignee(s): (std)**:** HIROSE YUNOSUKE ; NISHIDA KIYOSHI ; SAKAI YASUHIRO ; SUZUKI TAKESHI ; YAMAZAKI MAZAK CORP ; YAMAZAKI MAZAK KABUSHIKI

Assignee(s): YAMAZAKI MAZAK CORP NIWA GUN

Inventor(s): (std)**:** NISHIDA KIYOSHI ; SUZUKI TAKESHI ; HIROSE YUNOSUKE ; SAKAI YASUHIRO

Agent(s): TBK; ONDA HIRONORI; ONDA MAKOTO; MARSH FISCHMANN AND BREYFOGLE LLP; ONDA HIRONORI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

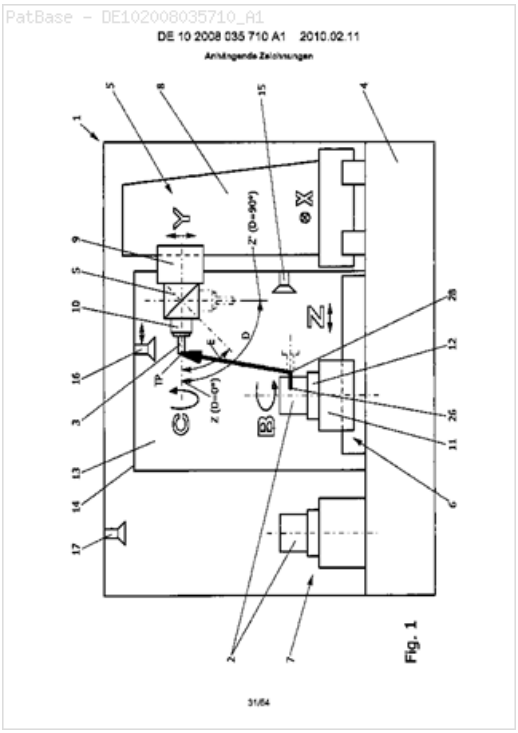
8) Family number: 44330015 (DE102008035710B4)

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Title: VERFAHREN ZUM SELBSTTAETIGEN ZURUECKFUEHREN EINES WERKZEUGS EINER PROGRAMMGESTEUERTEN WERKZEUGMASCHINE

Abstract: Source: DE102008035710B4 [DE] Verfahren zum selbsttaetigen Zurueckfuehren eines Werkzeugs einer programmgesteuerten Werkzeugmaschine nach einer Unterbrechung des Programmablaufs von einer Unterbrechungsposition (26) zu einer Rueckfuehrposition laengs einer Werkzeugrueckfuehrbahn (88), dadurch gekennzeichnet, dass • eine Werkzeugrueckfuehrbahn (88) von einer Werkzeugrueckfuehrbahn-Berechnungseinheit (500) automatisch so bestimmt wird, dass das in der Unterbrechungsposition (26) befindliche Werkzeug laengs der Werkzeugrueckfuehrbahn (88) innerhalb eines ersten Freiraums (20) und/oder innerhalb eines zweiten Freiraums (21) zu einer Neutralposition (28) zurueckgefuehrt wird, • wobei der erste und der zweite Freiraum (20, 21) geometrisch dreidimensional bestimmter Freiraum ist, • und der erste Freiraum (20) ein werkzeugbasierter Freiraum ist, • und der werkzeugbasierte Freiraum modelliert wird, indem dasjenige Volumen zu Freiraum wird, das waehrend der Relativbewegung zwischen Werkstueck und Werkzeug laengs einer programmierten Bahn von einer Werkzeugform durchdrungen wird, • und wobei zur Modellierung des ersten Freiraums (20) ein erster Freiraummodellierungsmodus (M1) oder ein zweiter Freiraummodellierungsmodus (M2) verwendet wird,...

Classifications:
International (IPC 8-9): B23Q15/22
G05B19/4067 (Advanced/Invention);
B23Q15/20 G05B19/406 (Core/Invention)
CPC: Y02P90/265 G05B19/4093 G05B19/4067 G05B2219/50111 G05B2219/50112
European: G05B19/4067 G05B19/4093 S05B219/50111 S05B219/50112



Family:

Publication number	Publication date	Application number	Application date
DE102008035710 A1	20100211	DE200810035710	20080730
DE102008035710 B4	20130131	DE200810035710	20080730

Priority:

DE200810035710 20080730

Probable Assignee: ROLEDER JUERGEN

Assignee(s): (std)**:** ROLEDER JUERGEN

Assignee(s): ROLEDER

Inventor(s): (std)**:** ROLEDER JUERGEN

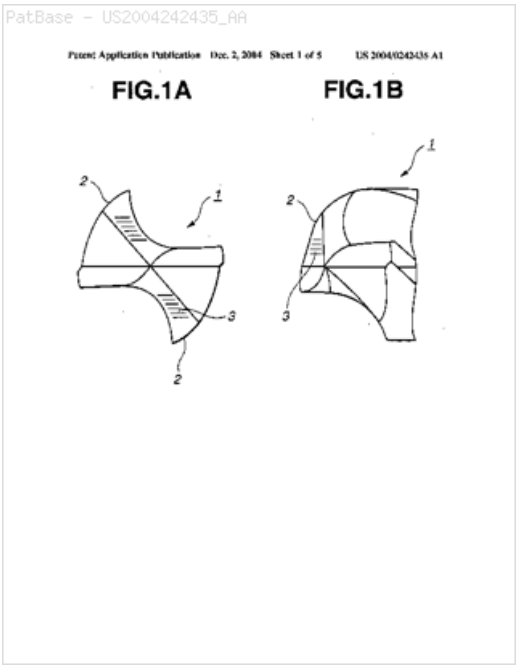
9) Family number: 30728016 (US2004242435A)

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Title: HARD-CARBON COATED MACHINE TOOL AND CUTTING OIL COMPOSITION THEREFOR

Abstract: A machine tool is used for machining a workpiece in the presence of a cutting oil composition. The machine tool includes a tool base and a hard carbon coating formed on the tool base. The hard carbon coating has 1 atomic percent or less of hydrogen. The cutting oil composition contains a base oil and at least one of an ashless fatty-ester friction modifier and an ashless aliphatic-amine friction modifier.

Classifications:
International (IPC 8-9): B23B51/00 B23C5/16 C10M101/02 C10M101/04 C10M129/68 C10M129/70 C10M129/74 C10M129/76 C10M133/04 C10M133/06 C10M133/56 C10M137/10 C10M139/00 C10M149/12 C10M169/04 C10M173/02 C23C14/06 (Advanced/Invention);
C10N10/04 C10N30/06 C10N40/22 C10N60/14 (Advanced/Non-invention);
B23B51/00 B23C5/16 C10M101/00 C10M129/00 C10M133/00 C10M137/00 C10M139/00 C10M149/00 C10M169/00 C10M173/02 C23C14/06 (Core/Invention)
International (IPC 1-7): B23B51/00 B23C5/16 C10M101/02 C10M101/04 C10M129/68 C10M129/70 C10M129/74 C10M129/76 C10M133/00 C10M133/04 C10M133/06 C10M133/56 C10M137/10 C10M139/00 C10M141/06 C10M149/12 C10M169/04 C23C14/06
CPC: C10M173/02 C10M2201/062 C10M2201/084 C10M2201/085 C10M2201/087 C10M2207/126 C10M2209/104 C10M2215/02 C10M2215/223 C10M2219/044 C10M2219/09 C10N2210/01 C10N2240/405 C10N2250/121 C10N2260/06 C10M129/68 C10M133/04 C10M133/56 C10M137/10
European: C10M129/68 C10M133/04 C10M133/56 C10M137/10 C10M173/02 C10N40/22 M10M201/062 M10M201/084 M10M201/085 M10M201/087 M10M207/126 M10M209/104 M10M215/02 M10M215/223 M10M219/044 M10M219/09 M10N210/01 M10N240/405 M10N250/121 M10N260/06
US: 508/291 508/371 508/375 508/378



Family:

Publication number	Publication date	Application number	Application date
GB200410483 A0	20040616	GB20040010483	20040511
GB2402942 A1	20041222	GB20040010483	20040511
GB2402942 B2	20060524	GB20040010483	20040511
JP2005008851 A2	20050113	JP20030409856	20031209
US2004242435 AA	20041202	US20040855501	20040528

Priority:
JP20030151855 20030529 JP20030409856 20031209 JP20030409856 20031219

Probable Assignee: NISSAN MOTOR CO LTD
Assignee(s): (std): NISSAN MOTOR
Assignee(s): NISSAN MOTOR CO ; NISSAN MOTOR CO LTD ; NISSAN MOTOR COMPANY LIMITED
Inventor(s): (std): KONDO TOMOHIRO ; MABUCHI YUTAKA ; NISHIMURA KIMIO
Inventor(s): TOMOHIRO KONDO ; YUTAKA MABUCHI ; KIMIO NISHIMURA

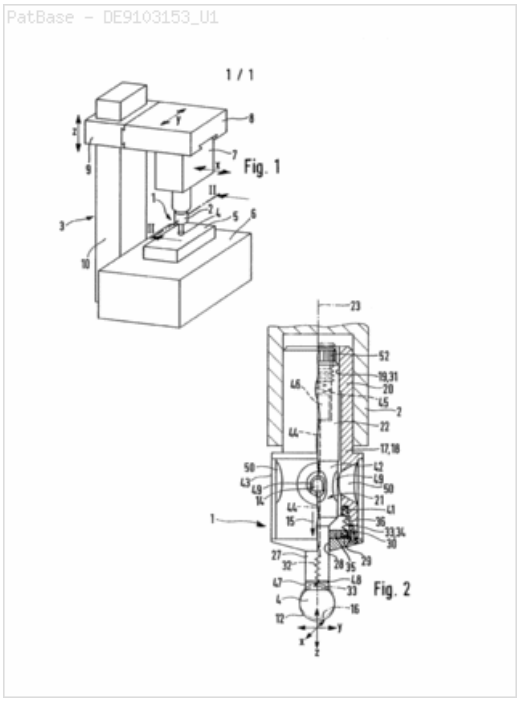
10) Family number: 17668016 (DE9103153U1)

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Abstract: Source: DE9103153U1 [DE] (Claim 1) 1. Tasteinrichtung zum Abtasten einer Gegenstandsoberflaeche, wobei die Tasteinrichtung in Gebrauchsstellung an einer Messvorrichtung oder einer Bearbeitungsmaschine oder dergleichen angeordnet ist und einen Tastkopf besitzt, der in der Gebrauchsstellung in einem von drei rechtwinkelig zueinander stehenden Koordinatenachsen (x, y, z) aufgespannten Abtastbereich positionierbar ist, wobei zwei der Koordinatenachsen (x, y) eine Tastebene definieren und die Tastrichtungen, in denen der Tastkopf mit der jeweiligen Gegenstandsoberflaeche in Tastkontakt bringbar ist, in dieser Tastebene oder in dazu parallelen Tastebenen verlaufen, dadurch gekennzeichnet, dass eine dritte Tastrichtung (15) vorhanden ist, die in Richtung der dritten Koordinatenachse (z) verlaeuft, und dass der Tastkopf (4) in Richtung der dritten Koordinatenachse (z) federelastisch nachgiebig in eine Ausgangsstellung (12) vorgespannt ist, ausgehend von der er waehrend eines in dritter Tastrichtung (15) wirkenden Tast kontaktes mit einer Gegenstandsoberflaeche selbstaetig rueckstellbar in eine Sicherheitsstellung (16) bewegbar ist.

Machine translation: (Claim 1) 1 Sensing means for sensing a Gegenstandsoberflaeche, where the sensing device is arranged in use position to a measuring device or a processing machine or the like and a probe has, in the use position into one of three right angles to each other coordinate axes (x, y, z) is spanned scanning positionable two of the coordinate axes (x, y) defines a scanning plane and the probe direction in which the probe with the respective Gegenstandsoberflaeche in tactile contact can be brought, run in this scanning plane or in parallel thereto key Benen, characterized in that a third probe direction (15) exists is extending in the direction of the third coordinate axis (z), and that the probe (4) in the direction of the third coordinate axis (z) is resiliently flexible in a starting position (12) is biased, based on which he while one in the third probe direction (15) acting pushbutton contact with a resettable Gegenstandsoberflaeche selbstaetig in a safety position (16) is movable.

Classifications:
International (IPC 8-9): G01B5/008 G01B7/00 G01B7/008 G01B7/28 (Advanced/Invention);
G01B5/008 G01B7/00 G01B7/008 G01B7/28 (Core/Invention)
International (IPC 1-7): B23Q17/00 B23Q35/24 G01B7/12 G01B7/28 G01B7/34
CPC: G01B7/008 G01B5/008 G01B7/002 G01B7/28
European: G01B5/008 G01B7/008 G01B7/00B G01B7/28



Family:

Publication number	Publication date	Application number	Application date
DE9103153 U1	19910725	DE19910003153U	19910315

Priority:

DE19910003153U 19910315

Probable Assignee: OTTO STUEBER GMBH AND CO 7311 BISSINGEN DE KG

Assignee(s): OTTO STUEBER GMBH AND CO 7311 BISSINGEN DE KG ; OTTO STUEBER GMBH AND CO KG 7311 BISSINGEN DE

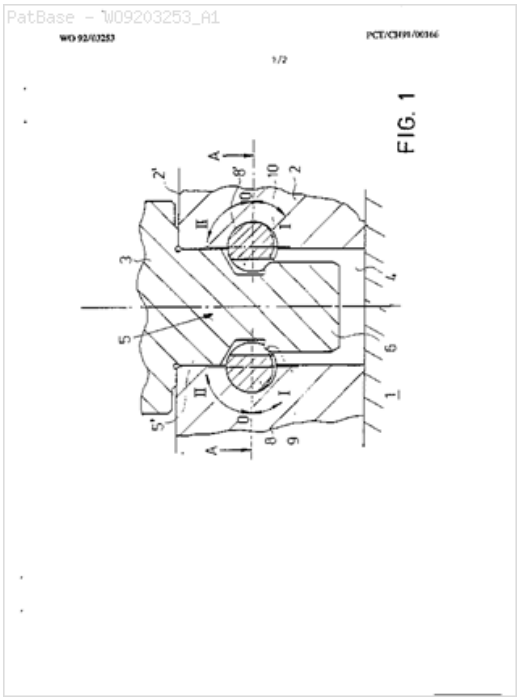
11) Family number: 17704017 (WO9203253A1)

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Title: CLAMPING DEVICE FOR MACHINE TOOLS

Abstract: A basic unit (2) is permanently secured to a machine table (1). A second basic unit (3) on which the work-piece to be machined is secured, can be connected to or released from the first unit (2) and can also be secured again after indexing through 90. To this end the first unit (2) has a drilling (4) into which fits a bearing pin (5) of the second unit (3). The bearing pin (5) has a cubic head (6) which is secured to the first cylindrical part (5') of the bearing pin (5) via a waist (7). Two parallel eccentric pins (8) intersecting the drilling (4) on a secant press on run-up edges (9) of the cubic head (6). This provides a precisely mating connection between the two basic units (2 and 3) resulting in the exact positioning of the workpiece on the machine table (1).

Classifications:
International (IPC 8-9): B23Q1/00 F16B3/00 (Advanced/Invention); B23Q1/00 F16B3/00 (Core/Invention)
International (IPC 1-7): B23Q1/00 B23Q3/06 B23Q7/00 F16B2/18 F16B3/00
CPC: B23Q1/0063 F16B3/00
European: B23Q1/00D F16B3/00



Family:

Publication number	Publication date	Application number	Application date

CH681967 A	19930630	CH19900002707	19900821
DE9190121 U1	19921224	DE19910090121U	19910809
WO9203253 A1	19920305	WO1991CH00166	19910809

Priority:

CH19900002707 19900821 WO1991CH00166 19910809

Probable Assignee: PLANETRON AG

Assignee(s): (std)**:** PLANETRON AG

Assignee(s): PLANETRON AG ETZIKEN CH ; PLANETRON ETZIKEN CH AG

Inventor(s): (std)**:** BLASER KURT

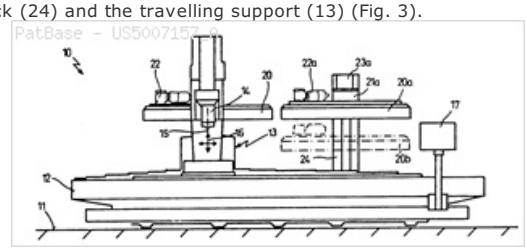
Designated states: AT BE CH DE DK ES FR GB GR IT JP KR LU NL SE US

12) Family number: 4534018 (US5007157A)

Title: MACHINE TOOL

Abstract: A machine tool comprises a travelling support (13) carrying a headstock (14) and arranged for being displaced relative to a machine table (12). The travelling support is equipped with a magazine (20). The tool magazine (20) is exchangeable. A stationary rack (24) arranged in the travelling area of the travelling support (13) carries a plurality of tool magazines (20a). Transfer means (21) are arranged on the travelling support (13) on the one hand and the rack (24) on the other hand for exchanging tool magazines (20, 20a) between the rack (24) and the travelling support (13) (Fig. 3).

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/155 B23Q3/157
CPC: Y10T483/1845 B23Q3/15526
European: B23Q3/155D2
US: 29/568 483/63



Family:

Publication number	Publication date	Application number	Application date
DE3930071 A1	19910321	DE19893930071	19890909
DE3930071 C2	19940317	DE19893930071	19890909
DE59001244 D1	19930527	DE19905001244	19900830
EP0417550 A2	19910320	EP19900116594	19900830
EP0417550 A3	19910529	EP19900116594	19900830
EP0417550 B1	19930421	EP19900116594	19900830
ES2052124 T3	19940701	ES19900116594T	19900830
JP2101899 C3	19961022	JP19900232642	19900904
JP3098732 A2	19910424	JP19900232642	19900904
JP8004986 B4	19960124	JP19900232642	19900904
US5007157 A	19910416	US19900578875	19900906

Priority:

DE19893930071 19890909 DE19905001244 19900830

Probable Assignee: CHIRON WERKE GMBH

Assignee(s): (std)**:** CHIRON WERKE GMBH

Assignee(s): CHIRON WERKE GMBH AND CO 7200 TUTTLINGEN DE KG ; CHIRON WERKE GMBH AND CO 78532 TUTTLINGEN DE KG ; CHIRON WERKE GMBH AND CO KG ; CHIRON WERKE GMBH AND CO KG 7200 TUTTLINGEN DE ; CHIRON WERKE GMBH AND CO KG 78532 TUTTLINGEN DE

Inventor(s): (std)**:** HANSU HENINGU BUINKURAA ; OIGEN RIYUTSUCHIYURE ; RUETSCHLE EUGEN DIPL ING ; WINKLER HANS HENNING DR ING ; WINKLER HANS HENNING ; RUETSCHLE EUGEN ; RUTSCHLE EUGEN

Inventor(s): RUETSCHLE EUGEN DIPL ING 7202 MUEHLHEIM DE ; WINKLER HANS HENNING DR ING 7200 TUTTLINGEN DE ; RUETSCHLE EUGEN W 7202 MUEHLHEIM DE ; WINKLER DR ING HANS HENNING W 7200 TUTTLINGEN DE

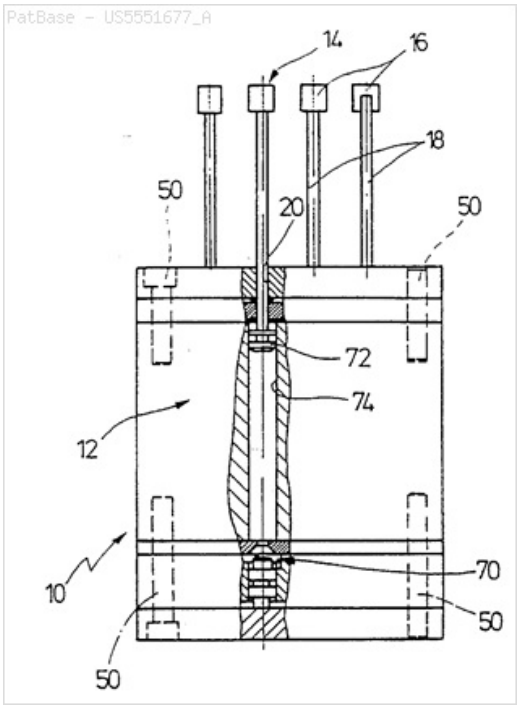
Designated states: CH DE DK ES FR GB IT LI SE

13) Family number: 20223021 (US5551677A)

Title: Profiled clamping jaw for clamping workpieces

Abstract: PCT No. PCT/EP92/02687 Sec. 371 Date Jul. 25, 1994 Sec. 102(e) Date Jul. 25, 1994 PCT Filed Nov. 23, 1992 PCT Pub. No. WO93/14907 PCT Pub. Date Aug. 5, 1993A profiled clamping jaw for a clamping device has a base body (12) and a clamping surface (14) arranged on the base body and adaptable to the surface profile of a workpiece (54). To make it possible to adapt by simple means the clamping surface (14) of the profiled clamping jaw (10) to the surface profile of the workpiece, the claiming surface (14) is composed of a plurality of pressure pieces (16) movable with respect to the base body (12) and capable of being locked thereon in a determined clamping position.

Classifications:
International (IPC 8-9): B25B1/24 (Advanced/Invention); B25B1/00 (Core/Invention)
International (IPC 1-7): B23Q3/06 B25B1/24
CPC: B25B1/2421
European: B25B1/24B2B2
US: 269/266



Family:

Publication number	Publication date	Application number	Application date
AT151000 E	19970415	AT19920923770T	19921123
DE4239180 A1	19930729	DE19924239180	19921121
DE59208305 D1	19970507	DE19925008305	19921123
DE9218907 U1	19960328	DE19920018907U	19921121
DK0623065 T3	19971020	DK19920923770T	19921123
EP0623065 A1	19941109	EP19920923770	19921123
EP0623065 B1	19970402	EP19920923770	19921123
ES2101130 T3	19970701	ES19920923770T	19921123
JP7502935 T2	19950330	JP19930512879T	19921123
US5551677 A	19960903	US19940256820	19940725
WO9314907 A1	19930805	WO1992EP02687	19921123

Priority:

DE19924202032 19920125 DE19920018907U 19921121 DE19924239180 19921121
DE19925008305 19921123 WO1992EP02687 19921123

Probable Assignee: GOETZ GMBH

Assignee(s): (std)**:** GOETZ GMBH METALL U ANLAGENB ; GOETZ METALL ANLAGEN ; GOTZ GMBH

Assignee(s): GOETZ GMBH METALL U ANLAGENBAU ; GOETZ GMBH METALL UND ANLAGENBAU 97084 WUERZBURG DE ; GOETZ GMBH METALL U ANLAGENBAU 97084 WUERZBURG DE ; GOETZ GMBH METALL UND ANLAGENBAU 97084 WUERZBURG D ; GOETZ GMBH METALL UND ANLAGENBAU ; GOETZ GMBH METALL UND ANLAGENBAU 7012 FELLBACH DE ; GOETZ GMBH ; GOETZ GMBH 71636 LUDWIGSBURG DE ; GOETZ GMBH METALL U

Inventor(s): (std)**:** PUTTMER HERMANN ; PUETTMER HERMANN ; ABRAHAM PETER

Inventor(s): ABRAHAM PETER D 7129 ILSFELD DE ; PUETTMER HERMANN D 7141 KIRCHBERG DE ; ABRAHAM PETER 7129 ILSFELD DE ; PUETTMER HERMANN 7141 KIRCHBERG DE

Designated states: AT BE CH DE DK ES FR GB GR IE IT JP LI LU MC NL SE US

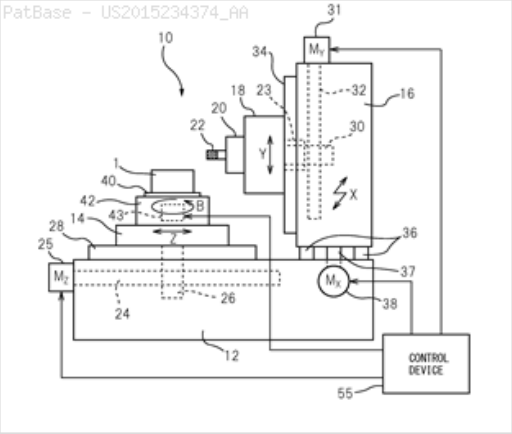
14) Family number: 56253030 (US2015234374A)

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Title: TOOL PATH-GENERATING METHOD, MACHINE TOOL CONTROL DEVICE AND TOOL PATH-GENERATING DEVICE

Abstract: A tool path-generating method for computing a tool path to process a workpiece, wherein the tool path for a designated tool when processing using the designated tool is previously established. The tool path-generating method comprises a path-computing process for computing, on the basis of the tool path for the designated tool, the tool path of a substitute tool differing from the designated tool when processing with the substitute tool. The path-computing process computes the portion that ultimately forms the machined surface when the workpiece is processed using the designated tool and sets the tool path for the substitute tool on the basis of the portion that ultimately forms the machined surface.

Classifications:
International (IPC 8-9): B23Q15/00 G05B19/19
G05B19/4093 (Advanced/Invention)
CPC: G05B2219/35158 G05B2219/36504 G05B19/19 Y02P90/265
G05B19/40937 G05B2219/35167
US: 700/186



Family:

Publication number	Publication date	Application number	Application date
CN104703755 A	20150610	CN201280076344	20121011
CN104703755 B	20171024	CN201280076344	20121011
EP2907621 A1	20150819	EP20120886448	20121011
EP2907621 A4	20160713	EP20120886448	20121011
JP2014057562 A1	20160825	JP20140540692T	20121011
JP5881843 B1	20160309	JP20140540692T	20121011
US2015234374 AA	20150820	US20120435104	20121011
US10042348 BB	20180807	US20120435104	20121011
WO14057562 A1	20140417	WO2012JP76348	20121011

Priority:

WO2012JP76348 20121011

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std)**:** MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std)**:** SUZUKI KYOHEI ; MASUMIYA YASUNORI ; SUZUKI KEITARO

Agent(s): THUM BERNHARD; AOKI ATSUSHI; TSURUTA JUNICHI; SHIMADA TETSURO; MORRISON AND FOERSTER LLP; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

15) Family number: 11335032 (US5257199A)

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Title: APPARATUS FOR IDENTIFYING TOOLS AND FOR MANAGING TOOL DATA

Abstract: In a machine tool such as a machining center or the like having an automatic tool changing apparatus, the tool holders adapted to respectively hold the tools provided for the automatic tool change are equipped with transmitters for transmitting signals indicative of tool data including the tool discrimination data of the tools. The receiver which receives the transmitted signals from the transmitters is attached to the machine tool. When a transmitter approaches the receiver, the transmitted data is received by the receiver. The kind and other data concerning the tool stored in the tool holder to which a transmitter is attached can be discriminated by the control unit of the machine tool on the basis of the received data.

Classifications:

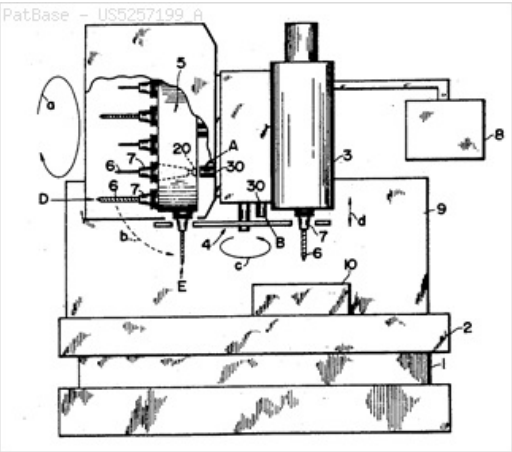
International (IPC 8-9)**:** B23Q17/00 B23Q3/155 B23Q3/157 G05B19/12 G05B19/418 G06K19/04 (Advanced/Invention); B23Q17/00 B23Q3/155 B23Q3/157 G05B19/04 G05B19/418 G06K19/04 (Core/Invention)

International (IPC 1-7)**:** B23Q17/00 B23Q3/155 B23Q3/157 G05B19/405 G05B23/00 G06F15/46

CPC: G05B2219/49302 Y10T483/12 Y10T483/134 Y02P90/087 Y02P90/205 G05B19/41825 G05B19/128 G05B2219/33207 G05B2219/50253 G06K19/04 Y02P90/10

European: G05B19/12W G05B19/418C2 G06K19/04 S05B219/33207 S05B219/49302 S05B219/50253

US: 235/375 340/4.36 340/680 340/825.23 364/474.02 364/474.21 364/474.37 483/4 483/9 700/160 700/195



Family:

Publication number	Publication date	Application number	Application date
AT67324 E	19910915	AT19860112566T	19860911
DE3681384 D1	19911017	DE19863681384	19860911
EP0214666 A2	19870318	EP19860112566	19860911
EP0214666 A3	19890222	EP19860112566	19860911
EP0214666 B1	19910911	EP19860112566	19860911

JP2048920 C3	19960425	JP19850200980	19850911
JP2129199 C3	19970502	JP19850200981	19850911
JP62063049 A2	19870319	JP19850200980	19850911
JP62063050 A2	19870319	JP19850200981	19850911
JP7004732 B4	19950125	JP19850200980	19850911
JP8015703 B4	19960221	JP19850200981	19850911
US5257199 A	19931026	US19930022619	19930217

Priority:

JP19850200980 19850911 JP19850200981 19850911 US19860904483 19860908
EP19860112566 19860911 EP19860112566 19860911 US19880700051 19881108
US19930022619 19930217

Probable Assignee: OMRON CORP

Assignee(s): (std)**:** OMRON CORP ; OMRON TATEISI ELECTRONICS ; OMRON TATEISI ELECTRONICS CO

Assignee(s): OMRON TATEISI ELECTRONICS CO KYOTO JP

Inventor(s): (std)**:** TSUJINO KOICHI ; TSUJINO KOICHI OMRON TATEISI E ; YAMADA HIROYUKI ; YAMADA HIROYUKI OMRON TATEISI

Inventor(s): YAMADA HIROYUKI OMRON TATEISI ELECTRO ; YAMADA HIROYUKI OMRON TATEISI ELECTRONICS CO ; YAMADA HIROYUKI OMRON TATEISI ELECTRONICS NAGAOKAK ; YAMADA HIROYUKI OMRON TATEISI ELECTRONICS NAGAOKAKYO CITY KYOTO 617 JP ; YAMADA HIROYUKI OMRON TATEISI ELECTRONICS... ; TSUJINO KOICHI OMRON TATEISI ELECTRON ; TSUJINO KOICHI OMRON TATEISI ELECTRONICS CO ; IGADERA SHIMO KAIINJI

Designated states: AT BE CH DE FR GB IT LI LU NL SE

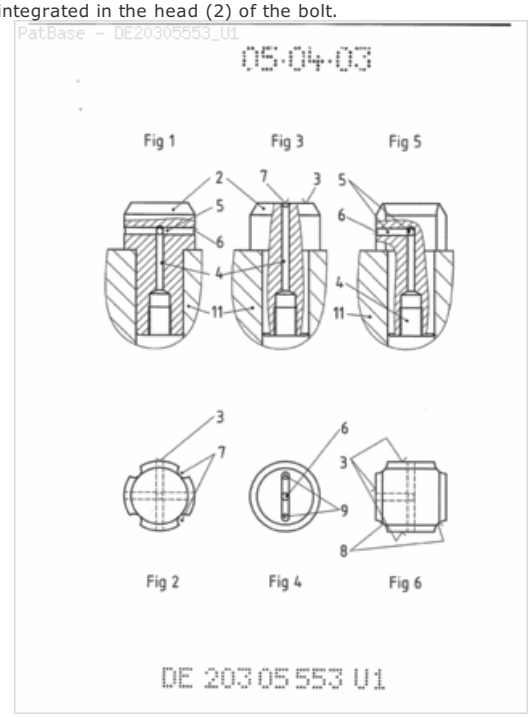
16) Family number: 28936035 (DE20305553U1)

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Title: POSITIONING BOLT, USED FOR TEMPORARY JOINING OF WORKPIECE TO MACHINING DEVICE, COMPRISING INTEGRATED RINSING DUCTS

Abstract: The cylindrical or conical bolt, inserted into a matching opening or sliding along a recess for the exact positioning of a workpiece, is provided with a central duct (4) for the transport of a rinsing fluid. At least one radial bore (5) branches off from the central bore (4). Grooves for the diversion of the fluid are integrated in the head (2) of the bolt.

Classifications:
International (IPC 8-9): B23Q16/00 B23Q3/18 B23Q7/14 (Advanced/Invention);
B23Q16/00 B23Q3/18 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q3/18 B25B11/00
CPC: B23Q3/18 B23Q7/1426 B23Q16/001
European: B23Q16/00C B23Q3/18 B23Q7/14K



Family:

Publication number	Publication date	Application number	Application date
DE20305553 U1	20030904	DE20032005553U	20030405

Priority:

DE20032005553U 20030405

Probable Assignee: HOHENSTEIN VORRICHTUNGSBAU

Assignee(s): (std)**:** HOHENSTEIN VORRICHTUNGSBAU ; HOHENSTEIN VORRICHTUNGSBAU U

Assignee(s): HOHENSTEIN VORRICHTUNGSBAU U SPANNSYSTEME GMBH ; HOHENSTEIN VORRICHTUNGSBAU UND SPANNSYSTEME GMBH

17) Family number: 16348036 (DE8126742U1)

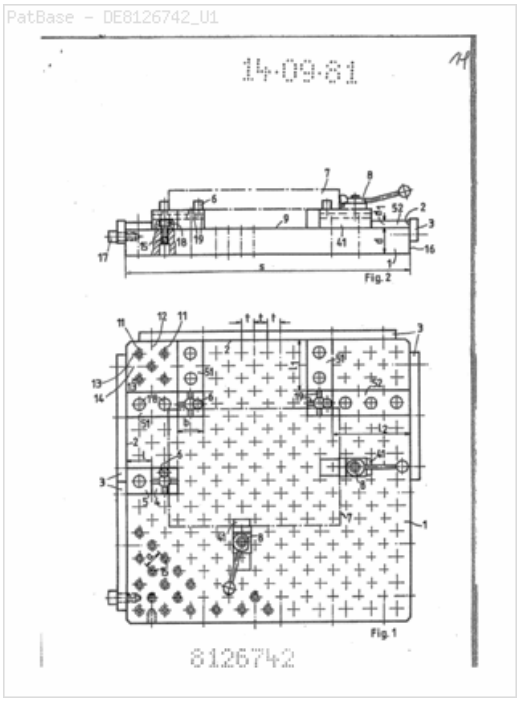
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Abstract: Source: DE8126742U1 [DE] (Claim 1) Palette zum Ausrichten und Aufspannen von Werkstuecken Ansprueche 1. Palette zum Ausrichten und Aufspannen von Werkstuecken, insbesondere fuer die spanabhebende Bearbeitung auf Bearbeitungszentren, mit einer im wesentlichen ebenen Grundplatte, die nach einem Rastersystem angeordnete Befestigungsstellen zum Festspannen und Ausrichtmittel zum Ausrichten von die Lage des Werkstueckes bestimmenden Baukoerpern aufweist, gekennzeichnet durch wenigstens zwei hochragende und laengs zweier im Winkel zueinander

stehender Seitenflaechen (16) der Grundplatte (1, 1') verlaufende Anschlagflaechen (2) und zwischen diesen und den Baukoerpern (4) einzufuegende Abstandskoerper (5,51, 52).

Machine translation: (Claim 1) range for alignment and clamping of workpieces claims 1 Range for alignment and clamping of workpieces, in particular for the machining on machining centers, with a substantially planar base plate having on a grid system mounted attachment points for clamping and aligning means for aligning the position of the workpiece defining building structures, characterized by at least two towering and standing at an angle to each other along two Seitenflaechen (16) of the base plate (1, 1 ') running Anschlagflaechen (2) and between these and the building (4) insert Abstandskoerper (5.51, 52).

Classifications:
International (IPC 8-9): B23Q3/00 (Advanced/Invention); B23Q3/00 (Core/Invention)
International (IPC 1-7): B23Q3/00



Family:

Publication number	Publication date	Application number	Application date
DE8126742 U1	19830224	DE19810226742U	19810914

Probable Assignee: FA ERWIN HALDER 7959 ACHSTETTEN DE
Assignee(s): (std)**:** FA ERWIN HALDER 7959 ACHSTETTEN DE

18) Family number: 65264037 (EP3147071B1)

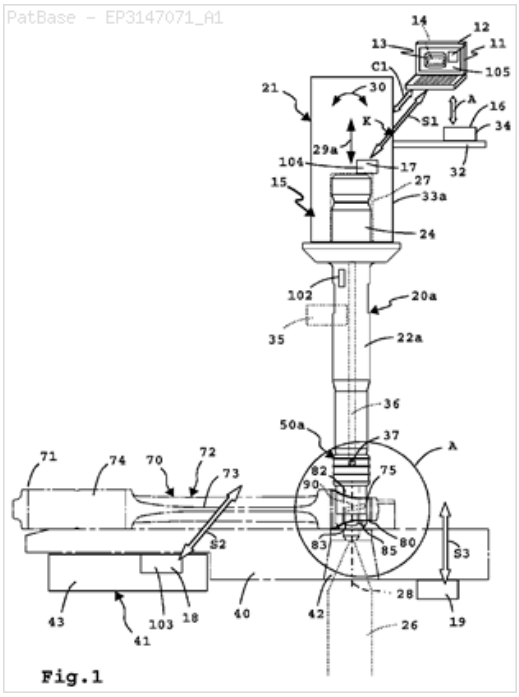
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Title: CALIBRATION METHOD AND CALIBRATION DEVICE PROCEDE D'ETALONNAGE ET DISPOSITIF D'ETALONNA

Abstract: Source: EP3147071A1 [DE] Die Erfindung betrifft eine Kalibriervorrichtung (10, 110) zum Kalibrieren einer Lageroeffnung (85) eines Werkstuecks (70), insbesondere eines Motorbauteils (71), zum Beispiel eines Pleuels, wobei die Kalibriervorrichtung (10; 110) mindestens ein Kalibrierwerkzeug (50; 150) aufweist, das an seinem Aussenumfang mindestens eine Kalibrierkontur (52; 152) aufweist, mit der eine als Lagerflaeche dienende Lager-Innenkontur (84) der Lageroeffnung (85) kalibrierbar ist, wobei zum Kalibrieren der Lageroeffnung (85) die mindestens eine Kalibrierkontur (52; 152) durch eine Vorschubbewegung (29a, 29b) entlang einer Kalibrierungsbahn (28) an der Lager-Innenkontur (84) entlang bewegt wird, wobei die Kalibriervorrichtung (10; 110) eine Positioniereinrichtung (15) zum Positionieren des Werkstuecks (70) und des mindestens einen Kalibrierwerkzeugs (50; 150) bezueglich der Kalibrierungsbahn (28) relativ zueinander aufweist. Die Kalibriervorrichtung weist eine Kraftmesseinrichtung (16) zur Erfassung einer bei dem Kalibrieren auf das Werkstueck (70), insbesondere die Lager-Innenkontur (84), einwirkenden Kalibrierkraft (K) und eine Steuerungseinrichtung (11) zur Steuerung der Positioniereinrichtung (15) in Abhaengigkeit von der Kalibrierkraft (K) auf.

Machine translation: The invention relates to a calibration device (10, 110) to calibrate a bearing hole (85) a workpiece (70), in particular an engine component (71), for example a connecting rod, with the calibration device (10; 110) at least a Kalibrierwerkzeug (50, 150) has, on its circumference at least a Kalibrierkontur (52; 152) has, with one as a storage area serving bearing hole (84) camps opening (85) is calibrated to the calibration of the bearing hole (85) that at least one Kalibrierkontur (52; 152) through a feed motion (29a, 29 b) along a calibration line (28) on the bearing inner contour (84) along moves, where the calibration device (10; 110) relative has a positioning device (15) to the positioning of the workpiece (70) and at least a calibration tool (50, 150) with regard to the calibration line (28). The calibration device has a force measuring device (16) for recording an acting in the calibration on the workpiece (70), in particular the bearing hole (84), Kalibrierkraft (K) and a control device (11) for controlling the positioning device (15) depending on the Kalibrierkraft (K).

Classifications:
International (IPC 8-9): B21C37/30 B23P13/00 B23P9/00 B23P9/02 B23Q15/22 B23Q17/22 B24B39/02 F16C33/08 F16C33/14 F16C9/04 (Advanced/Invention)
CPC: B23P9/025 B21C37/30 F16C33/14 F16C9/04



Family:

Publication number	Publication date	Application number	Application date
DE102015116005 A1	20170323	DE201510116005	20150922
DE502016003045 D1	20190124	DE201650003045T	20160905
EP3147071 A1	20170329	EP20160187278	20160905
EP3147071 B1	20190102	EP20160187278	20160905
ES2712078 T3	20190509	ES20160187278T	20160905

Priority:

DE201510116005 20150922 EP20160187278 20160905

Probable Assignee: ALFING KESSLER SONDERMASCHINEN GMBH

Assignee(s): (std)**:** ALFING KESSLER SONDERMASCHINEN GMBH

Inventor(s): (std)**:** KOCH THOMAS

Agent(s): PATENTANWAELTE BREGENZER U REULE PARTNERSCHAFTSGESELLSCHAFT MBB; ISERN JORGE

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

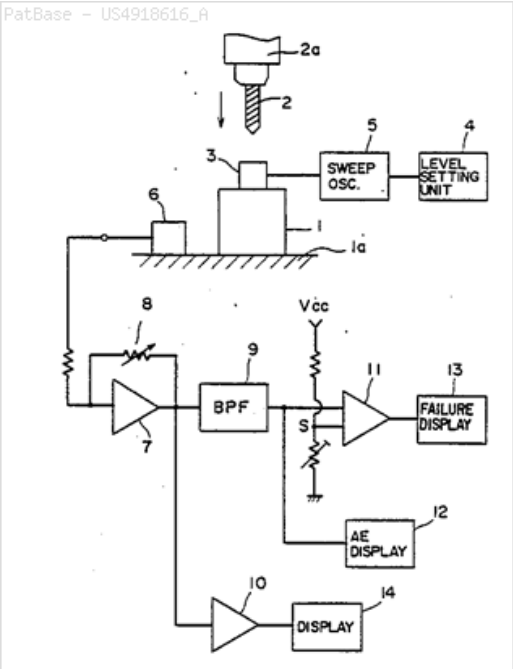
19) Family number: 3415038 (US4918616A)

Title: TOOL MONITORING SYSTEM

Abstract: A tool monitoring system for detecting a tool failure of a tool employed in a tool machine, comprising artificial signal generating unit for generating a predetermined artificial tool failure signal simulating the acoustic emission signal obtained in an actual failure of the tool, acoustic emission transducing unit adapted to be mounted on the tool machine near the tool and driven by the artificial signal generating unit for applying the artificial tool failure signal to the tool machine, acoustic emission sensing unit mounted on the tool machine near the tool so as to receive, in a setting mode of the system where the transducing unit is mounted on the machine, the applied artificial tool failure signal from the acoustic emission transducing unit through the tool machine and, in a monitoring mode of the system where the tool is operated, an acoustic emission from the tool, and signal processing unit for analyzing an output signal generated from the acoustic emission sensing unit to detect the tool failure of the tool.

Classifications:

International (IPC 8-9): B23Q17/09 G01M1/00 G01N29/14 G01N29/28 G05B19/4065 (Advanced/Invention); B23Q17/09 G01M1/00 G01N29/14 G01N29/28 G05B19/406 (Core/Invention)
International (IPC 1-7): B23Q17/09 G01M1/00 G01N29/04 G01N29/14 G05B19/405 G06F15/46
CPC: B23Q17/0947 G05B19/4065 G05B2219/37032 G05B2219/37242 G05B2219/37351 G05B2219/37493 G05B2219/37498 G05B2219/37536 G01N29/14
European: B23Q17/09B6M G01N29/14 G05B19/4065 S05B219/37032 S05B219/37242 S05B219/37351 S05B219/37493 S05B219/37498 S05B219/37536
US: 340/680 364/474.17 364/507 364/508 364/551.02 700/175 700/195 702/39 73/587



Family:

Publication number	Publication date	Application number	Application date
AT46777 E	19891015	AT19850106105T	19850517
DE3573333 D1	19891102	DE19853573333	19850517
EP0165482 A2	19851227	EP19850106105	19850517
EP0165482 A3	19880921	EP19850106105	19850517
EP0165482 B1	19890927	EP19850106105	19850517
JP1796939 C3	19931028	JP19840210176	19841005
JP1796942 C3	19931028	JP19840227196	19841029
JP1797380 C3	19931028	JP19840101554	19840518
JP5005618 B4	19930122	JP19840210176	19841005
JP5005620 B4	19930122	JP19840227196	19841029
JP5007138 B4	19930128	JP19840101554	19840518
JP60244859 A2	19851204	JP19840101554	19840518
JP61082161 A2	19860425	JP19840205338	19840928
JP61088147 A2	19860506	JP19840210176	19841005
JP61105462 A2	19860523	JP19840227196	19841029
KR19850008219 A	19851213	KR19850003399	19850517
KR900007293 B1	19901008	KR19850003399	19850517
US4918616 A	19900417	US19850734679	19850516

Priority:

JP19840101554 19840518 JP19840205338 19840928 JP19840210176 19841005
JP19840227196 19841029 EP19850106105 19850517

Probable Assignee: OMRON CORP

Assignee(s): (std)**:** OMRON CORP ; OMRON TATEISI ELECTRONICS CO ; TATEISI ELECTRIC CO

Assignee(s): TATEISHI DENKI KK

Inventor(s): (std)**:** OTSUKA KAZUAKI ; TAKINAMI TAKAHARU ; TSHUJINO KOICHI ; TSUCHIDO CHO ; YAMADA HIROYUKI ; YAMADA TAKESHI ; YOSHIMURA KIYOKAZU ; HIRAYAMA TATEMITSU ; IWAKIRI TETSURO ; MIYAKE RYOICHI ; MIYAWAKI NORIO ; NAITO TATSUHIKO ; NAKAMURA HIDEAKI ; YOSHIMURA KIYOKAZ ; YAMADA HIROYUGGI ; TSUZINO KOICHI ; MYAWAKI NORIO ; TSUJINO KOICHI ; TAKINAMI KOJI

Inventor(s): OOTSUKA KAZUAKI ; YOSHIMURA KYOKAZU

Designated states: AT BE CH DE FR GB IT LI LU NL SE

20) Family number: 16566039 (DE8319141U1)

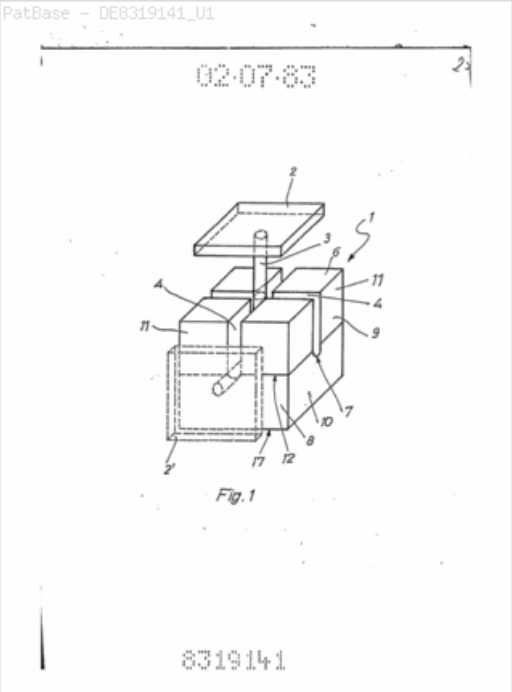
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Title: WERKSTUECKAUFNAHMEVORRICHTUNG FUER BEARBEITUNGSMASCHINEN, INSBESONDERE FUER NUMERISCH GESTEUERTE BEARBEITUNGSMASCHINEN DER SPANENDEN BEARBEITUNG WERKSTUECKAUFNAHMEVORRICHTUNG FOR MACHINE TOOLS, INCLUDING THE MACHINES for numerically controlled machining (Machine translation)

Abstract: Source: DE8319141U1 [DE] (Claim 1) Werkstueckaufnahmevorrichtung fuer Bearbeitungsmaschinen, insbesondere fuer numerisch gesteuerte Bearbeitungsmaschinen der spanenden Bearbeitung Ansprueche 1. Werk3tueclcaufnahmevorrichtung fuer Bearbeitungsmaschinen, insbesondere fuer numerisch gesteuerte Bearbeitungsmaschinen der spanenden Bearbeitung, mit einem schwenkbaren Traeger (2, 2'), auf dem sich das Werkstueck festspannen laesst, dadurch gekennzeichnet, dass der Werkstuecktraeger (2, 2') ueber ein Verbindungselement (3) mit einem einzigen Schwenklager (5,14,15) verbunden und der Werkstuecktraeger (2, 2') zumindest um jeweils eine von drei aufeinander senkrecht stehenden Achsen schwenkbar ist.

Machine translation: (Claim 1) Werkstueckaufnahmevorrichtung for machine tools, especially for numerically controlled machine tools to the machining claims 1 Werk3tueclcaufnahmevorrichtung for machine tools, especially for numerically controlled machines of machining, with a swiveling Traeger (2, 2 '), on which can be firmly clamped to the workpiece, wherein the Werkstuecktraeger (2, 2') by a connecting element (3) with a single pivot bearing (5,14,15) and the associated Werkstuecktraeger (2, 2 ') is at least one of three mutually perpendicular axes swivel.

Classifications:
International (IPC 8-9): B23Q3/18 (Advanced/Invention); B23Q3/18 (Core/Invention)
International (IPC 1-7): B23Q3/18



Family:

Publication number	Publication date	Application number	Application date
DE8319141 U1	19850411	DE19830019141U	19830702

Priority:

DE19830019141U 19830702

Probable Assignee: FESTO MASCHINENFABRIK GOTTLIEB STOLL 7300 ESSLINGEN DE

Assignee(s): FESTO MASCHINENFABRIK GOTTLIEB STOLL 7300 ESSLINGE ; FESTO MASCHINENFABRIK GOTTLIEB STOLL 7300 ESSLINGEN DE

21) Family number: 55192039 (RU2011147553A)

Title: Machine for graphite electrodes (Machine translation)

Abstract: Source: RU2011147553A **Machine translation:** 1. Machine for machining of graphite electrodes comprising a base, a slide mounted on it, is moved along the base by passing the "screw-nut rolling" column of the table, the moving slide along, the tool magazine mounted on the bracket, characterized in that the spindle is equipped with high cooling system, which is a rotor rotating inside the stator in two radial bearings and axial electromagnetic support, and to ensure safe operation provided support for the rotor-catchers and measuring sensors, radial and axial, signals which are converted in the control computer in the excitation current windings than the magnetomotive force is regulated, the rotor returns to the original position, furthermore, machining center equipped with a dust removal system of a working area comprising a removable dust receptacle configured to fit the shape of the workpiece, and to maximize the fence released from the treatment of dust which articulation means allowing to select the optimum absorption of dust duct connected to the inlet of the cyclone having the outlet helically cover the exhaust pipe, a cylindrical portion and a conical shell, and the outlet conduit is attached a filter element, wherein the cyclone is mounted on a pedestal, in which a hopper arranged to collect dust sealingly connected to the conical portion of the shell tsiklona.2. Machine for machining of graphite electrodes according to claim 1, characterized in that the coolant supply system includes a housing and a spindle chamber holes

Classifications:
International (IPC 8-9): B23Q3/155 (Advanced/Invention)

Family:

Publication number	Publication date	Application number	Application date
RU2011147553 A	20131120	RU20110147553	20111124

Priority:

RU20110147553 20111124

Probable Assignee: KOCHETOV OLEG SAVELIEVICH

Assignee(s): (std)**:** KOCHETOV OLEG SAVELIEVICH

22) Family number: 4202042 (US4428055A)

Title: TOOL TOUCH PROBE SYSTEM AND METHOD OF PRECISION MACHINING

Abstract: A system and method are disclosed for automatically machining a work piece to precise selectively determined dimensions under computer numerical control in which the cutting tool is set automatically and automatic on-machine inspection is performed of the machined work piece surfaces. Using vibration sensing to detect contact between the cutting edge of the cutting tool and position reference surfaces, the cutting edge is calibrated against these surfaces under closed loop control. The deviation between the programmed and the actual positions of the cutting edge at each reference surface is determined and an initial compensating tool position offset is automatically provided in each axis and is entered into numerical control means. After machining has been initiated, probing of the work piece occurs at least once before the final

cut is taken. The tool functions as a tool touch probe during this operation and vibrations are sensed as the calibrated cutting edge is brought into contact with the machined surface. Appropriate tool position offsets are determined and entered into the numerical control means at that time, to assure that the dimensions of the finished surface will conform to the desired dimensions. After final machining has taken place, the finished surface is again probed with the calibrated cutting edge, using vibration sensing. Deviations from the desired dimensions are determined and are indicated together with the allowable machining tolerance for each dimension.

Classifications:
International (IPC 8-9): G05B19/18 G05B19/401 G05B19/404 (Advanced/Invention); G05B19/18 G05B19/401 G05B19/404 (Core/Invention)
International (IPC 1-7): G05B19/18 G06F15/46
CPC: Y10T408/172 G05B19/4015 G05B2219/37207 G05B2219/37231 G05B2219/37351 G05B2219/49169 G05B2219/49392 G05B2219/50031
European: G05B19/401C S05B219/37207 S05B219/37231 S05B219/37351 S05B219/49169 S05B219/49392 S05B219/50031
US: 318/572 364/170 364/474 364/508 364/560 408/11 700/160 702/56 702/97

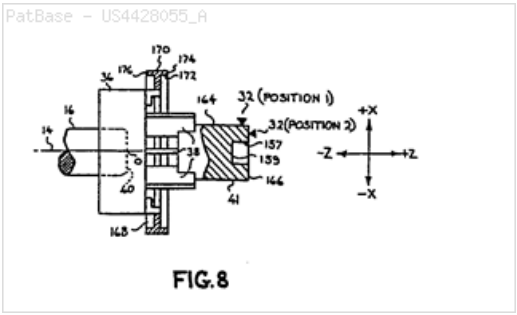


FIG.8

Family:

Publication number	Publication date	Application number	Application date
DE3274162 D1	19861211	DE19823274162	19820816
EP0072687 A2	19830223	EP19820304301	19820816
EP0072687 A3	19830323	EP19820304301	19820816
EP0072687 B1	19861105	EP19820304301	19820816
JP58046406 A2	19830317	JP19820142242	19820818
US4428055 A	19840124	US19810293799	19810818

Priority:
US19810293799 19810818

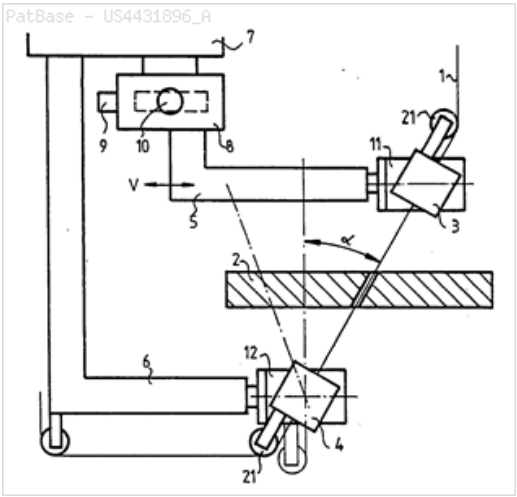
Probable Assignee: GEN ELECTRIC
Assignee(s): (std): GEN ELECTRIC
Assignee(s): GENERAL ELECTRIC CO ; GENERAL ELECTRIC CO A CORP OF NY ; GENERAL ELECTRIC COMPANY
Inventor(s): (std): KELLEY JOHN R ; KELLEY JOHN ROBERT ; ZURBRICK JOHN R ; ZURBRICK JOHN ROSS ; JIYON ROSU ZURUBURITSUKU ; JIYON ROBAATO KERII
Designated states: CH DE FR GB IT LI SE

23) Family number: 19191042 (US4431896A)

Title: Method and apparatus for orienting the wire guidance heads on spark erosion cutting equipment for eroding with a great wire slope

Abstract: PCT No. PCT/CH80/00047 Sec. 371 Date Dec. 26, 1980 Sec. 102(e) Date Oct. 31, 1980 PCT Filed Apr. 22, 1980 PCT Pub. No. WO80/02395 PCT Pub. Date Nov. 13, 1980.To permit machining of workpieces on spark erosion cutting equipment with large angles of inclination, the guidance heads which guide the wire electrode in the cutting zone with respect to the workpiece are pivotably arranged and controlled, by being mounted on individual gimbal suspensions so that it is possible to provide for a controllable slope angle up to large amounts. Individual drive motors control movement about the respective gimbal axes.

Classifications:
International (IPC 8-9): B23H7/06 B23H7/10 (Advanced/Invention); B23H7/06 B23H7/08 (Core/Invention)
International (IPC 1-7): B23D B23H7/06 B23H7/10 B23P1/04 B23P1/08 B23P1/12 G09B21/00
CPC: B23H7/06 B23H2200/20
European: B23H7/06 L23H200/20
US: 219/69.12 219/69.16 219/69G 219/69W



Family:

Publication number	Publication date	Application number	Application date
CH639308 A	19831115	CH19790003930	19790426
DE3041612 C1	19860821	DE19803041612	19800422
DE3041612 D2	19810423	DE19803041612	19800422
FR2454869 A1	19801121	FR19800009338	19800425
FR2454869 B1	19831223	FR19800009338	19800425
GB2062528 A1	19810528	GB19800036449	19800422
GB2062528 B2	19840510	GB19800036449	19800422
IT1120937 A	19860326	IT19790023140	19790530
IT7923140 A0	19790530	IT19790023140	19790530
JP56500405 T2	19810402	JP19800500839T	19800422

JP63036888 B4	19880722	JP19800500839T	19800422
SE435029 B	19840903	SE19800008262	19801126
SE435029 C	19841213	SE19800008262	19801126
SE8008262 A	19801126	SE19800008262	19801126
SE8008262 L	19801126	SE19800008262	19801126
US4431896 A	19840214	US19800212727	19801226
WO8002395 A1	19801113	WO1980CH00047	19800422

Priority:

CH19790003930 19790426 WO1980CH00047 19800422

Probable Assignee: AGIE AG IND ELEKTRONIK

Assignee(s): (std)**:** A G FUR INDUSTRIELLE ELEKTRONIK ; AGIE IND ELEKTRONIK AG ; AGIE AG IND ELEKTRONIK ; INDASUTORIERE EREKUTORONIKU AGII ROSOONE BAI ROKAR ; INDUSTRIELLE ELEKTRO AGIE LOSONE ; FUR INDUSTRIELLE ELEKTRONIK AGIE LOSONE B LOC AG ; AG FUR INDUSTRIELLE ELEKTRONIK AGIE LOSONE B LOCAR ; AGIE LOSONE BEI LOCARNO F INDUSTRIELLE ELEK AG ; LODETTI A

Assignee(s): FUR IND AG ; IND ELEKTRONIK AGIE LOSONE LOCARNO AG ; A G FUER INDUSTRIELLE ELEKTRONIK AGIE ; AGIE LOSONE BEI LOCARNO AG FUER INDUSTRIELLE ; AGIE LOSONE BEI LOCARNO AG FUER INDUSTRIELLE ELEKTRONIK ; AG FUER INDUSTRIELLE ELEKTRONIK AGIE LOSONE BEI LOCARNO ; AG FUR INDUSTRIELLE ELEKTRONIK AGIE LOSONE B LOCARNO ; FUR INDUSTRIELLE ELEKTRONIK AGIE LOSONE B LOCARNO ; AKTIENGESELLSCHAFT FUER INDUSTRIELLE ELEKTRONIK AGIE LOSONE BEI LOCARNO ; INDASUTORIERE EREKUTORONIKU AGII ROSOONE BAI ROKARUNO AG ; FUR INDUSTRIELLE ELEKTRONIK AGIE LOSONE B LOCARNO AG ; INDUSTRIELLE ELEKTRONIK AGIE LOSONE BEI LOCARNO AG F ; AKTIENGESELLSCHAFT FUER INDUSTRIELLE ELEKTRONIK AG ; AG FUR IND ; A G FUR INDUSTRIELLE ELEKTRONIK AGIE LOSONE B LOCA ; A G FUR INDUSTRIELLE ELEKTRONIK AGIE LOSONE B LOCARNO ; AG FUER INDUSTRIELLE ELEKTRONIK AGIE LOSONE BEI LO

Inventor(s): (std)**:** A LODETTI ; ATTILIO LODETTI ; LODETTI A ; RODETSUTEI ATSUTEIRIO ; LODETTI ATTILIO

Designated states: DE GB JP SE US

24) Family number: 55192042 (RU2011147554A)

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Title: Machining center for graphite electrodes (Machine translation)

Abstract: Source: RU2011147554A **Machine translation:** Machining center for the production of graphite electrodes, consisting of a base, with installed skids, moving along the ground by transmitting "Rolling screw-nut", column, table, moving along the slide, the tool magazine mounted on a bracket, wherein that is equipped with a high speed spindle which is a rotor rotating inside the stator of radial electromagnetic two supports and axle support, and to ensure safe operation, provides support for the rotor and the catcher measuring sensors, radial and axial, the signals from which are converted into a current control computer excitation windings than the magnetomotive force is regulated, the rotor returns to the original position besides machining center equipped with a dust removal system of a working area comprising a removable dust receptacle configured to fit the shape of the workpiece, and to maximize the processing zone of the intake of dust released, through which the articulation, allowing to select the optimum absorption of dust is connected to the inlet duct of the cyclone, comprising a housing consisting of a cylindrical and conical parts and is located in an upper peripheral portion of the input gas stream and an axial outlet of the purified gas and the loudspeaker, in its lower an axial portion connected to the purified gas outlet nozzle and comprising a conical impingement washer mounted in its large base lower base of the loudspeaker, and the cavity formed by the impingement surfaces of the washers and associated columns ba

Classifications:
International (IPC 8-9): B23Q3/00 (Advanced/Invention)

Family:

Publication number	Publication date	Application number	Application date
RU2011147554 A	20131120	RU20110147554	20111124

Priority:

RU20110147554 20111124

Probable Assignee: KOCHETOV OLEG SAVELIEVICH

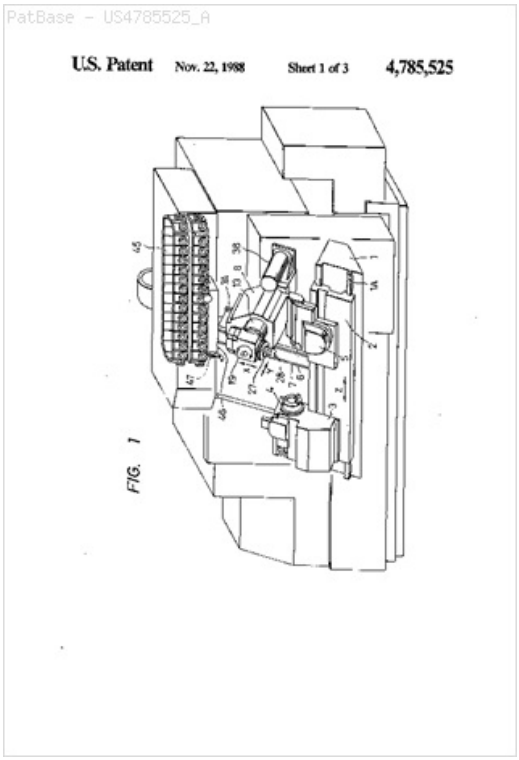
Assignee(s): (std)**:** KOCHETOV OLEG SAVELIEVICH

25) Family number: 23434047 (US4785525A)

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Title: MACHINE TOOL FOR COMPLEX MACHINING

Abstract: A machine tool comprising a table on which a spindle holding the workpiece moves in horizontal direction along the workpiece. A tool post is sidewardly movable toward the table. An arbor head is connected to the end of the post and is both axially and circumferentially movable. The arbor head includes a powered arbor for holding and possibly rotating a tool. The result is that the workpiece is movable in one direction and the arbor support is movable in two other orthogonal directions as well as being rotatable. Thereby, a variety of complex machining operations may be performed. A tool magazine and an automatic tool changer are provided.
Classifications:
International (IPC 8-9): B23B3/00 B23B3/16 B23P23/00 B23Q1/01 B23Q1/62 B23Q3/155 (Advanced/Invention);
B23B3/00 B23P23/00 B23Q1/00 B23Q1/25 B23Q3/155 (Core/Invention)
International (IPC 1-7): B23B11/00 B23B3/00 B23B7/14 B23P23/00 B23Q3/157
CPC: Y10T29/5109 Y10T483/1705 Y10T483/1719 Y10T483/1748 B23B3/161 B23Q1/01 B23Q1/625 B23Q3/15513
European: B23B3/16B B23Q1/01 B23Q1/62A3 B23Q3/155C
US: 29/27R 29/568 483/18 483/24 483/36



Family:

Publication number	Publication date	Application number	Application date
DE3769895 D1	19910613	DE19873769895	19870811
EP0259637 A1	19880316	EP19870111637	19870811
EP0259637 B1	19910508	EP19870111637	19870811
JP63074534 A2	19880405	JP19860213763	19860912
US4785525 A	19881122	US19870095719	19870914

Priority:

JP19860213763 19860912

Probable Assignee: TSUGAMI CORP

Assignee(s): (std)**:** TSUGAMI CORP ; TSUGAMI KK

Assignee(s): TSUGAMI CORP TOKIO TOKYO JP

Inventor(s): (std)**:** ISHIDA KENICHI ; YOSHIOKA MASAKI

Inventor(s): YOSHIOKA MASAKI NAGAOKA SHI NIIGATA JP

Designated states: CH DE FR GB IT LI

26) Family number: 60453047 (US2015275819A)

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Title: METHOD FOR ADJUSTING VOLUME OF COMBUSTION CHAMBER OF ENGINE

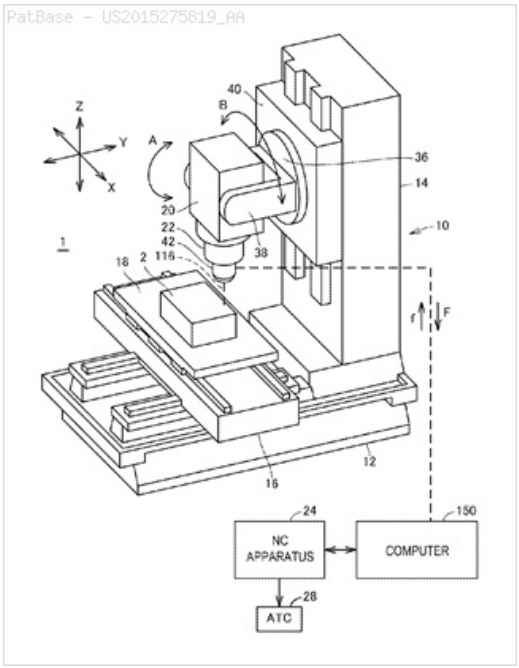
Abstract: A method for adjusting the volume of the combustion chamber of an engine with high accuracy is provided. A cylinder head (200) of an engine includes a recess (204) constituting part of the combustion chamber of the engine, and a mating surface (202) for a cylinder block. The method for adjusting the volume of the combustion chamber includes measuring a plurality of portions of the surface of the recess (204) and a plurality of portions of the mating surface (202) by using a displacement meter, calculating differences between the respective measurement values of the mating surface (202), and the design shape of the mating surface (202) in a state in which the design shape of the surface of the recess (204) is fitted with respect to the respective measurement values of the recess (204), and deciding the cutting amount of the mating surface (202) based on the calculated differences and cutting the mating surface (202) by the decided cutting amount.

Classifications:

International (IPC 8-9): B23D79/00 B23Q17/00 B23Q17/20 B23Q17/24 F02F1/24 G01B11/25 G05D5/00 (Advanced/Invention)

CPC: F02F1/24 F02F2200/06 Y10T29/4927

US: 29/888.06



Family:

Publication number	Publication date	Application number	Application date
CN104942373 A	20150930	CN201510111604	20150313
CN104942373 B	20181228	CN201510111604	20150313
DE102015103465 A1	20151001	DE201510103465	20150310
JP2015183640 A2	20151022	JP20140062490	20140325
JP5960744 B2	20160802	JP20140062490	20140325
US2015275819 AA	20151001	US20150645651	20150312
US10145332 BB	20181204	US20150645651	20150312

Priority:

JP20140062490 20140325

Probable Assignee: DMG MORI SEIKI CO LTD

Assignee(s): (std)**:** DMG MORI SEIKI CO ; DMG MORI SEIKI CO LTD

Inventor(s): (std)**:** NISHIKAWA SHIZUO ; NAKAO HIROKI

Agent(s): FISH AND RICHARDSON PC

27) Family number: 17928047 (EP1044759A2)

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Title: HANDLING TOOL FOR A MACHINE TOOL

Abstract: The handling tool includes a tool reservoir from which the handling tool (1) and grippers (7) can be inserted from the magaz position into the finishing spindle of the machine tool The grippers are arranged on the handling tool with their gripper suppor (5) able to expand in the radial and/or axial direction from the magazine position over a spread-out intermediate position into gripping position. The gripper supports which interact with an operating element such as a piston (4) are mounted and supported through an axi (9) and curved guide (6a). A locking element (X) acts as stop for the intermediate work position.

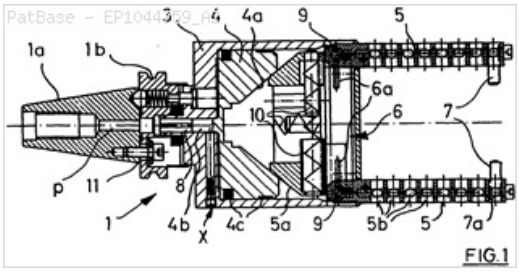
Classifications:

International (IPC 8-9): B23Q3/12 B23Q3/155 B23Q3/18 B23Q7/04 B25B5/08 B25J15/02 B25J15/04 (Advanced/Invention); B23Q3/00 B23Q3/155 B23Q3/18 B23Q7/04 B25B5/00 B25J15/02 B25J15/04 (Core/Invention)

International (IPC 1-7): B23Q3/12 B23Q3/155 B23Q3/18 B23Q7/04 B25J15/04

CPC: B23Q2230/002 B23Q7/043 B25B5/087 B25J15/0206 B25J15/0253 B25J15/0475

European: B23Q7/04C B25B5/08D B25J15/02A B25J15/02P B25J15/04F



Family:

Publication number	Publication date	Application number	Application date
AT270168 E	20040715	AT20000108334T	20000414
DE19916765 A1	20001019	DE19991016765	19990414
DE19916765 B4	20120426	DE19991016765	19990414
DE50006922 D1	20040805	DE20005006922	20000414
EP1044759 A2	20001018	EP20000108334	20000414
EP1044759 A3	20001213	EP20000108334	20000414
EP1044759 B1	20040630	EP20000108334	20000414

Priority:

DE19991016765 19990414 DE20005006922 20000414

Probable Assignee: NC AUTOMATION GMBH

Assignee(s): (std)**:** NC AUTOMATION GMBH

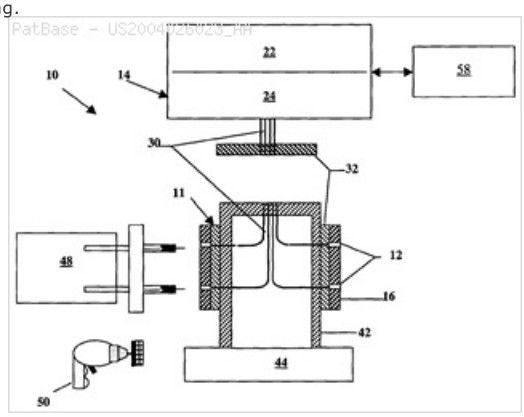
Inventor(s): (std): BREG MICHAEL ; BAUCH KARL

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

28) Family number: 30281048 (US2004026023A)

Title: SYSTEM AND METHOD FOR BONDING AND DEBONDING A WORKPIECE TO A MANUFACTURING FIXTURE

Abstract: A system and a method by which workpieces are bonded to and debond from a manufacturing fixture using a radiation responsive adhesive as a bonding agent. The system includes curing the adhesive agent during loading within seconds, and structurally weakens the adhesive bond during unloading within seconds. During the workpiece loading cycle, an adhesive dispenser deposits radiation responsive adhesive on to a load bearing, light transmittive surface, known as gripper pins. The workpiece is subsequently pushed against the locators, and towards the gripper pins causing the adhesive to interpose between workpiece and gripper pins, curing radiant energy is transmitted through the gripper pins and on to the adhesive to cure adhesive and bond the workpiece to the fixture. Therefore, the bond is structurally weakened or debonded in order to remove the workpiece from the fixture after manufacturing.



Classifications:
International (IPC 8-9): B23B1/00 B23B31/00 B23Q3/00 B23Q3/08 B25B11/00 B27G11/02 B29C65/14 B29C65/48 B29C65/76 B32B37/12 C09J11/04 C09J201/00 C09J5/00 C09J9/00 F16B11/00 G03C1/74 G21K1/00 (Advanced/Invention);
B23B31/00 B23Q3/00 B23Q3/06 B25B11/00 B32B37/12 F16B11/00 (Advanced/Non-invention)
International (IPC 1-7): B23B0/00 B23B1/00 B23B31/00 B23Q3/06 B32B31/00 B32B31/28 C09J9/00
CPC: B29C65/1403 B29C65/1406 B29C65/1409 B29C65/1416 B29C65/1435 B29C65/1464 B29C65/1483 B29C65/1487 B29C65/1606 B29C65/1616 B29C65/76 C09J5/00 B29C65/1635 B29C65/1664 B29C65/1683 B29C65/1687 B29C66/5326 B29C66/472 B29C65/4835 B29C65/485 B29C65/4865 B29C65/4845 B27G11/02 B23Q3/084 B29C66/1122
European: B23Q3/08D B29C65/14 B29C65/14D10 B29C65/14H B29C65/16 B29C65/48B4F B29C65/76 B29C66/47 C09J5/00 L29C65/14A L29C65/14A2 L29C65/14A4 L29C65/14A6B L29C65/14H L29C65/16 L29C65/16A2 L29C65/16A6B L29C65/16H
US: 156/247 156/273.3 156/273.300P 156/275.5 156/275.500S 156/275.7 156/275.700S 156/379.6 156/379.600S 156/380.9 252/600 252/600S 269/289.00R 269/289R 269/329

Family:

Publication number	Publication date	Application number	Application date
AU2003254323 AA	20040225	AU20030254323	20030806
CA2494835 AA	20050204	CA20032494835	20030806
CA2494835 AA	20040219	CA20032494835	20030806
CN100534768 C	20090902	CN200610103150	20030806
CN100535071 C	20090902	CN200610103149	20030806
CN1688440 A	20051026	CN20038023563	20030806
CN1895874 A	20070117	CN200610103150	20030806
CN1900194 A	20070124	CN200610103149	20030806
EP1554074 A2	20050720	EP20030784938	20030806
EP1554074 A4	20080604	EP20030784938	20030806
EP2062680 A1	20090527	EP20090154359	20030806
JP2006502869 T2	20060126	JP20040527775T	20030806
JP4485361 B2	20100623	JP20040527775T	20030806
KR20050061455 A	20050622	KR20057002336	20030806
MXPA05001491 A1	20051018	MX2005PA01491	20030806
US2004026023 AA	20040212	US20030635791	20030806
US2008011416 AA	20080117	US20070671776	20070206
US7172676 BB	20070206	US20030635791	20030806
WO04014587 A2	20040219	WO2003US24559	20030806
WO04014587 A3	20040902	WO2003US24559	20030806

Priority:

US20020402145P 20020807 EP20030784938 20030806 US20030635791 20030806
WO2003US24559 20030806 US20070671776 20070206

Probable Assignee: PENN STATE RESEARCH FOUNDATION

Assignee(s): (std): DEMETER EDWARD C ; PENN STATE RES CORP ; PENN STATE RES FOUND ; PENN STATE RESEARCH FOUNDATION

Assignee(s): PENN STATE RESEARCH CORP ; NATIONAL SCIENCE FOUNDATION

Inventor(s): (std): DEMETER EDWARD C ; EDWARD C DEMETER

Inventor(s): DEMETER EDWARD

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; GOWLING LAFLEUR HENDERSON LLP; LAMB RICHARD ANDREW; HOWARD AND HOWARD ATTORNEYS PC

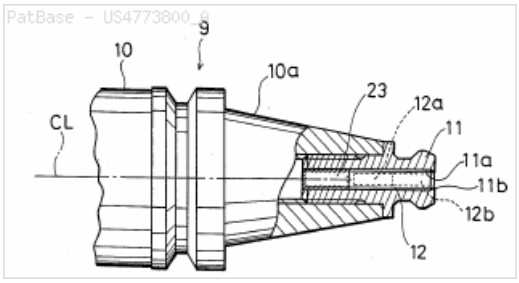
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29) Family number: 3094048 (US4773800A)

Title: PULL STUD

Abstract: A pull stud detachably attached to a tool holder includes a tool data storing element for storing tool data. The arrangement being such that tool data of each tool can be stored in the tool data storing element within the pull stud attached

to the tool holder holding the tool.
Classifications:
International (IPC 8-9): B23B31/00 B23Q3/155 G05B19/12 (Advanced/Invention);
B23B31/00 B23Q3/155 G05B19/04 (Core/Invention)
International (IPC 1-7): B23C5/16 B23Q3/155
CPC: Y10S40/913 Y10S279/90 G05B19/128 B23B31/006 B23B2231/10 B23Q3/15546 Y10T279/21 Y10T409/30952 Y10T483/134
European: B23B31/00F B23Q3/155D4 G05B19/12W L23B231/10
US: 279/126 279/1TS 279/900 29/568 40/913 409/234 483/9



Family:

Publication number	Publication date	Application number	Application date
US4773800 A	19880927	US19870001465	19870109
US4850766 A	19890725	US19880214527	19880701

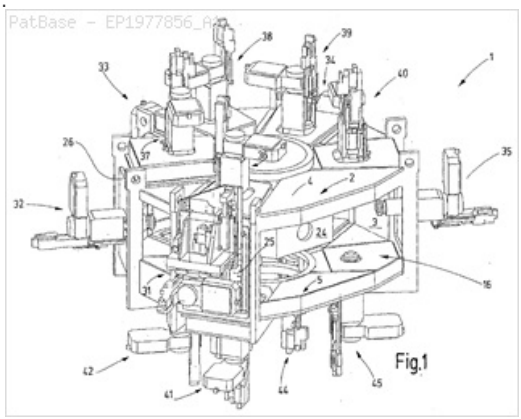
Priority:
US19870001465 19870108 US19870001465 19870109 US19880214527 19880701

Probable Assignee: YAMAZAKI MAZAK CORP
Assignee(s): (std): YAMAZAKI MAZAK CORP ; YAMAZAKI MAZAKI CORP
Inventor(s): (std): FURUHASHI RYOICHI ; NAGASE SHINSUKE

30) Family number: 42257048 (EP1977856A1)

Title: MACHINE TOOL

Abstract: The tool has a frame (2) movably supported with a central workpiece holder (24), where the frame is skeletonized. A processing unit (31) is provided with a tool for processing a workpiece. An adapter (26) is arranged between the connection point and the processing unit and connects the processing unit with the frame. The frame forms a retainer, which defines an inner area (3) and consists of a side braces, which are attached to respective outer circumference of a head plate (4) and a base plate (5) and are interconnected with each other.
Classifications:
International (IPC 8-9): B23Q1/01 B23Q39/04 (Advanced/Invention);
B23Q1/00 B23Q39/00 (Core/Invention)
CPC: B23Q39/042
European: B23Q39/04B



Family:

Publication number	Publication date	Application number	Application date
DE102007016270 A1	20081009	DE200710016270	20070404
DE102007016270 B4	20090813	DE200710016270	20070404
EP1977856 A1	20081008	EP20080002243	20080207

Priority:
DE200710016270 20070404

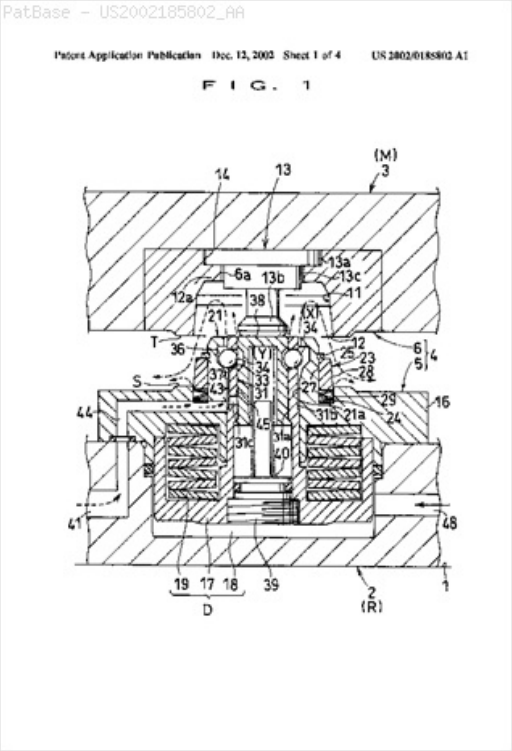
Probable Assignee: WITZIG AND FRANK GMBH
Assignee(s): (std): WITZIG AND FRANK GMBH
Inventor(s): (std): BAUER WALTER
Agent(s): RUEGER BARTHELT AND ABEL PATENTANWAELTE
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK TR

31) Family number: 24624049 (US2002185802A)

Title: CLAMPING APPARATUS WITH DATUM FUNCTION

Abstract: A work pallet (3) has an under surface opened to provide a positioning hole (12). The positioning hole (12) has an upper wall which supports a pull rod (13) diametrically movably. A clamp pallet (2) projects an annular plug portion (21), onto which a shuttle member (23) is externally fitted. The shuttle member (23) makes a tapering engagement with the positioning hole (12). The plug portion (21) has a cylindrical hole (21a), into which a transmission sleeve (31) is inserted. The transmission sleeve (31) supports an engaging ball (34), which engages with an engaged portion (13b) of the pull rod (13). Defined between the cylindrical hole (21a) and an outer peripheral surface (31b) of the transmission sleeve (31) is a flow passage (43) through which cleaning compressed air passes.
Classifications:
International (IPC 8-9): B23Q1/00 B23Q11/00 B23Q16/00 B23Q3/00 B23Q3/06 B23Q3/18 B23Q7/14 (Advanced/Invention);

B23Q1/00 B23Q11/00 B23Q16/00 B23Q3/00 B23Q3/06 B23Q3/18 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q1/00 B23Q11/00 B23Q3/00 B23Q3/06 B23Q3/18 B23Q7/14
CPC: B23Q11/005 B23Q1/0072 B23Q16/00
European: B23Q1/00D B23Q1/00D1 B23Q11/00F2 B23Q16/00
US: 269/309 269/309P



Family:

Publication number	Publication date	Application number	Application date
DE60203564 D1	20050512	DE20026003564	20020516
DE60203564 D1	20050512	DE20026003564T	20020516
DE60203564 T2	20060209	DE20026003564T	20020516
EP1264658 A2	20021211	EP20020010903	20020516
EP1264658 A3	20030514	EP20020010903	20020516
EP1264658 B1	20050406	EP20020010903	20020516
JP2002361533 A2	20021218	JP20010172070	20010607
US2002185802 AA	20021212	US20020163274	20020604
US6604738 BB	20030812	US20020163274	20020604

Priority:
JP20010172070 20010607
Probable Assignee: KOSMEK KK
Assignee(s): (std): KOSMEK KK ; KOSMEK LTD ; KOSMEK KOBE KK
Assignee(s): KABUSHIKI KAISHA KOSMEK ; KABUSHIKI KAISHA KOSMEK KOBE ; KOSMEK K USHIKI KAISHA AB
Inventor(s): (std): HARUNA YOSUKE
Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

32) Family number: 5943052 (DD256098A)

Title: POSITIONIEREINRICHTUNG FUER POSITIONSVERAENDERLICHE BAUTEILE POSITIONING DEVICE FOR POSITION VARIABLE COMPONENTS (Machine translation)

Abstract: Source: DD256098A [DE] [Source: Claim 1] 1. Positioniereinrichtung fuer positionveraenderliche Bauteile, insbesondere zur Lagebestimmung von Werkstuecktraegern auf Arbeitstischen von Bearbeitungszentren, mit waelzgefuehrten Positionierelementen, die bei Verbleib der gesamten Waelzfuehrung in der Basisbaugruppe mit koaxialen Positonsausnehmungen des Werkstuecktraegers in Eingriff gebracht werden, gekennzeichnet dadurch, dass sich das in an sich bekannter Weise eine von der Zylinderform abweichende, vorzugsweise kugelartig ausgebildete Fixierflaeche (10) aufweisende Positionierelement (4) rueckseitig an ein unter Vorspannung stehendes, reversibel deformierbares Federelement (11) abstuetzt und mit der Kante (12) der Positionierausnehmung (7) des Werkstuecktraegers (5) in Verbindung steht, wobei der Waelzfuehrung (3) ein mit dem Positionierelement (4) in Kontakt stehendes Abdichtelement vorgeordnet ist.

Machine translation: [Source: claim 1] 1 positioning device for position variable components, in particular the orientation of work piece carriers on work tables of machining centers, with roller-guided positioning elements placed on fate of the entire rolling guide with coaxial Positonsausnehmungen of workpiece carrier engaged in the base Assembly, characterized by the fact that that in itself known way a deviating from the cylindrical shape, preferably ball-like trained fixing surface (10) referring to positioning element (4) back to one under preload standing, reversibly deformable spring element (11) supports and stands with the edge (12) the positioning hole (7) of the workpiece carrier (5) in connection with a sealing element standing with the positioning element (4) in contact with is mapped to the rolling Guide (3).

Classifications:
International (IPC 8-9): B23Q7/00 (Advanced/Invention);
B23Q7/00 (Core/Invention)
International (IPC 1-7): B23Q7/00

PatBase – DD256098_A1

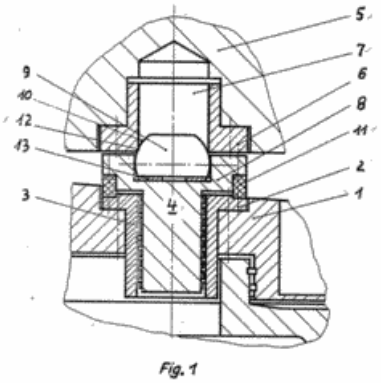


Fig. 1

Family:

Publication number	Publication date	Application number	Application date
DD256098 A1	19880427	DD19860298429	19861224

Priority:

DD19860298429 19861224

Probable Assignee: WERKZEUGMASCH HECKERT VEB

Assignee(s): (std)**:** WERKZEUGMASCH HECKERT VEB

Assignee(s): VEB WERKZEUGMASCHINENKOMBINAT FRITZ HECKERT STAMMBETRIEB DD

Inventor(s): (std)**:** MUSCHIOL ANDREAS ; NEUBERT ERHARDT ; NEUBERT JOACHIM ; SCHNEIDER OLAF

Inventor(s): SCHNEIDER OLAF DD ; NEUBERT JOACHIM DD ; NEUBERT ERHARDT DD ; MUSCHIOL ANDREAS DD

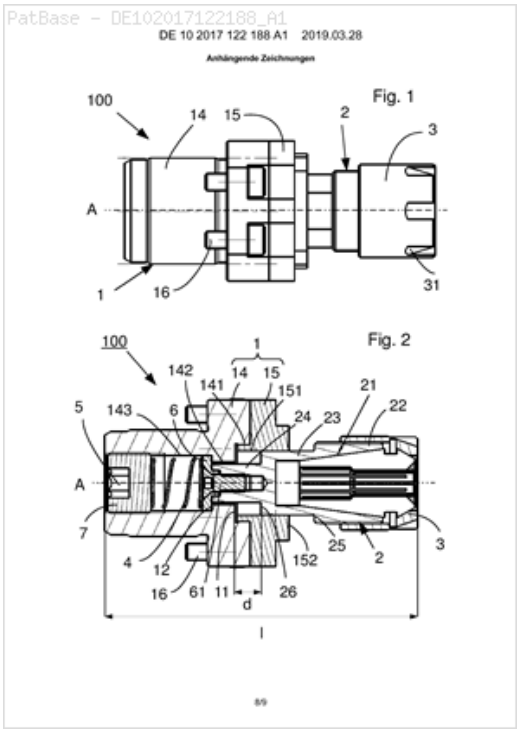
33) Family number: 73728057 (DE102017122188A1) © PatBase

Title: WERKZEUGHALTER Tool Holder (Machine translation)

Abstract: Source: DE102017122188A1 [DE] Werkzeughalter zur Halterung eines Werkzeugs mit einem Gehaeuseteil, das rueckseitig angeordnet ist und an einer Maschine befestigt werden kann, und einem Aufnahmeteil, das vorderseitig angeordnet ist und in dem das Werkzeug aufgenommen werden kann, wobei eine gesamte Laenge des Werkzeughalters veraenderbar ist.

Machine translation: Tool holder for holding a tool having a housing part, is arranged back-to-back and at the machine can be mounted, and a receptacle, the front side is arranged and in which the tool can be received, wherein an entirety of the length of the tool holder is changeable.

Classifications:
International (IPC 8-9): B23B29/00 B23B29/06 B23B31/08 B23G1/46 (Advanced/Invention)
CPC: B23B31/083 B23B2231/54 B23B2260/042 B23B2260/136 B23B2265/32



Family:

Publication number	Publication date	Application number	Application date
DE102017122188 A1	20190328	DE201710122188	20170925

Priority:

DE201710122188 20170925

Probable Assignee: KLAUS FEHRENBACH GMBH

Assignee(s): (std)**:** KLAUS FEHRENBACH GMBH

Inventor(s): (std)**:** FEHRENBACH MARKUS

34) Family number: 5943058 (DD256099A)

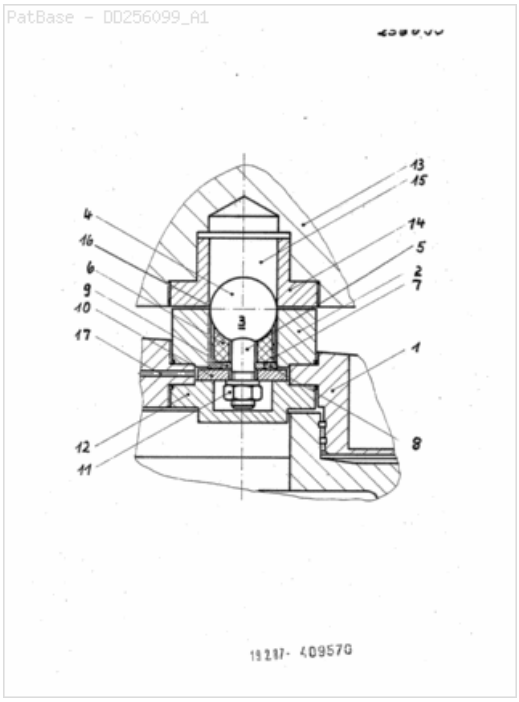
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Title: EINRICHTUNG ZUR LAGEBESTIMMUNG POSITIONSVERAENDERLICHER BAUGRUPPEN THE POSITION VARIABLE ORIENTATION DEVICE ASSEMBLIES (Machine translation)

Abstract: Source: DD256099A [DE] [Source: Claim 1] 1. Einrichtungzuer Lagebestimmung positionsveraenderlicher Baugruppen, insbesondere von Werkstuecktraegern auf Arbeitstischen von Bearbeitungszentren, mit Positionierelementen, die mit koaxialen Positionierausnehmungen des Werkstuecktraegers in Eingriff gebracht werden, eine von der Zylinderform abweichende Fixierflaeche besitzen und axial federbelastet sind, gekennzeichnet dadurch, dass sich das in der Fuehrungsbuchse (2) gleitend gefuehrte Positionierelement (3) rueckseitig an einem unter Vorspannung stehenden, buchsenfoermig ausgebildeten inkompressiblen Federelement (6) abstuetzt, das einerseits von einer in der Fuehrungsbuchse (2) spielbehaftet aufgenommen, radial spreizbaren Spielausgleichsbuchse (7) umschlossen ist, wobei das Positionierelement (3) mit der Kante (16) der PositionierauSlshmung (15) in Verbindung steht.

Machine translation: [Source: claim 1] 1. Einrichtungzuer location determination of position variable components, in particular of workpiece carriers on work tables of machining centers, with positioning elements, which are, have a fixing surface deviating from the cylindrical and are thrust spring loaded with co-axial positioning slots of the workpiece carrier engaged characterized by the fact that the positioning element gliding guided in the Guide bushing (2) (3) back to a subject to bias, female-shaped trained incompressible spring element (6) rests, which on the one hand by one in the Guide bushing (2) flawed game recorded, radially expandable game balancing connector (7) is enclosed, focusing on the positioning element (3) with the edge (16) of the PositionierauSlshmung (15) in conjunction.

Classifications:
International (IPC 8-9): B23Q7/00 (Advanced/Invention);
B23Q7/00 (Core/Invention)
International (IPC 1-7): B23Q7/00



Family:

Publication number	Publication date	Application number	Application date
DD256099 A1	19880427	DD19860298430	19861224

Priority:

DD19860298430 19861224

Probable Assignee: WERKZEUGMASCH HECKERT VEB

Assignee(s): (std)**:** WERKZEUGMASCH HECKERT VEB

Assignee(s): VEB WERKZEUGMASCHINENKOMBINAT FRITZ HECKERT STAMMBETRIEB DD

Inventor(s): (std)**:** MUSCHIOL ANDREAS ; NEUBERT ERHARDT ; NEUBERT JOACHIM ; SCHNEIDER OLAF

Inventor(s): SCHNEIDER OLAF DD ; NEUBERT JOACHIM DD ; NEUBERT ERHARDT DD ; MUSCHIOL ANDREAS DD

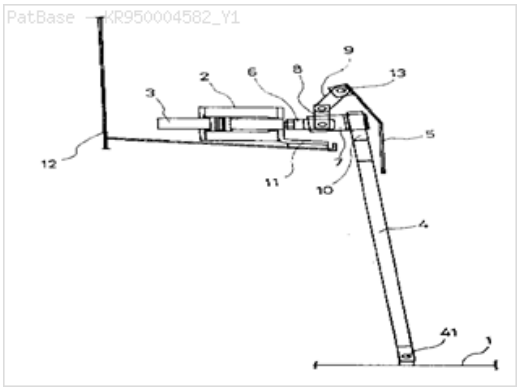
35) Family number: 16256060 (KR950004582Y)

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Title: SPLASH GUARD DOOR-WHICH HAS RIGID LINKS AND PISTON

Abstract: Source: KR950004582Y **Machine translation:** [Source: claim 1] **1.** (1) each of the two or more tables to wit the workpiece has a machining table (1) in accordance with the rotational movement of moving to a position to cutting the workpiece machining centers of the chip in the form of scattering prevention system, Table 1 between one or more pin 41 can at its bottom face by material is supported so as to be angled with respect to the chip and the chip scattering scattering prevention wall (4), fixed to the center of the top of the wall (4) to the load 24, the guide pin 10 of a cylindrical shape to accommodate the guide pin has a hole, the guide pin 10 to accommodate the slope can be pivoted about the other end of the first link (7), and one end of the first link (7) of the other end of the second link is connected to the turning materials (6) of the device by the bracket 11 is fixed to the second link (12) fixed to the other end of (6) to (2), a cylinder having a piston connected to the second link 6 and the first link (7) is fixed to the pivot connection portion of one end of the third link is connected to the normal state (8), its end (8) to the upper end of the third link is connected to the turning materials pivot points 13 in the other end of the fourth link fixed to pivot the material (9), and the pivot point 13, and the fixed end of the fourth link (9) is connected to the chip scattering Protection wall (4) for covering the upper portion of the protective cover (5) is characterized in that consists of an anti-chip system.

Classifications:
International (IPC 8-9): B23Q11/08 (Advanced/Invention); B23Q11/08 (Core/Invention)
International (IPC 1-7): B23Q11/08



Family:

Publication number	Publication date	Application number	Application date
KR950004582 Y1	19950610	KR19920028473U	19921231

Priority:

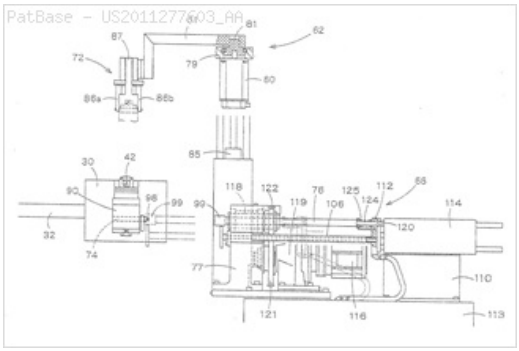
KR19920028473U 19921231

Probable Assignee: DAEWOO HEAVY IND CO LTD
Assignee(s): (std): DAE WOO HEAVY IND CO LTD ; DAEWOO HEAVY IND CO LTD
Assignee(s): DAEWOO HEAVY IND LTD
Inventor(s): (std): LEE DONG JIN

36) Family number: 49934063 (US2011277603A)

Title: PRECISION ROLL TURNING LATHE AND AUTOMATIC TOOL CHANGER THEREFOR

Abstract: There is provided an automatic tool changer which, in a precision roll turning lathe which feeds a tool post at a high speed, can automatically change a tool, such as a cutting tool, without stopping the machine, thereby enabling highly efficient ultra-Precision machining of a roll mold for molding of a large-sized plastic sheet. The automatic tool changer includes: a change device including a vertically movable pivot arm having a pivot axis and which pivots in a horizontal plane, a hand portion, mounted at the front end of the arm, for detachably gripping a tool holder, a pivot drive section for pivoting the pivot arm, and a lifting drive section for vertically moving the pivot arm; a tool holder stocker, having a plurality of circumferentially-arranged stages disposed at a predetermined distance from the pivot axis, each stage detachably holding a tool holder; a holder base, mounted to the tool post, for fixing and unfixing a tool holder through the rotation of a clamp shaft; and a clamp shaft operating device including an operating portion for clamping/unclamping the tool holder by rotating the clamp shaft.
Classifications:
International (IPC 8-9): B23B25/06 B23B29/24 B23B31/06 B23B5/08 B23D13/00 B23Q3/155 (Advanced/Invention); B23B5/08 (Advanced/Non-invention)
CPC: Y10T82/2587 Y10T409/502624 Y10T409/509348 Y10T483/1714 Y10T483/1719 B23Q3/15573 B23B5/08
European: B23B5/08 B23Q3/155N3
US: 409/304 409/345 483/22 483/24 483/24S 82/159 82/159P



Family:

Publication number	Publication date	Application number	Application date
CN102248424 A	20111123	CN201110132355	20110517
CN102248424 B	20140625	CN201110132355	20110517
JP2011240424 A2	20111201	JP20100112952	20100517
JP5539012 B2	20140702	JP20100112952	20100517
KR101214695 B1	20121221	KR20110045640	20110516
KR20110126548 A	20111123	KR20110045640	20110516
TW201208792 A	20120301	TW20110115959	20110506
TWI455779 B	20141011	TW20110115959	20110506
US2011277603 AA	20111117	US20110108088	20110516
US8641589 BB	20140204	US20110108088	20110516

Priority:
JP20100112952 20100517

Probable Assignee: TOSHIBA KIKAI KK
Assignee(s): (std): TOSHIBA MACHINE CO LTD ; UCHIMURA HIROSHI
Assignee(s): TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK ; TOSHIBA MACH CO LTD ; TOSHIBA MACHINE CO
Inventor(s): (std): HIROSHI UCHIMURA ; UCHIMURA HIROSHI
Agent(s): NAGAI HIROSHI; DLA PIPER LLP

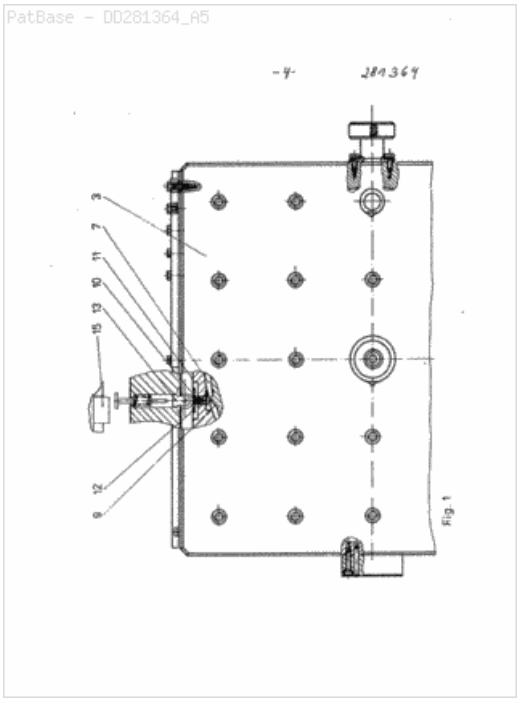
37) Family number: 6067066 (DD281364A)

Title: WERKSTUECKTRAEGER WORKPIECE CARRIER (Machine translation)

Abstract: Source: DD281364A [DE] [Source: Claim 1] 1. Werkstuecktraeger, insbesondere fuer Bearbeitungszentren, Fertigungszellen und Fertigungssysteme, bestehend an einem Unterteil mit Transportfuehrungen und einem Oberteil mit Spannprofilen,. gekennzeichnet dadurch, dass das Oberteil (3) auf dem Unterteil (1) drehbar gelagert, mit diesen formschluessig verbunden ist, durch das Unterteil (1) hindurchfuehrt oder dieses umschliesst und an der Unterseite Formelemente (16) aufweist, die mit korrespondierenden Formelementen (18) des Arbeitstisches positionierend Zusammenwirken, wobei das Oberteil (3) in vorbestimmten Drehwinkeln auf dem Unterteil (1) rastbar und mindestens eine vorbestimmte Rastung signalisierbar ist.

Machine translation: [Source: claim 1] 1 workpiece carrier, in particular for machining centers, production cells and manufacturing systems, consisting of a bottom with transport guides and an upper part with clamping profiles,. characterized by the fact that the upper part (3) on the base (1) swivel bearings is positively associated with these, passes through the bottom (1) or this wraps and has at the bottom of form elements (16) that certain work together, with the upper part (3) in preset rotation angles on the base (1) with detent and at least a positionierend with corresponding form elements (18) of the work table catch can is.

Classifications:
International (IPC 8-9): B23Q3/02 (Advanced/Invention); B23Q3/02 (Core/Invention)
International (IPC 1-7): B23Q1/02 B23Q3/02



Family:

Publication number	Publication date	Application number	Application date
DD281364 A5	19900808	DD19870307341	19870929

Priority:

DD19870307341 19870929

Probable Assignee: WERKZEUGMASCH HECKERT VEB

Assignee(s): (std)**:** WERKZEUGMASCH HECKERT VEB

Assignee(s): VEB WERKZEUGMASCHINENKOMBINAT FRITZ HECKERT DD

Inventor(s): (std)**:** LEWICKI REINER ; POETTRICH WOLFGANG ; SIEBER PETER

Inventor(s): SIEBER PETER DD ; POETTRICH WOLFGANG DD ; LEWICKI REINER DD

38) Family number: 57804066 (US2015023752A)

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Title: CHIP DISPOSAL DEVICE OF MACHINE TOOL

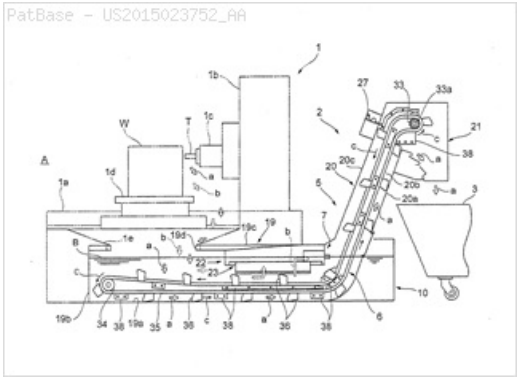
Abstract: To provide a chip disposal device of a machine tool which surely separates and collects a cutting fluid adhering to a chip lump, thereby capable of reducing an amount of the cutting fluid discharged to the outside of the machine. The chip disposal device includes a liquid separating part 65 which separates and collects a cutting fluid adhering to chips, the liquid separating part 65 has a mounting part 66 which is provided continuously from an inclined discharge surface 20a and is inclined so as to get lower as it goes more apart outward from the inclined discharge surface 20a, and to which a first chip lump a1 conveyed by a first scraping plate 36a is transferred. Then, the first chip lump a1 on the mounting part 66 stays on the mounting part 66 until dropping by being pushed by a second chip lump a2 conveyed by a second scraping plate 36b following the first scraping plate 36a.

Classifications:

International (IPC 8-9)**:** B01D33/04 B01D43/00 B23Q11/00 B23Q11/10 B65G45/14 B65G45/22 (Advanced/Invention); B01D43/00 (Advanced/Non-invention)

CPC: B23Q11/0057 B23Q11/0067 B01D33/04 B01D43/00 B23Q11/1069 Y02P70/171 Y10T409/304088

US: 1/1 409/137



Family:

Publication number	Publication date	Application number	Application date
CN203936705 U	20141112	CN201420345805U	20140625
DE602014004692 D1	20161222	DE201460004692T	20140624
EP2818277 A1	20141231	EP20140173719	20140624
EP2818277 B1	20161109	EP20140173719	20140624
JP2015009282 A2	20150119	JP20130133764	20130626
JP6062325 B2	20170118	JP20130133764	20130626
US2015023752 AA	20150122	US20140316272	20140626
US9339907 BB	20160517	US20140316272	20140626

Priority:

JP20130133764 20130626 EP20140173719 20140624

Probable Assignee: DMG MORI SEIKI CO LTD

Assignee(s): (std): DMG MORI SEIKI CO LTD

Assignee(s): DMG MORI SEIKI CO LTD YAMATOKORIYAMA SHI ; DE GIESSEN SEIKI CO LTD ; DMG MORI SEIKI CO

Inventor(s): (std): KITADE YUHEI ; OSHIMA RYUTARO ; KAKUTANI MASAHIDE ; MATSUYAMA TOMOYOSHI ; KICHIBAYASHI TAKUYA ; KADOTANI MASAHIDE ; YOSHIBAYASHI TAKUYA ; KITADE OHIRA ; SUMIYA MASAHIDE

Inventor(s): KAKUTANI MASAHIDE YAMATOKORIYAMA SHI ; KITADE YUHEI YAMATOKORIYAMA SHI ; OSHIMA RYUTARO YAMATOKORIYAMA SHI ; MATSUYAMA TOMOYOSHI YAMATOKORIYAMA SHI

Agent(s): GRUENECKER PATENT U RECHTSANWAELTE PARTG MBB; GRUENECKER KINKELDEY STOCKMAIR AND SCHWANHAEUSSER

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

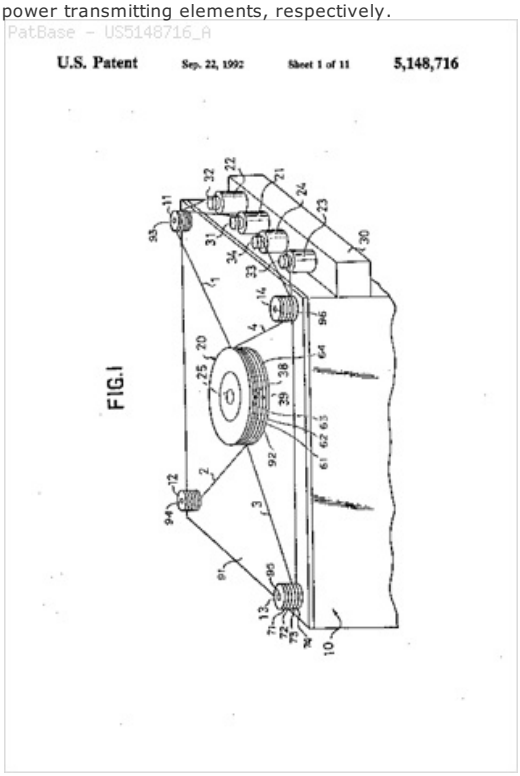
39) Family number: 9667067 (US5148716A)

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Title: PLANE MOTION MECHANISM

Abstract: In a plane motion mechanism, a table is mounted on a top planar surface of a base for movement thereon in plane motion. One end portions of respective first, second and third power transmitting elements adjacent respectively to one ends thereof are wound about an outer peripheral side surface of the table. At least two, first and second, drive units are provided, to which the other ends of the respective first and second power transmitting elements are connected respectively, for applying tension forces respectively to the first and second power transmitting elements. A tension-applying unit, to which the other end of the third power transmitting unit is connected, is provided for applying a tension force to the third power transmitting element. The table may be circular in cross-section and having an outer peripheral side surface. At least pair of first and second elongated power transmitting units may extend in contact with an outer peripheral side surface of the table to generate friction between the first and second power transmitting units and the outer peripheral side surface of the table. A pair of drive units may be provided for driving the first and second power transmitting elements, respectively.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/34 B23Q1/44 B23Q1/48 B23Q5/38 F16H19/00 F16H19/02 G05D3/00 (Advanced/Invention)
International (IPC 1-7): A47B13/00 B23Q1/06 B23Q1/14 B23Q1/25 B23Q5/22 F16H19/00 F16H19/02 F16H19/06 G05D3/00 G05G11/00
CPC: B25J9/0078 F16H19/06 B23Q1/34 B23Q1/48 B23Q1/4809 F16H2019/069 G05D3/00 Y10T74/18848 Y10T74/20348
European: B23Q1/34 B23Q1/48 B23Q1/48A1 F16H19/06 G05D3/00 R16H19/06X
US: 108/20 248/178 248/178.1 248/651 74/479 74/490.08 74/89.22



Family:

Publication number	Publication date	Application number	Application date
DE69113560 D1	19951109	DE19916013560	19910719
DE69113560 T2	19960605	DE19916013560T	19910719
EP0469956 A1	19920205	EP19910402027	19910719
EP0469956 B1	19951004	EP19910402027	19910719
EP0599827 A2	19940601	EP19940400069	19910719
EP0599827 A3	19950809	EP19940400069	19910719
JP5228770 A2	19930907	JP19910256037	19910701
KR19920002266 A	19920228	KR19910012413	19910719
US5148716 A	19920922	US19910731064	19910717

Priority:

JP19900190671 19900720 JP19910256037 19910701 EP19910402027 19910719

Probable Assignee: NICOTEC CO

Assignee(s): (std): NICOTEC CO ; NICOTEC CO LTD ; NIPPON CONNECTICUT SAW CO ; NIPPON CONNECTICUT SAW CO LTD ; UNI DATA LTD ; UNIE DATA KK

Assignee(s): UNI DATA LTD TOKIO TOKYO JP ; NICOTEC CO LTD TOKIO TOKYO JP ; NIKOTETSUKU KK

Inventor(s): (std): SUDA HIROHARU C O UNI DATA LTD ; SUDA HIROHARU

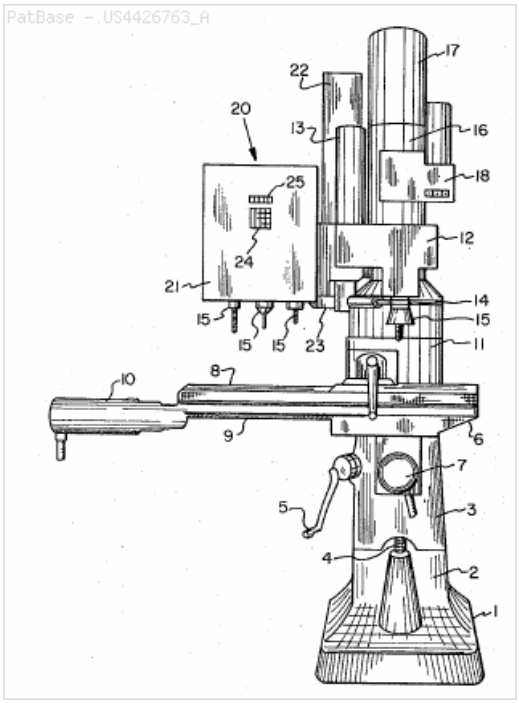
Designated states: DE FR GB IT SE

40) Family number: 4192069 (US4426763A)

Title: TOOL CHANGER

Abstract: A tool changer for a milling machine comprising a tool store, twin claw tool changer and microprocessor controller. Tool hangers in the tool store are mounted to an orbiting chain. The chain is driven by a servomotor to advance a tool hanger to the ready (exchange) position through the shortest distance without each tool hanger coming to rest as it passes the ready position. The tool exchange takes place with no movement of the orbiting chain after the tool exchange is initiated since the tool holder removed from the spindle of the milling machine is placed into the very same hanger from which the tool holder placed in the spindle was taken. The microprocessor keeps track of which tool holders are in which hanger no matter how many exchanges.

Classifications:
International (IPC 8-9): B23Q3/157 G05B19/18 (Advanced/Invention); B23Q3/157 G05B19/18 (Core/Invention)
International (IPC 1-7): B23Q3/157 G05B19/27
CPC: Y10S483/902 B23Q3/15766 G05B19/182 G05B2219/34215 G05B2219/42212 G05B2219/50261 Y10T483/12 Y10T483/127 Y10T483/1769 Y10T483/1891
European: B23Q3/157C2C3 G05B19/18B S05B219/34215 S05B219/42212 S05B219/50261
US: 211/1.5 29/568 318/602 483/4 483/45 483/6 483/68 483/902



Family:

Publication number	Publication date	Application number	Application date
US4426763 A	19840124	US19810297333	19810828

Priority:
US19810297333 19810828

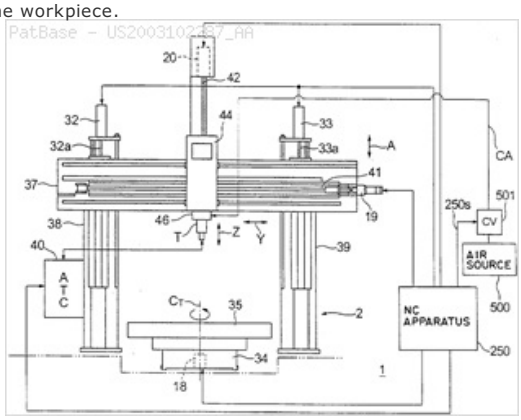
Probable Assignee: AEROTECH INC
Assignee(s): (std): AEROTECH INC
Inventor(s): (std): HORNOK EMERY ; KILLIAN GARY L

41) Family number: 28630070 (US2003102287A)

Title: TOOL, TOOL HOLDER, AND MACHINE TOOL

Abstract: A tool attachable to a machine tool in the same way as an ordinary tool, capable of being driven and operating without connecting with an external power supply etc., and made small enough to enable automatic changing, provided with a generator for generating power by energy of compressed air supplied from the outside, a motor driven by power generated by the generator, and a cutting tool driven by the motor for cutting the workpiece.

Classifications:
International (IPC 8-9): B23H1/00 B23H7/26 B23Q1/00 B23Q15/00 B23Q5/04 B23Q5/06 H02K16/00 H02K7/18 (Advanced/Invention); B23Q15/00 (Advanced/Non-invention); B23H1/00 B23H7/26 B23Q1/00 B23Q15/00 B23Q5/00 H02K16/00 H02K7/18 (Core/Invention)
International (IPC 1-7): B23H1/00 B23H7/30 B23Q15/00 B23Q5/04 H02K16/00 H02K7/18
CPC: B23H1/00 B23H7/26 B23H7/265 B23Q1/0009 B23Q5/043 B23Q5/06 B23H2400/10
European: B23H1/00 B23H7/26 B23H7/26B B23Q1/00B B23Q5/04D B23Q5/06 L23H400/10
US: 219/69.11 219/69.110P 219/69.13 219/69.130S 219/69.2 219/69.200S



Family:

Publication number	Publication date	Application number	Application date
JP2003170328 A2	20030617	JP20010367429	20011130
KR100745933 B1	20070802	KR20020074403	20021127

KR20030044819 A	20030609	KR20020074403	20021127
US2003102287 AA	20030605	US20020305132	20021127

Priority:

JP20010367429 20011130

Probable Assignee: TOSHIBA KIKAI KK

Assignee(s): (std)**:** TOSHIBA MACHINE CO LTD

Assignee(s): ADACHI SAKASHI ; KATSUMATA KOJI ; TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK ; TOSHIBA MACH CO LTD

Inventor(s): (std)**:** ADACHI MASARU ; ADACHI SAKASHI ; KATSUMATA KOJI

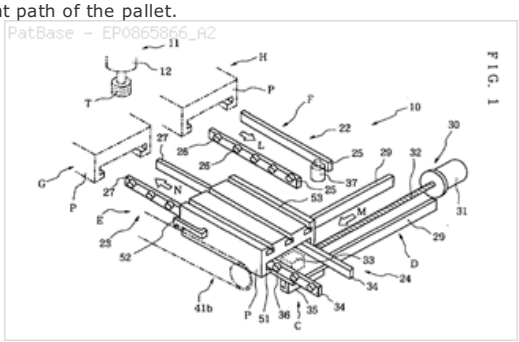
42) Family number: 11379070 (EP0865866A2)

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Title: PALLET CHANGER

Abstract: A pallet changer having two fixed pallet pools 22 and 23 for the conveyance of a pallet P to a machine tool and also having a movable pallet pool 24 for moving the pallet P between both fixed pallet pools 22 and 23, wherein a work on the pallet can be changed at a predetermined position on a movement path of the pallet.

Classifications:
International (IPC 8-9): B23Q7/00 B23Q7/14 (Advanced/Invention); B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q7/00 B23Q7/14
CPC: B23Q7/1431
European: B23Q7/14K2



Family:

Publication number	Publication date	Application number	Application date
DE69808980 D1	20021205	DE19986008980	19980304
DE69808980 D1	20021205	DE19986008980T	19980304
DE69808980 T2	20030320	DE19986008980T	19980304
EP0865866 A2	19980923	EP19980103753	19980304
EP0865866 A3	19990324	EP19980103753	19980304
EP0865866 B1	20021030	EP19980103753	19980304
JP10249667 A2	19980922	JP19970079141	19970314
JP3712090 B2	20051102	JP19970079141	19970314

Priority:

JP19970079141 19970314

Probable Assignee: KITAMURA MACHINERY CO LTD

Assignee(s): (std)**:** KITAMURA MACHINERY CO LTD

Assignee(s): KITAMURA MACH CO LTD ; KITAMURA MACHINERY CO

Inventor(s): (std)**:** KITAMURA AKIHIRO ; KITAMURA KOICHIRO ; KITAMURA KOSAKU ; KITAMURA KOUSAKU ; SAITO TAKASHI ; TANIGUCHI KATSUJI ; YAMADA SHIGERU

Designated states: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

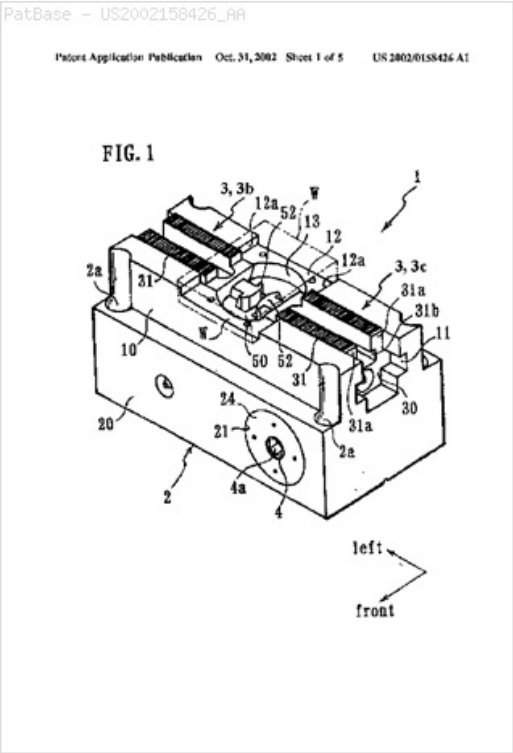
43) Family number: 28274071 (US2002158426A)

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Title: CHUCK DEVICE

Abstract: A chuck device (1) includes: a worm gear mechanism (5) decelerating a rotational drive force applied through an input shaft member (4); a second gear mechanism (6) using the rotational drive force transferred from the worm gear mechanism (5) to drive a screw shaft member (46) in the axial direction; and a conversion mechanism (7) redirecting the axial drive force transferred by the screw shaft member (46) to drive a pair of claw members (3) symmetrically. Thus, the rotational drive force applied through the input shaft member (4) is increased by the worm gear mechanism (5) and the second gear mechanism (6), and this rotational drive force is redirected by the conversion mechanism (7) and transferred to the claw members (3), allowing a workpiece or tool to be firmly chucked.

Classifications:
International (IPC 8-9): B23B31/00 B23B31/177 B25B1/08 (Advanced/Invention); B23B31/177 (Advanced/Non-invention); B23B31/12 B25B1/00 (Core/Invention)
International (IPC 1-7): B23B31/00 B23B31/16 B23B31/177 B23Q1/42 B25B1/08
CPC: Y10T279/19 Y10T279/1913 Y10T279/1933 Y10T279/1973 B25B1/08 B23B2250/12 B23B2260/158 B23B31/16233
European: B23B31/16K B25B1/08 L23B250/12 L23B260/158
US: 269/172 269/240 279/11 279/110 279/110S 279/112 279/115 279/121 279/121P



Family:

Publication number	Publication date	Application number	Application date
EP1184112 A1	20020306	EP20010904488	20010215
EP1184112 A4	20030611	EP20010904488	20010215
JP2001259909 A2	20010925	JP20000068698	20000313
KR100443733 B1	20040809	KR20017013348	20011019
KR20020020693 A	20020315	KR20017013348	20010215
TW474842 B	20020201	TW20010105845	20010313
US2002158426 AA	20021031	US20010009879	20011113
US6799767 BB	20041005	US20010009879	20011113
WO0168299 A1	20010920	WO2001JP01101	20010215

Priority:

JP20000068698 20000313 WO2001JP01101 20010215

Probable Assignee: PASCAL ENGINEERING CORP

Assignee(s): (std)**:** KURODA TAKAYUKI ; PASCAL KK

Assignee(s): PASCAL ENGINEERING CORP ; PASCAL K USHIKI KAISHA AB

Inventor(s): (std)**:** KURODA ITTETSU ; KURODA TAKAYUKI

Designated states: DE IT KR US

44) Family number: 3156077 (US4768902A)

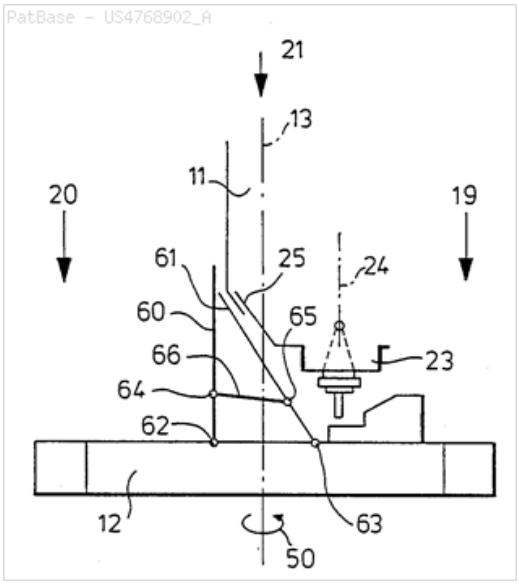
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Title: MACHINE TOOL

Abstract: A machine tool comprises a displaceable work table (12) having a first area which in a first position in which it serves as the processing side carries workpieces for being processed by means of a tool of the machine tool, and a second area which in a second position in which it serves as the mounting side can receive another workpiece, the two positions of the said areas being exchangeable by displacement of the table (12), and at least one splash guard (28) which can be moved relative to the work table being arranged between the said table areas. In order to ensure that one always has a larger working space available on the processing side to permit the spindle stock to be moved over the full area and to permit bulky and/or heavy workpieces to be loaded on the surface of the work table (12) from the mounting side, the splash guard (28) subdivides the working space defined by the areas asymmetrically. To this end, the splash guard is movable relative to the work table in such a manner that the working space ratio between the area on the processing side and the area on the mounting side remains at least approximately constant when the positions of the two areas are changed. Finally, the splash guard (28) moves automatically when the work table (12) changes its position (Fig. 3a).

Classifications:

International (IPC 8-9): B23Q1/00 B23Q1/66 B23Q11/08 F16P1/04 (Advanced/Invention);
B23Q1/00 B23Q1/25 B23Q11/08 F16P1/00 (Core/Invention)
International (IPC 1-7): B23Q1/06 B23Q1/6 B23Q11/08
CPC: Y10S29/056 F16P1/04 B23Q1/66 Y10T74/219 Y10T408/98 Y10T409/30392 B23Q11/0891
European: B23Q1/66 B23Q11/08 F16P1/04
US: 29/DIG.56 408/241G 409/134 451/457 51/274 74/608



Family:

Publication number	Publication date	Application number	Application date
DE3533089 C1	19870409	DE19853533089	19850917
DE3734722 C1	19881124	DE19873734722	19871014
DE3805842 C1	19881124	DE19883805842	19880225
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DE3863898 D1	19910829	DE19883863898	19881003
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EP0216217 A1	19870401	EP19860112208	19860903
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ES2023476 B3	19920116	ES19880116323T	19881003
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JP5051417 B4	19930802	JP19890039502	19890221
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JP62079943 A2	19870413	JP19860220812	19860917
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Priority:

DE19853533089 19850917 US19860906323 19860911 DE19873734722 19871014
DE19883805842 19880225 DE19883805844 19880225 DE19883863898 19881003
DE19895001254 19890201

Probable Assignee: CHIRON WERKE GMBH AND CO KG

Assignee(s): (std)**:** CHIRON WERKE GMBH ; CHIRON WERKE GMBH AND CO KG ; SHIRON WERKE GMBH

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Inventor(s): WINKLER DR HANS HENNING W 7200 TUTTLINGEN DE ; HANINGER RUDOLF 7201 SEITINGEN DE ; RUETSCHLE EUGEN W 7202 MUEHLHEIM DE ; OIGEN RYUUTOSHURE

Designated states: CH DE ES FR GB IT LI SE

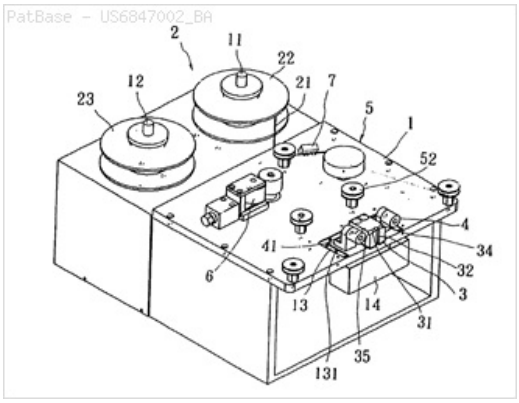
45) Family number: 31484079 (US6847002B)

Title: MICROELECTRODE MACHINING DEVICE

Abstract: The microelectrode machining device disclosed by the invention mainly comprises a platform, a wire supply

mechanism, a wire guide, and two (electric conductor)elements, wherein the platform can be fixed at an EDM machine and the wire supply mechanism is arranged on the platform for providing the wire needed in the EDM process, and the wire guide disposed on the platform has an arch-slide arranged thereon and a groove arranged at a position corresponding to the middle of the arch-slide on the wire guide, in addition, the two (electric conductor)elements are arranged on the platform to supply the power needed in the EDM process, and the two (electric conductor)elements are disposed respectively at the side of wire guide, and the altitudes of the bottom of both the wheel-shaped (electric conductor)element are lower than that of the wire exit and wire entrance of the arch-slide of the wire guide, in respective. By the design of aforementioned structure, the wire supplied by the wire supply mechanism first passes through the bottom of the (electric conductor)element, and enters the arch-slide from the wire entrance and exits the same from the wire exit, and passes again through the bottom of another (electric conductor)element. In this way, the wire is subject to a minute downward suppressing force so that the wire can travel smoothly inside the arch-slide of the wire guide.

Classifications:
International (IPC 8-9): B23H1/04 B23H7/02 B23H7/10 (Advanced/Invention); B23H7/02 B23H7/08 (Core/Invention)
International (IPC 1-7): B23H1/04 B23H7/02 B23H7/10
CPC: B23H7/02 B23H7/105
European: B23H7/02 B23H7/10E
US: 219/69.12



Family:

Publication number	Publication date	Application number	Application date
TW200520879 A	20050701	TW20030136945	20031226
TWI227178 B	20050201	TW20030136945	20031226
US6847002 BA	20050125	US20040793778	20040308

Priority:
TW20030136945 20031226

Probable Assignee: INDUSTRIAL TECHNOLOGY RESEARCH INST
Assignee(s): (std): IND TECH RES INST
Assignee(s): INDUSTRIAL TECHNOLOGY RESEARCH INST ; INDUSTRIAL TECHNOLOGY RESEARCH INSTITUT ; INDUSTRIAL TECHNOLOGY RESEARCH INSTITUTE
Inventor(s): (std): LIN JUI KUAN ; MAI CHAO CHUANG ; SU HSIN CHUAN ; YANG CHING CHENG
Agent(s): TROXELL LAW OFFICE PLLC

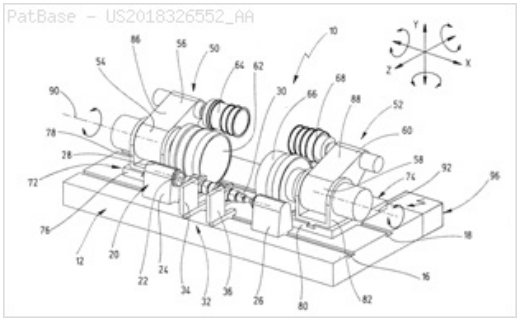
46) Family number: 66455082 (US2018326552A)

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Title: GRINDING MACHINE AND METHOD FOR MACHINING WORKPIECES

Abstract: A grinding machine for machining workpieces comprises a machine bed; a workpiece holder comprising a workpiece spindle; at least one grinding spindle comprising a grinding tool for machining; a set of steady rests spaced apart from each other along an axial longitudinal extension of the workpiece, wherein the steady rests are operable in an engagement state and a disengagement state, and wherein the steady rests of the set of steady rests are arranged to engage in the engagement state a workpiece for support, the workpiece being mounted on the workpiece holder; and a control device that is configured to selectively set the steady rests into the engagement state or the disengagement state in such a way that a change between the engagement state and the disengagement state takes place during the machining of the workpiece.

Classifications:
International (IPC 8-9): B23Q1/76 B24B19/08 B24B19/12 B24B41/06 B24B5/02 B24B5/04 B24B5/42 (Advanced/Invention)
CPC: B24B5/421 B24B5/04 B24B19/125 B24B41/065



Family:

Publication number	Publication date	Application number	Application date
CN109070300 A	20181221	CN201780007782	20170123
DE102016101196 A1	20170727	DE201610101196	20160125
DE102016101196 B4	20180201	DE201610101196	20160125
EP3408053 A1	20181205	EP20170701679	20170123
US2018326552 AA	20181115	US20180042464	20180723
WO17129513 A1	20170803	WO2017EP51295	20170123

Priority:
DE201610101196 20160125 WO2017EP51295 20170123 US20180042464 20180723

Probable Assignee: SCHAUDT MIKROSA GMBH
Assignee(s): (std): SCHAUDT MIKROSA GMBH

Inventor(s): (std): KARASSIK WADIM ; CERUSO JOACHIM ; RENZ JOHANNES ; MAVRO DANIEL

Agent(s): WITTE WELLER AND PARTNER PATENTANWAELTE MBB; WITTE WELLER AND PARTNERPATENTANWAELTE MBB

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

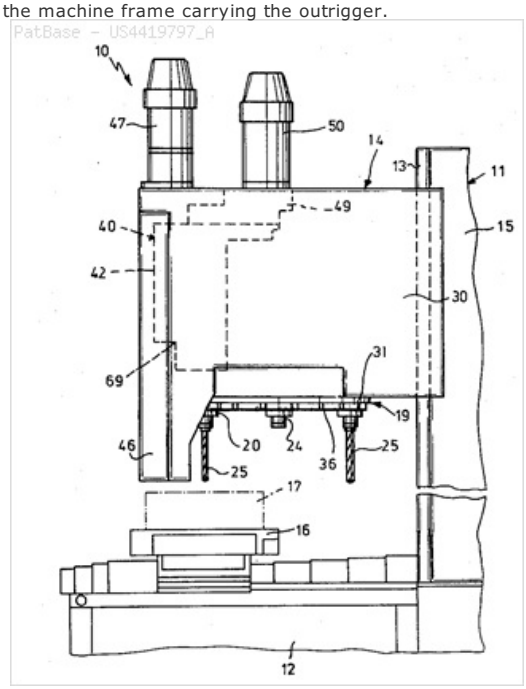
47) Family number: 1597085 (US4419797A)

© PatBase

Title: MACHINING CENTER

Abstract: A machining center for at least one of a drilling or milling operation. The machining center includes a machine frame at which an outrigger is attached, with a tool spindle, driveable to execute stroke movements and rotary movements, being mounted to the outrigger. The tool spindle is adapted to be moved from an end position, in alignment with a tool carrier present in the tool magazine and connectible to the tool spindle, axially for being coupled to the tool carrier and then further movable axially for machining of workpieces. The tool spindle is rotatably mounted at a slide arranged at the outrigger and guided along a straight guide extending in parallel to an axis of rotation of the tool spindle. The slide serves for axial movement of the tool spindle for executing axial strokes intended for workpiece machining and for an exchange of a tool carrier. The slide has a zone through which the tool spindle extends, which zone may pass through a gap of the tool magazine. Upon each tool carrier change, the gap may be engaged by the respective tool carrier to be coupled to the tool spindle, which tool carrier is carried by a magazine connecting member in order to enable a coupling to the tool spindle. The straight guide for the slide is arranged at a spacing from the zone of the machine frame carrying the outrigger.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23B39/20 B23C7/00 B23P23/02 B23Q3/155 B23Q3/157 B23Q39/02
CPC: Y10T29/5107 Y10T408/37 Y10T483/1795 B23Q3/15706
European: B23Q3/157B
US: 29/26A 29/568 408/35 483/56



Family:

Publication number	Publication date	Application number	Application date
BR8007388 A	19810526	BR19800007388	19801112
DD154475 A5	19820324	DD19800225104	19801111
DE2945770 A1	19810521	DE19792945770	19791113
DE2945770 C2	19861030	DE19792945770	19791113
FR2469244 A1	19810522	FR19800024143	19801113
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GB2065511 B2	19830407	GB19800036192	19801111
IT1133793 A	19860709	IT19800025887	19801111
IT8025887 A0	19801111	IT19800025887	19801111
JP56082147 A2	19810704	JP19800158925	19801113
SU1131464 D	19841223	SU19803002910	19801110
US4419797 A	19831213	US19800206642	19801113

Priority:

DE19792945770 19791113

Probable Assignee: SIGLOCH K EUGEN ING

Assignee(s): (std): SIGLOCH K EUGEN ING GRAD ; SIGLOCH K EUGEN ; STARK GERHARD ; SIGLOCH KARL EUGEN ; SIGLOCH K ; SIGLOCH K E ; OJGEN ZIGLOKH K ; SIGLOCH EUGEN K

Assignee(s): SIGLOCH EUGEN K DE ; K EUGEN SIGLOCH ; K OJGEN ZIGLOKH ; KOJGEN ZIGLOKH ; SIGLOCH K EUGEN ING ; SIGLOCH K EUGEN ING GRAD 7000 STUTTGART DE

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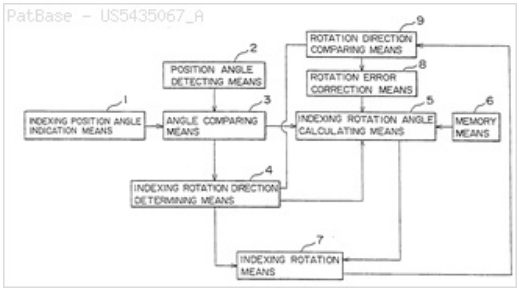
Inventor(s): KOJGEN ZIGLOKH DE ; STARK GERHARD 7311 NOTZINGEN DE ; STARK GERHARD DD ; SIGLOCH K EUGEN ING GRAD 7000 STUTTGART DE ; SIGLOCH EUGEN K DE ; SIGLOCH ING GRAD K EUGEN ; SIGLOCH ING GRAD KEUGEN ; K EUGEN SIGLOCH ; K OJGEN ZIGLOKH DE ; EUGEN K SIGLOCH ET GERHARD STARK ; GERHARD STARK ; GERKHARD SHTARK DE

48) Family number: 30230086 (US5435067A)

Title: Method and apparatus for indexing attachment

Abstract: PCT No. PCT/JP92/00731 Sec. 371 Date Feb. 8, 1993 Sec. 102(e) Date Feb. 8, 1993 PCT Filed Jun. 5, 1992 PCT Pub. No. WO92/21479 PCT Pub. Date Dec. 10, 1992.An attachment indexing apparatus which performs the steps of indicating an objective indexing position angle of an attachment by an indexing position angle indicating means 1, detecting the present position angle by a position detecting means 2, comparing the objective indexing position angle with the present position angle by an angle comparing means 3, determining the indexing rotation direction of the attachment by an indexing rotation direction determining means 4 in accordance with the compared result, calculating an indexing rotation angle of the attachment from the angle compared result and the indexing rotation direction by an indexing rotation angle calculating means 5, and indexing and rotating the attachment in accordance with the determined indexing rotation direction and the calculated indexing rotation angle.

Classifications:
International (IPC 8-9): B23B19/00 B23Q15/00 B23Q15/26 B23Q16/02 G05B19/23 (Advanced/Invention); B23B19/00 B23Q15/00 B23Q15/20 B23Q16/00 G05B19/19 (Core/Invention)
International (IPC 1-7): B23Q15/00 B23Q15/26 B23Q16/02 B23Q3/12 B23Q5/56 G05B19/19
CPC: B23Q16/02 G05B19/231 G05B2219/41085 G05B2219/42212 G05B2219/50047
European: B23Q16/02 G05B19/23C S05B219/41085 S05B219/42212 S05B219/50047
US: 33/1.0PT 33/1N 33/1PT 33/534 700/186



Family:

Publication number	Publication date	Application number	Application date
JP5086446 U1	19931122	JP19920028494U	19920428
US5435067 A	19950725	US19930965297	19930208
WO9221479 A1	19921210	WO1992JP00731	19920605

Priority:
JP19910162179 19910606 JP19920028494U 19920428 WO1992JP00731 19920605

Probable Assignee: TOSHIBA KIKAI KK
Assignee(s): (std): TOSHIBA MACHINE CO LTD
Assignee(s): TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK
Inventor(s): (std): TANAKA TADASHI ; UCHIDA NOBORU
Designated states: DE JP US

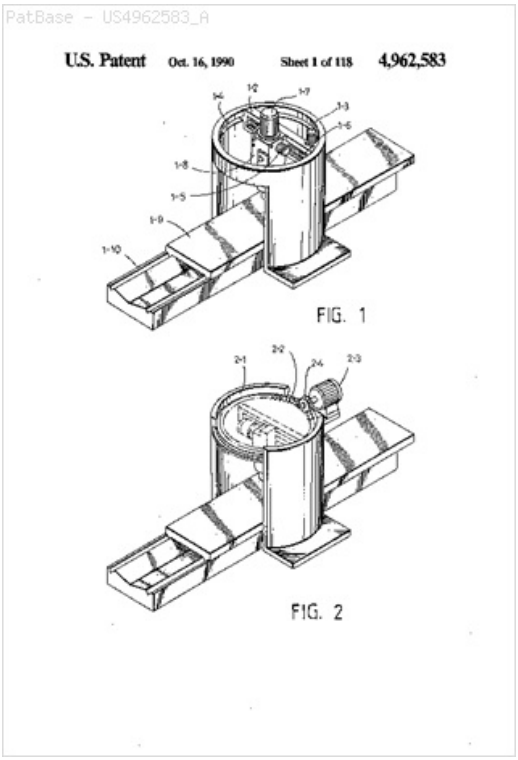
49) Family number: 30137090 (US4962583A)

Title: TUNNEL TYPE OR DRAGON-GATE TYPE PROCESSING SYSTEM ASSEMBLED WITH SELECTED ELEMENTS AND ITS RELATED INTERFACE MEANS

Abstract: A dragon-gate processing machine having a dragon-gate support structure, at least one lateral girder coupled to the support structure for mounting tool holding members and automatic tool exchange devices, a plurality of working tables mounted below the dragon-gate support structure, driving apparatus for driving the working tables, a mechanical transmission for coupling the drive apparatus to the working tables, an auxiliary rotary arm mounted to the dragon-gate support structure for holding auxiliary processing devices, and control means for controlling operation of the dragon-gate machine. The dragon-gate machine allows processing such as drilling, latching, and planing to be performed on a workpiece mounted on the working table. The novel invention allows such processing to be performed at any angle and at any desired direction according to the processing requirements of the workpiece.

Classifications:
International (IPC 8-9): B23P21/00 B23P23/00 B23Q1/00 B23Q1/01 B23Q11/00 B23Q3/155 B23Q3/157 B23Q5/10 B23Q5/38 B23Q5/40 F16H19/00 F16H49/00 H02K1/06 H02K1/27 H02K1/30 H02K11/00 H02K23/02 H02K23/18 H02K25/00 H02K26/00 H02K29/00 H02K3/26 H02K33/00 H02K37/00 H02K37/10 H02K37/12 H02K37/20 H02K41/02 H02K49/00 H02K49/06 H02K49/08 H02K7/10 H02K7/114 H02K7/12 H02P8/00 H02P8/14 (Advanced/Invention); H02K49/10 (Advanced/Non-invention); B23P23/00 B23Q1/00 F16H49/00 H02K1/06 H02K37/00 H02K49/00 H02K7/10 H02P8/00 (Core/Invention)
International (IPC 1-7): B23P23/00 B23P23/02 B23Q1/00 B23Q1/02 B23Q3/155 B23Q3/157 B23Q7/00 F16H49/00 H02K1/06 H02K1/22 H02K37/00 H02K49/00 H02K7/00 H02K7/10 H02P1/04 H02P5/16 H02P8/00
CPC: Y10S310/06 B23Q11/0092 B23P21/00 B23Q1/012 B23Q3/15526 B23Q3/157 B23Q3/15706 B23Q3/15713 B23Q5/10 B23Q5/385 B23Q5/40 F16H19/04 H02K1/27 H02K1/2713 H02K1/28 H02K3/26 H02K7/114 H02K7/125 H02K23/02 H02K23/18 H02K25/00 H02K26/00 H02K33/00 H02K37/00 H02K37/10 H02K37/12 H02K37/20 H02K41/02 H02K49/00 H02K49/06 H02K49/08 H02K49/102 H02K49/106 H02K2201/18 H02P8/14 Y10T29/5124 Y10T82/2587 B23Q39/021 H02K11/21 Y10T483/1738 Y10T483/175
European: B23P21/00 B23Q1/01A B23Q11/00G8 B23Q3/155D2 B23Q3/157 B23Q3/157B B23Q3/157C B23Q5/10 B23Q5/38B B23Q5/40 F16H19/04 H02K1/27 H02K1/27B1 H02K1/28 H02K1/30 H02K11/00 H02K11/00F1 H02K23/02 H02K23/18 H02K25/00 H02K26/00 H02K29/00 H02K3/26 H02K33/00 H02K37/00 H02K37/10 H02K37/12 H02K37/20 H02K41/02 H02K49/00 H02K49/06 H02K49/08 H02K7/114 H02K7/12B H02P8/14 T02K201/18 T02K49/10B T02K49/10B2C T02K49/10C1
US: 250/231.14 29/563 29/568 310/154 310/154.05 310/198 310/208 310/268 310/49.28 310/49R 310/68.00B 310/68B 310/DIG.6 318/138 318/400.4 318/716 318/721 318/732 318/771 324/175 483/32 483/37 82/159

PatBase – US4962583_A



Family:

Publication number	Publication date	Application number	Application date
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EP0208123 B1	19891206	EP19860107369	19830928
EP0208124 A2	19870114	EP19860107370	19830928
EP0208124 A3	19870121	EP19860107370	19830928
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EP0208125 B1	19900404	EP19860107373	19830928
EP0251350 A2	19880107	EP19870200857	19830928
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EP0255736 A1	19880210	EP19870200856	19830928
US4962583 A	19901016	US19880258088	19881017
US5304886 A	19940419	US19920944046	19920911
US5306996 A	19940426	US19920887484	19920521
US5674169 A	19971007	US19900597600	19901015

Priority:

US19820426188 19820928 EP19830305856 19830928 EP19830305856P 19830928
EP19860107368 19830928 EP19860107369 19830928 EP19860107372 19830928
EP19860107372 19830928 EP19860107373 19830928 EP19860107371 19830928
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US19900598260 19901015 US19900597600 19901015 US19900599054 19901017
US19920887484 19920521 US19920944046 19920911

Probable Assignee: YANG TAI HER

Assignee(s): (std): YANG TAI HER

Assignee(s): YANG TAI HER SI HU JENN CHANG HWA HSIEN TW

Inventor(s): (std): YANG TAI HER

Inventor(s): YANG TAI HER SI HU JENN CHANG HWA HSIEN TW

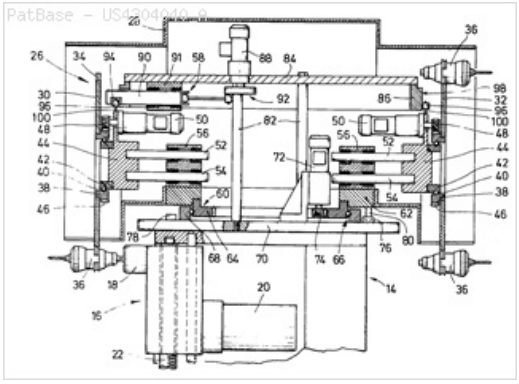
Designated states: AT BE CH DE FR GB IT LI LU NL SE

50) Family number: 8436091 (US4304040A)

Title: MACHINING CENTER WITH INTERCHANGEABLE MAGAZINE TOOL STORAGE MEANS

Abstract: A plurality of magazine tool storage means, mounted on a machine frame, above a headstock, includes tool-holder supports each having receptors into which tool holders can be inserted. Each support is adjustable so that any of its receptors can be arranged in a predetermined changeover position for performing an automatic tool change between the support and the headstock. The magazine tool storage means are successively movable from a fitting position outside a machine working space in the region of the headstock to a standby position for the automatic tool change within the working space.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: Y10T483/175 Y10T483/179 Y10T483/1845 B23Q3/15526 B23Q3/15706 B23Q3/15539
European: B23Q3/155D2 B23Q3/157B
US: 211/1.55 211/105 29/568 483/37 483/54 483/63



Family:

Publication number	Publication date	Application number	Application date
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FR2429645 A1	19800125	FR19790017434	19790629
GB2027622 A1	19800227	GB19790021503	19790620
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JP55011791 A2	19800126	JP19790081602	19790629
JP58022301 B4	19830507	JP19790081602	19790629
US4304040 A	19811208	US19790055878	19790709

Priority:

DE19782828536 19780629 US19790055878 19790709

Probable Assignee: EX CELL O GMBH

Assignee(s): (std): EX CELL O GMBH ; KNORR ECKHARD ; STAIGER HANS

Assignee(s): EKUU SERUU OO GMBH

Inventor(s): (std): KNORR ECKHARD ; STAIGER HANS ; STAIGER HANS ING GRAD ; KNORR ECKAHRD DR ING ; HANSU SUTAIGERU ; EKUHARUTO KUNOORU

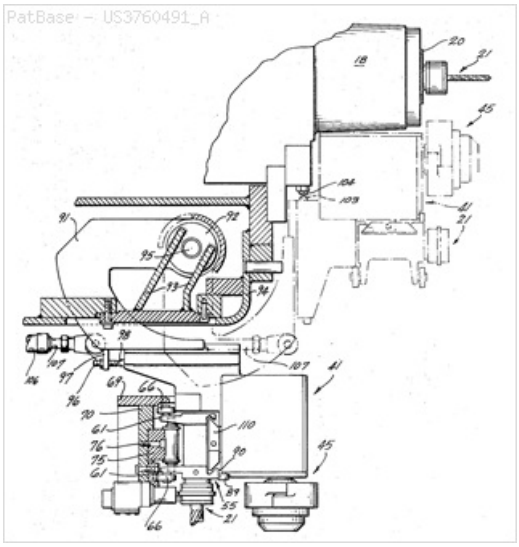
Inventor(s): ECKHARD KNORR ET HANS STAIGER ; STAIGER HANS ING

51) Family number: 1339093 (US3760491A)

Title: TOOL CHANGE MECHANISM

Abstract: A tool storage magazine containing a plurality of movable tool receptacles or cartridges that are movable to a tool change station. The cartridge and its associated tool at the tool change station is removable from the magazine by a pivotal carrier that is provided with a clamp which clamps the cartridge containing the selected tool to the pivotal carrier. The pivotal carrier then swings 90 DEG to move the clamped cartridge with it for the purpose of positioning the axis of the selected tool in the cartridge parallel with the machine tool spindle. The pivotal carrier also carries a tool change arm movable to interchange the tool in the cartridge with the tool in the machine tool spindle. Upon completion of the 90 DEG pivotal movement by the pivotal carrier, the tool change arm is actuated in its tool change cycle to insert the new tool from the cartridge into the spindle and the previously used tool from the spindle into the cartridge. The cartridge with the old tool in it is then returned to the tool storage magazine by a reverse pivotal movement of the carrier.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/155 B23Q3/157 B23Q3/16
CPC: Y10T483/1764 Y10T483/1771 Y10T483/1864 Y10T483/1891 B23Q3/1574 B23Q3/1554 B23Q3/15773
European: B23Q3/155D3 B23Q3/157C2B3 B23Q3/157D
US: 29/56.8 29/568 414/730 483/43 483/46 483/65 483/68



Family:

Publication number	Publication date	Application number	Application date
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DE2325635 A1	19731206	DE19732325635	19730521
DE2325635 C2	19870108	DE19732325635	19730521
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FR2185476 B1	19770211	FR19730018478	19730522
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JP49056268 A2	19740531	JP19730055129	19730517
JP53008068 B4	19780324	JP19730055129	19730517
NL160508 B	19790615	NL19730007051	19730521
NL160508 C	19791115	NL19730007051	19730521
NL7307051 A	19731126	NL19730007051	19730521
NL7809401 A	19781229	NL19780009401	19780915
US3760491 A	19730925	US19720255408	19720522

Priority:

US19720255408 19720522

Probable Assignee: KEARNEY AND TRECKER CORP

Assignee(s): (std)**:** KEARNEY AND TRECKER CORP

Assignee(s): KEARNEY AND TRECKER CORP MILWAUKEE WIS US ; KEARNEY AND TRECKER CORP MILWAUKEE WIS V ST A ; KEARNEY AND TRECKER CORP US ; KEARNEY AND TRECKER TE WEST ALLIS WISCONSIN VER ST V AM CORP ; KEARNEY AND TRECKER TE WEST ALLIS WISCONSIN VERSTVAM CORP ; KEARNEY AND TRECKER WEST ALLIS WISCONSIN VER ST V AM CORP ; KEARNEY ET TRECKER CORP ; KEARNEY TRECKER CORP ; KEARNEY ET TRECKER CORP US ; ZANKL FRANK ; LOHNEIS EARL R

Inventor(s): (std)**:** LOHNEIS E ; ZANKL F ; ZANKL FRANK ; LOHNEIS EARL R

Inventor(s): LOHNEIS EARL R MILWAUKEE WIS US ; ZANKL F US ; LOHNEIS E US

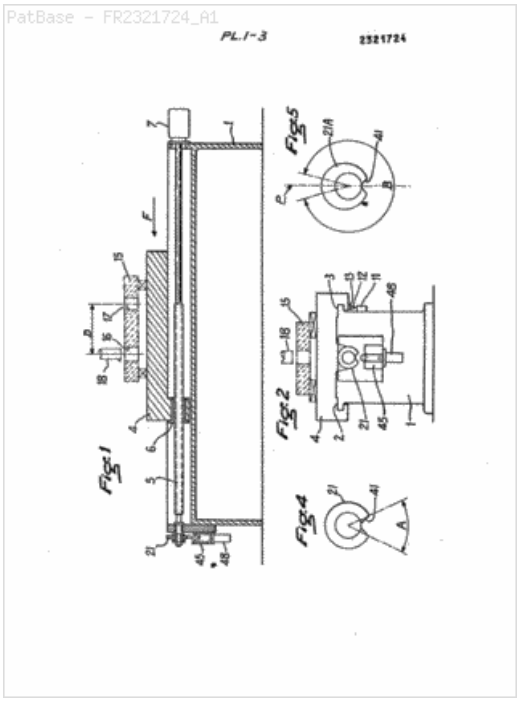
52) Family number: 3609093 (FR2321724A)

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Title: MACHINE TOOL POSITIONING DEVICE - HAS POSITIONING WHEEL WITH SLOT ENGAGING STOP TO CONTROL SCREW ADVANCE SYSTEM

Abstract: The positioning and blocking device is used for two parts of a machine tool moved relative to each other by a screw element mounted on one part of the machine tool. The screw element engages a threaded piece carried by the other part. One element rotates in the machine tool part which carries it, whilst the other element is fixed to the machine. The rotating element (5) is fixed to a precise angular positioning disc (21) in whose edge is a slot (41). This slot (41) is cut to receive without any play, the end of a finger (44). This is acted on by a jack (48) on the machine trial part (1) carrying the rotating element (5).

Classifications:
International (IPC 8-9): B23Q15/24 B23Q16/00 (Advanced/Invention); B23Q15/20 B23Q16/00 (Core/Invention)
International (IPC 1-7): B23Q15/00 B23Q5/34 G05D3/04
CPC: B23Q15/24 B23Q16/00
European: B23Q15/24 B23Q16/00



Family:

Publication number	Publication date	Application number	Application date
FR2321724 A1	19770318	FR19750025842	19750821

Priority:

FR19750025842 19750821

Probable Assignee: GSP ATELIERS

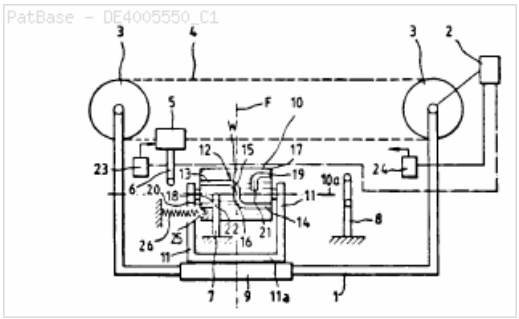
Assignee(s): (std)**:** GSP ATELIERS

53) Family number: 8060097 (DE4005550C1)

Title: Machine tool handling system - incorporates master cam fitted to surface of driving element

Abstract: Relative movement, positioning and locking system for e.g. tool magazine and carrier or machining centre worktable etc. drives one part relative the other. A driver dog (5,6) coupled to a drive (2,3,4) or moving part (e.g. slide 9) should work with a master cam (12) fitted to the surface of a driving element (10) which is coupled to slide or drive for transverse movement. The master cam (12) consists of entry and exit sectors (13,14) for the dog and an adjoining bent sector (15,16) and also has master cams (17,18) for slide end position locking duties, each cam (17,18) composed of entry and exit sectors (19,20) and a bent sector (21,22) at right angles to the direction of movement. USE/ADVANTAGE - Mechanical handling, e.g. machine tools. Mechanical cam and drive system ensures reliable feed, position and arrest sequence in robust, low-wearing design.

Classifications:
International (IPC 8-9): B23Q16/00 B23Q16/02 (Advanced/Invention); B23Q16/00 (Core/Invention)
International (IPC 1-7): B65G35/00 B65G49/00
CPC: B23Q16/00 B23Q16/026
European: B23Q16/00 B23Q16/02C4



Family:

Publication number	Publication date	Application number	Application date
DE4005550 C1	19910529	DE19904005550	19900222

Priority:

DE19904005550 19900222

Probable Assignee: DOERRIES SCHARMANN GMBH 4050 MOENCHENGLADBACH DE

Assignee(s): DOERRIES SCHARMANN GMBH 4050 MOENCHENGLADBACH DE

Inventor(s): ESSER KARL JOSEF 4050 MOENCHENGLADBACH DE

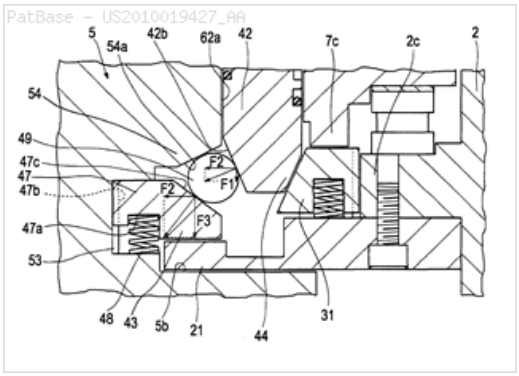
54) Family number: 44284098 (US2010019427A)

Title: CLAMPING DEVICE OF INDEXING DEVICE FOR MACHINE TOOL

Abstract: A clamping device for holding an indexed angular position of a main shaft includes a clamp section non-rotatable

relative to the main shaft, and a pressing mechanism including a clamp piston displaceable in an axial direction of the main shaft and causing a fluid pressure received by the clamp piston to act on the clamp section. The clamp section includes a first clamp portion being non-rotatable relative to the main shaft, and a second clamp portion being rotatable with the main shaft. The pressing mechanism includes first and second pressing portions which respectively press the first and second clamp portions. The second clamp portion or the second pressing portion is elastically displaced when the clamp piston advances by the fluid pressure. Forces in axial and radial directions are respectively applied to the first and second clamp portions, thereby clamping the main shaft.

Classifications:
International (IPC 8-9): B23Q1/25 B23Q1/28 B23Q16/02 B23Q16/04 B23Q16/06 B23Q16/08 B23Q16/10 B23Q5/54 (Advanced/Invention); B23Q1/25 B23Q1/26 B23Q16/00 (Core/Invention); B23Q16/08 (Core/Non-invention)
CPC: B23Q2220/004 B23Q16/06 B23Q16/102 B23Q16/105
European: B23Q16/06 B23Q16/10C B23Q16/10E H02K7/102
US: 269/57 269/57S 269/63 269/63S 269/74 269/74P



Family:

Publication number	Publication date	Application number	Application date
CN101722442 A	20100609	CN200910179219	20091010
CN101722442 B	20130612	CN200910179219	20091010
EP2179817 A1	20100428	EP20090011816	20090916
JP2010099789 A2	20100506	JP20080274580	20081024
JP5216528 B2	20130619	JP20080274580	20081024
KR20100045906 A	20100504	KR20090086384	20090914
TW201026430 A	20100716	TW20090135135	20091016
US2010019427 AA	20100128	US20090574056	20091006

Priority:
JP20080274580 20071024 JP20080274580 20081024

Probable Assignee: TSUDAKOMA KOGYO KK
Assignee(s): (std): TSUDAKOMA IND CO LTD
Assignee(s): TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA KOGYO KK ; TSUDAKOMA CORP ; TSUDAKOMA IND CO
Inventor(s): (std): NISHIDA YOUICHI ; NISHITA YOICHI ; NISHIDA YOICHI ; YOUICHI NISHIDA
Agent(s): SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

55) Family number: 63480098 (DE102015010175B3)

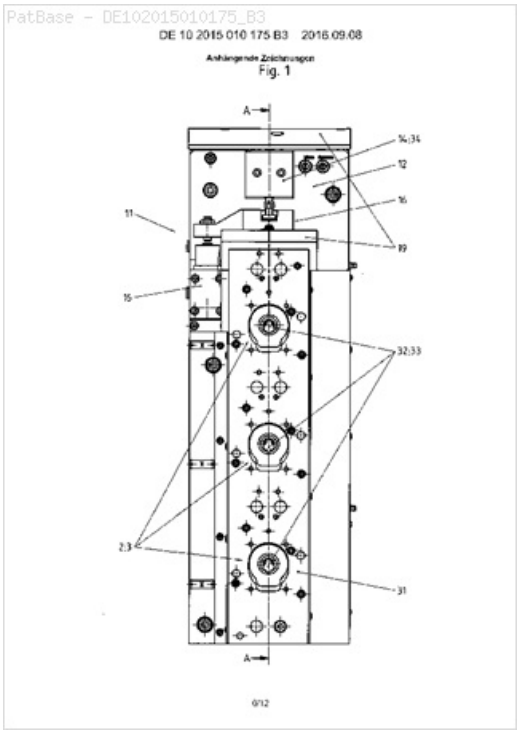
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Title: SCHWENKBARES MEHRTEILE- UND MEHRSEITEN-WERKSTUECK-SPANNMODUL Pivoting benefits- AND MULTI-PAGE WORKPIECE CLAMPING MODULE (Machine translation)

Abstract: Source: DE102015010175B3 [DE] An den An- und Auflageflaechen (17) eines mehrseitigen Haltekoerpers (1) sind jeweils ein Spannstellen-Tragekoerper (11) fuer in Reihen angeordnete stationaere oder schwenkbare Werkstueck-Haltemodule (2) mit Niederzug-Spannstellen (3) fuer duennwandige und kleine rechtkantige Werkstuecke (4) angeordnet. In jedem Spannstellen-Tragekoerper (11) ist eine Spannhaken-Traegerplatte (31) fuer mehrere in Reihe angeordnete und aufsitzende Spannhaken (32), laengsbeweglich oder schwenkbeweglich gefuehrt, aufgenommen. Jeder hydraulisch bewegte Spannhaken (32) fixiert mittels seines abgewinkelten Hakenvorsprunges (33) ein auf der Bodenplatte (23), zwischen den Positionieranschlaegen (22) der Werkstueck-Kassette (21) aufliegendes Werkstueck (4) ueber mindestens eine an der Werkstueck-Unterseite (41) befindliche hinterschnittene Innenspannstelle (43) einer Spannoeffnung (42).

Machine translation: On the purchase and bearing areas (17) of a multipage Haltekoerpers (1) are each a clamping points-Tragekoerper (11) for arranged in rows stationary or swiveling workpiece holding modules (2) with descending clamp bodies (3) for thin-walled and small right-edged workpieces (4). Each clamping points-Tragekoerper (11) a clamping hook-bearing plate (31) for a plurality of spaced and seated in series clamping hook (32), led laengsbeweglich or pivotally accommodated. Each hydraulically actuated clamping hook (32) fixed by means of its bent hook protrusion (33) on the bottom plate (23), between the positioning stops (22) of the workpiece cassette (21) resting workpiece (4) by at least one of the workpiece-side (41) located undercut internal clamping body (43) a Spannoeffnung (42).

Classifications:
International (IPC 8-9): B23Q3/08 (Advanced/Invention)
CPC: B23Q3/082 B23Q3/061



Family:

Publication number	Publication date	Application number	Application date
DE102015010175 B3	20160908	DE201510010175	20150806

Priority:

DE201510010175 20150806

Probable Assignee: WVL WERKZEUG U VORRICHTUNGSBAU LICHTENSTEIN GMBH

Assignee(s): (std)**:** WVL WERKZEUG U VORRICHTUNGSBAU LICHTENSTEIN GMBH

Inventor(s): (std)**:** WOETZEL KAI

56) Family number: 29437105 (US6071047A)

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Title: METHOD AND APPARATUS FOR FEEDING COOLANT LIQUID AND SEPARATING AND RECOVERING IT IN CUTTING MACHINE AND GRINDING MACHINE

Abstract: PCT No. PCT/JP97/00373 Sec. 371 Date Oct. 14, 1997 Sec. 102(e) Date Oct. 14, 1997 PCT Filed Feb. 12, 1997 PCT Pub. No. WO97/29882 PCT Pub. Date Aug. 21, 1997A coolant liquid feeding method comprises feeding a coolant liquid, with air bubbles caused to form continuously therein, for cutting or grinding operation to a region under machining, expediting the splashing of air bubbles in all directions when the air bubbles impinge on the region under machining and burst, and also expediting the entry of accelerated splashed liquid particles into a cutter/workpiece pressure contact plane, thereby improving the cooling and lubrication of the region under machining, whereby the air bubbles in the coolant liquid which has failed to reach the region under machining or which, though reaching there, has left there for the recovery channel are allowed to adhere to suspended foreign matters in the liquid, thereby expediting the surfacing of the foreign matters. The coolant liquid is discharged downward generally as a spiral flow which is a collection of particulate turbulent flows, thereby forming a cylindrical veil of coolant liquid which surrounds the milling tool or grinding tool and whose lower end reaches the surface of the workpiece, at least part of the spiral flow being caused to move from the lower end of the cylindrical veil along the surface of the workpiece in a whirl toward the central region until it is fed to the region under machining which is in contact with the milling tool or grinding tool.

Classifications:

International (IPC 8-9): B01D17/00 B01D17/02 B01D17/025 B01D17/028 B01D17/032 B01D17/035 B01D21/00 B01D21/02 B01D21/24 B03D1/14 B03D1/16 B05B1/34 B23Q11/00 B23Q11/10 B24B55/03 C02F1/40 (Advanced/Invention);
B01D17/02 B01D17/025 B23Q11/00 B23Q11/10 C02F1/40 (Core/Invention)

International (IPC 1-7): B01D17/025 B01D17/028 B01D17/032 B01D17/035 B01D21/02 B01D21/24 B05B1/34 B23Q11/00 B23Q11/10 B23Q11/12 B24B55/03 C02F1/40

CPC: Y10S29/05 Y10S29/077 Y10S82/901 B03D1/028 B03D1/1418 B03D1/1487 B23Q11/1069 B01D17/00 B01D17/0205 B01D21/003 B01D21/0042 B01D21/009 B01D21/02 B01D21/2455 B01D21/2488 B01D21/283 B01D2221/14 B03D1/16 B23Q11/0053 B03D1/1456 B03D1/1462 B03D1/247 Y10T82/10 Y10T407/14 Y10T408/44 Y10T408/46 Y10T409/303752 Y10T409/304032 Y10T409/304088 B23Q11/1061 Y02P70/171 B01D17/0208 B01D17/0211 B01D17/0214 B01D17/045

European: B01D17/00 B01D17/02D B01D21/00M B01D21/00N B01D21/00N2 B01D21/00T B01D21/02 B01D21/24N2 B01D21/24R B01D21/28A B03D1/14 B03D1/16 B23Q11/00F3 B23Q11/10 B23Q11/10J L01D221/14

US: 210/167.02 210/168 210/171 29/DIG.5 29/DIG.50 29/DIG.77 407/11 408/56 408/61 409/131 409/136 409/137 451/449 82/1.11 82/901

PatBase - US6071047_A

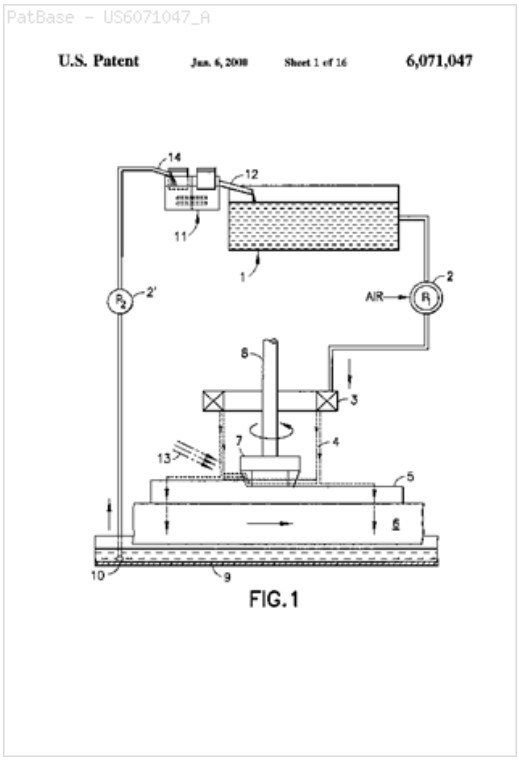


FIG. 1

Family:

Publication number	Publication date	Application number	Application date
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CA2245893 AA	19970821	CA19972245893	19970212
CN1078120 C	20020123	CN19971093816	19970212
CN1131762 C	20031224	CN20011020075	20010711
CN1214894 C	20050817	CN20011020074	19970212
CN1216013 A	19990505	CN19971093816	19970212
CN1357432 A	20020710	CN20011020075	20010711
CN1491773 A	20040428	CN20011020074	19970212
DE69725967 D1	20031211	DE19976025967	19970212
DE69725967 T2	20040609	DE19976025967T	19970212
DE69733159 D1	20050602	DE19976033159	19970212
DE69733159 T2	20060302	DE19976033159T	19970212
DE69733159 T8	20060608	DE19976033159T	19970212
DE69733160 D1	20050602	DE19976033160	19970212
DE69733160 T2	20060302	DE19976033160T	19970212
DE69733160 T8	20060608	DE19976033160T	19970212
EP0881033 A1	19981202	EP19970902667	19970212
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EP0881033 B1	20031105	EP19970902667	19970212
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KR100448466 B1	20041213	KR19980706314	19980814
KR19990082576 A	19991125	KR19980706314	19970212
US6071047 A	20000606	US19970945291	19971014
WO9729882 A1	19970821	WO1997JP00373	19970212

Priority:

JP19960065077 19960215 JP19960260086 19960823 EP19970902667 19970212
JP19970529186 19970212 WO1997JP00373 19970212 JP20000388004 20001221
JP20000388003 20001221

Probable Assignee: ZETA HEIWA LTD

Assignee(s): (std): HOEI KOGYO CO ; HOEI KOGYO CO LTD ; NAKAI YOSHIKAZU ; ZETA HEIWA LTD ; SAWATO HIRAWA CO LTD ; ZEEDA HEIWA KK

Assignee(s): SAWATO HIRAWA CO ; ZETA HEIWA LTD ASHIYA ; BALDWIN GRAPHIC SYSTEMS INC ; BALDWIN TECHNOLOGY CO ; BALDWIN TECHNOLOGY CORP ; FLEET NATIONAL BANK

Inventor(s): (std): NAKAI YOSHIKAZU ; YOSHIKAZU NAKAI

Agent(s): GRIFFITH HACK

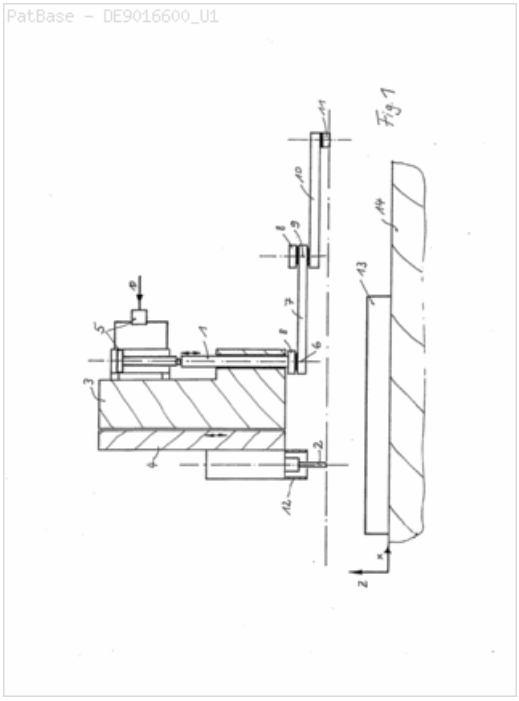
Designated states: AM AT AU AZ BE BR BY CA CH CN CZ DE DK ES FI FR GB GR HU IE IT JP KG KR KZ LI LU MC MD MX NL PL PT RU SE SG TJ TM US VN

57) Family number: 17689110 (DE9016600U1)

Abstract: Source: DE9016600U1 [DE] (Claim 1) Schutzansprueche Vorrichtung zum Spannen von Werkstuecken auf einem Maschinentisch 1. Vorrichtung zum Spannen von Werkstuecken auf einem Maschinentisch, z. B einer CNC-Oberfraesmaschine, dadurch gekennzeichnet, dass der Spanner sich am Bearbeitungsaggregat (3) abstuetzt und Maschinentisch (14) und Bearbeitungsaggregat (3) relativ zueinander in 3 translatorischen Koordinaten x-y-z beweglich sind.

Machine translation: (Claim 1) Schutzansprueche device for clamping of workpieces on a machine table first Device for clamping of workpieces on a machine table, eg a CNC Oberfraesmaschine, wherein the clamp on the processing unit (3) supports and machine table (14) and processing unit (3) relative to each other are xyz move in three translational coordinates.

Classifications:
International (IPC 8-9): B23Q3/06 B25B5/06 B25B5/16 (Advanced/Invention); B23Q3/06 B25B5/00 (Core/Invention)
International (IPC 1-7): B23Q1/20 B23Q3/02 B27C5/06
CPC: B25B5/061 B23Q3/069 B25B5/062 B25B5/16
European: B23Q3/06L B25B5/06B B25B5/06B1 B25B5/16



Family:

Publication number	Publication date	Application number	Application date
DE9016600 U1	19920514	DE19900016600U	19901207

Priority:
DE19900016600U 19901207

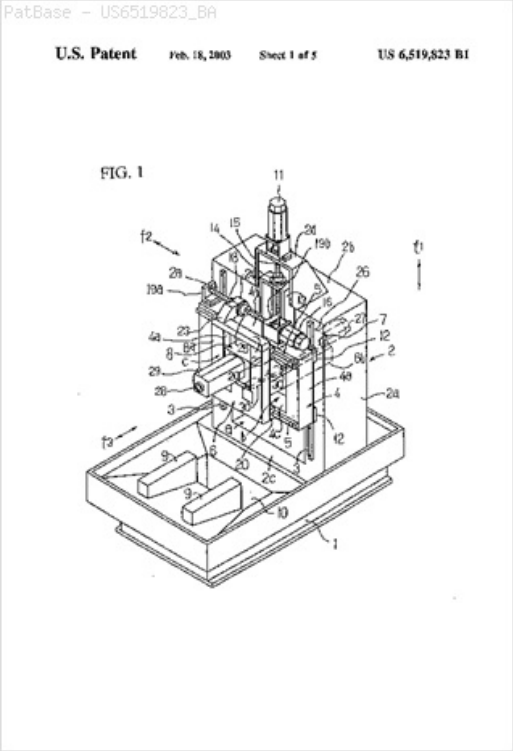
Probable Assignee: HOFFMANN WILHELM DR ING

Assignee(s): HOFFMANN WILHELM DR ING ; HOFFMANN WILHELM DR ING 4840 RHEDA WIEDENBRUECK DE

58) Family number: 28431117 (US6519823B)

Title: MACHINE TOOL

Abstract: A machine tool capable of reducing the vibration of a spindle head to enable a high-precision machining, wherein a column (2) is mounted fixedly onto a bed (1), a first saddle (4) forming a square frame body of rectangular cross-section is mounted on the column (2) movably in vertical direction (f1), a second saddle (6) forming a square frame body (6a) smaller in size than the above square frame body is mounted inside the first saddle (4) movably in lateral direction (f2), a horizontal guide frame (6b) of a specified length is mounted on the rear surface of the square frame body (6a) of the second saddle (6) in the state of being crossed at right angle to the rear surface, rail members (5, 7) are laid down on square frame body upper and lower prismatic bodies (4b, 4c) of the first saddle (4) and the horizontal guide frame (6b) of the second saddle (6), and concrete is filled sealingly into the square frame body of the first saddle (4) and/or the square frame body of the second saddle (6) and the horizontal guide frame (6b) so as to form a vibration damping structural body.
Classifications:
International (IPC 8-9): B23B17/00 B23Q1/00 B23Q1/01 B23Q1/62 B23Q11/00 F16F15/02 (Advanced/Invention); B23Q1/00 (Advanced/Non-invention); B23B17/00 B23Q1/00 B23Q1/25 B23Q11/00 F16F15/02 (Core/Invention)
International (IPC 1-7): B05B12/14 B23B17/00 B23B39/02 B23C1/02 B23Q1/00 B23Q1/01 B23Q1/1 B23Q1/62 B23Q1/70 B23Q11/0 B23Q11/00 B23Q5/36 F16F15/02
CPC: Y10T29/5107 Y10T408/91 Y10T409/307728 Y10T409/308288 Y10T409/309576 Y10T483/17 B23Q1/626 B23Q1/015 B23Q11/0032
European: B23Q1/01B B23Q1/62A5 B23Q11/00D
US: 29/260A 29/26A 408/234 409/202 409/212 409/235 483/16



Family:

Publication number	Publication date	Application number	Application date
CA2375725 AA	20011227	CA20002375725	20000628
CA2375725 C	20050830	CA20002375725	20000628
CN1128692 C	20031126	CN20008009109	20000628
CN1356934 A	20020703	CN20008009109	20000628
DE60013454 D1	20041007	DE20006013454	20000628
DE60013454 D1	20041007	DE20006013454T	20000628
DE60013454 T2	20050901	DE20006013454T	20000628
EP1207006 A1	20020522	EP20000940871	20000628
EP1207006 A4	20021023	EP20000940871	20000628
EP1207006 B1	20040901	EP20000940871	20000628
ES2225160 T3	20050316	ES20000940871T	20000628
JP2001009652 A2	20010116	JP19990187585	19990701
JP3256879 B2	20020218	JP19990187585	19990701
KR100482986 B1	20050415	KR20017014490	20000628
KR20020013886 A	20020221	KR20017014490	20000628
TW469206 B	20011221	TW20000112964	20000630
US6519823 BA	20030218	US20010018256	20011218
WO0102132 A1	20010111	WO2000JP04284	20000628

Priority:

JP19990187585 19990701 WO2000JP04284 20000628 KR20017014490 20011114

Probable Assignee: HORKOS CORP

Assignee(s): (std)**:** HORKOS CORP ; SEO YOSHIHIDE ; SUGATA SHINSUKE

Assignee(s): HORKOS CORP FUKUYAMA

Inventor(s): (std)**:** SEO YOSHIHIDE ; SHINSUKE SUGATA ; SUGATA SHINSUKE ; YOSHIHIDE SEO

Agent(s): GOWLING LAFLEUR HENDERSON LLP

Designated states: AT BE CA CH CN CY DE DK ES FI FR GB GR IE IT KR LI LU MC NL PT SE US

59) Family number: 44861120 (JP2010058238A)

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Title: MACHINING METHOD

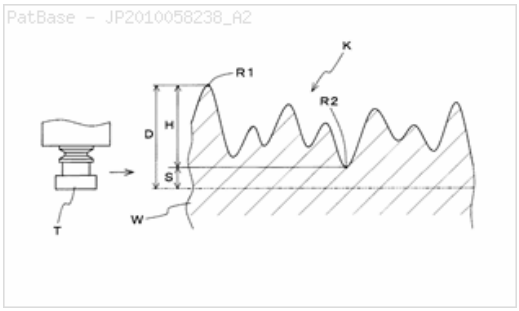
Abstract: PROBLEM TO BE SOLVED: To provide a machining method capable of machining for eliminating a black scale by a single cutting operation. SOLUTION: The machining method machines a surface K of a workpiece W having a black scale by using a tool T at least to eliminate the black scale, configured to sequentially execute: a measurement process to measure recessed and projecting parts of the black scale (top face) of the workpiece W using a laser measuring instrument on a machine tool, thereby obtaining a height H between a highest crest portion R1 and a lowest trough portion R2; a cut depth setting process to add a predetermined cut depth S to the obtained height H and set the resulting value as a cut depth D to be used for the tool T to machine the black scale K of the workpiece W; and a machining process to machine the black scale K of the workpiece W by relatively moving the tool T and the workpiece W according to the cut depth D set above.

Classifications:

International (IPC 8-9): B23Q15/02 B23Q15/24 B23Q17/24 G05B19/401 (Advanced/Invention); B23Q15/007 B23Q15/20 B23Q17/24 G05B19/401 (Core/Invention)

CPC: G05B19/401 G05B2219/37275 G05B2219/49007

European: G05B19/401 S05B219/37275 S05B219/49007



Family:

Publication number	Publication date	Application number	Application date
DE102009039540 A1	20100408	DE200910039540	20090901
JP2010058238 A2	20100318	JP20080227902	20080905

Priority:

JP20080227902 20080905

Probable Assignee: MORI SEIKI SEISAKUSHO KK

Assignee(s): (std)**:** MORI SEIKI SEISAKUSHO KK

Assignee(s): MORI SEIKI CO LTD

Inventor(s): (std)**:** NISHIKAWA SHIZUO ; MORITA HISAYOSHI ; KASHIHARA KEIZO ; FUJISHIMA MAKOTO

Agent(s): MURAKAMI SATOSHI

60) Family number: 62965125 (US2018056446A)

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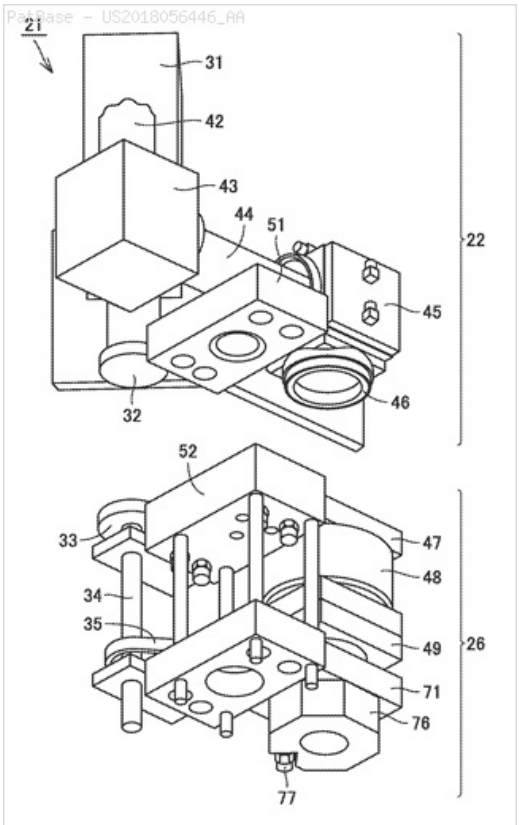
Title: ADDITIVE MANUFACTURING HEAD AND MANUFACTURING MACHINE

Abstract: An additive manufacturing head includes: a nozzle configured to discharge material powder; a rotary member connected with the nozzle, including a first material powder passage formed in the rotary member to direct the material powder to the nozzle, and configured to rotate to cause the nozzle to move in the circumferential direction about a laser beam emitted toward the workpiece; and a stationary member including a second material powder passage which is formed in the stationary member and into which the material powder is introduced, the stationary member being disposed directly beside the rotary member in the direction of the rotational axis of the rotary member. A third material powder passage communicating with the first material powder passage and the second material powder passage and extending annularly about the rotational axis of the rotary member is formed between the stationary member and the rotary member. Accordingly, an additive manufacturing head that implements a mechanism configured simply to feed material powder to an infinitely revolving nozzle is provided.

Classifications:

International (IPC 8-9): B22F3/105 B22F3/16 B23B5/00 B23K26/00 B23K26/144 B23K26/21 B23K26/34 B23K26/342 B23K37/04 B23P23/04 B28B1/00 B29C67/00 B29C67/02 B33Y30/00 (Advanced/Invention)

CPC: B23B5/00 B23P23/04 B29C67/00 Y02P10/295 B22F2003/1056 B23K37/04 B23K26/0006 B23K26/144 B28B1/001 B23K26/342 B33Y30/00 B23K26/0093 B23K26/064 B23K26/147 B23K26/1482 B22F2003/247



Family:

Publication number	Publication date	Application number	Application date
CN107530832 A	20180102	CN201680018485	20160307
CN107530832 B	20190517	CN201680018485	20160307
DE112016001410 T5	20180125	DE201611001410T	20160307
JP2016182635 A2	20161020	JP20150064632	20150326

JP5947941 B1	20160706	JP20150064632	20150326
US2018056446 AA	20180301	US20160561088	20160307
WO16152479 A1	20160929	WO2016JP56952	20160307

Priority:

JP20150064632 20150326 WO2016JP56952 20160307

Probable Assignee: DMG MORI SEIKI CO LTD

Assignee(s): (std)**:** DMG MORI CO LTD ; DMG MORI SEIKI CO LTD

Assignee(s): DMG MORI CO

Inventor(s): (std)**:** MEZAWA YUHEI

Agent(s): FUKAMI PATENT OFFICE PC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

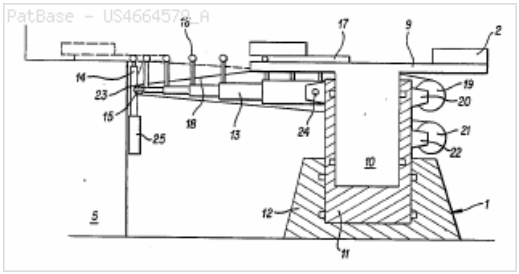
61) Family number: 5277128 (US4664579A)

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Title: Arrangement for transferring heavy workpieces

Abstract: The present invention relates to an improved arrangement for transferring heavy workpieces from a transport or storage position to at least one machining position or reverse. According to the invention this is achieved by means of a pair of arms (13) which are telescoptically extendable for bridging the distance between the positions and by means of support apparatus (14, 15) which, in the fully or partly extended position for the arms (13), engage and support the arms adjacent their outer ends.

Classifications:
International (IPC 8-9): B23Q7/14 B65G47/90 (Advanced/Invention); B23Q7/14 B65G47/90 (Core/Invention)
International (IPC 1-7): B65H5/04
CPC: B23Q7/1431 B65G47/901
European: B23Q7/14K2 B65G47/90B
US: 104/135 193/35TE 198/346.1 198/468.9 414/223 414/223.01



Family:

Publication number	Publication date	Application number	Application date
US4664579 A	19870512	US19850809914	19851217

Priority:

US19830531900 19830824 US19850809914 19851217

Probable Assignee: SCHEDWIN SVEN ERIK

Assignee(s): (std)**:** SCHEDWIN SVEN ERIK

Inventor(s): (std)**:** SCHEDWIN SVEN ERIK

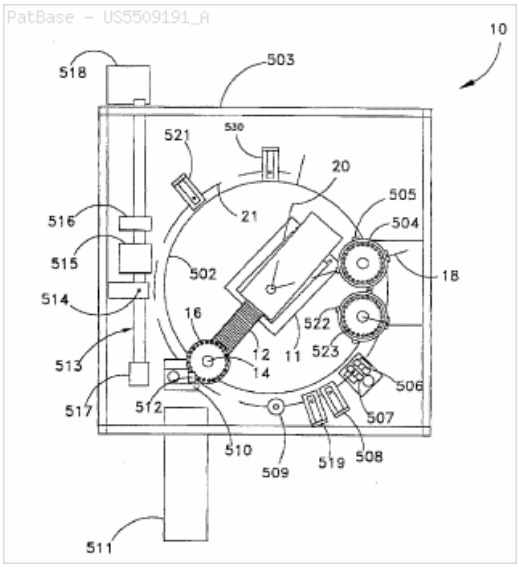
62) Family number: 13277129 (US5509191A)

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Title: APPARATUS FOR ASSEMBLING AND PROCESSING SMALL PARTS USING A ROBOT

Abstract: A method and apparatus for processing and assembling a plurality of small parts weighing under five pounds using a robot employing a rotatable pallet for holding an array of small parts. Said rotatable pallet being held in place on the robot wrist head, which moves the pallet through a plurality of stationary work-stations located within the operating envelope of the robot, and rotates the pallet at each work-station to index the pallet and to present it to the work-station for an operation on a specific part or parts. Said robot participates in the work-station tasks by moving the rotatable pallet in the X, Y, and Z directions as needed. Movable data pins are used to indicate conditions of individual parts in nests, and of the pallet taken as a whole.

Classifications:
International (IPC 8-9): B23P21/00 B23Q16/00 B23Q3/155 B23Q7/04 B23Q7/14 (Advanced/Invention); B23P21/00 B23Q16/00 B23Q3/155 B23Q7/04 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23P21/00 B23Q17/00 B23Q7/10 B65D85/00
CPC: Y10T29/49769 Y10T29/49778 Y10T29/49829 Y10T29/5127 Y10T29/519 Y10T29/53004 Y10T29/53096 Y10T29/53365 Y10T29/5337 Y10T29/534 Y10T29/53435 Y10T29/53478 B23P21/006 B23P21/004 B23Q7/1494 B23Q7/047 B23Q39/027 B23Q39/028
European: B23P21/00B B23P21/00B1 B23Q16/00C B23Q3/155D4 B23Q7/04M B23Q7/14K8
US: 206/459.1 206/562 221/297 29/33J 29/38R 29/407.04 29/407.09 29/430 29/701 29/722 29/783 29/784 29/791 29/799 29/809 297/220 297/840 414/795.7 414/798 901/40



Family:

Publication number	Publication date	Application number	Application date
US5509191 A	19960423	US19940189118	19940126
US5542168 A	19960806	US19940358392	19941219
US5636425 A	19970610	US19960620239	19960322
US5664322 A	19970909	US19960620220	19960322
US5680694 A	19971028	US19960620174	19960322
US5709303 A	19980120	US19960620177	19960322

Priority:

US19940189118 19940126 US19940358392 19941219 US19960620220 19960322
US19960620177 19960322 US19960620174 19960322 US19960620239 19960322

Probable Assignee: BEST NORMAN D

Assignee(s): BEST NORMAN D

Inventor(s): (std)**:** BEST NORMAN D

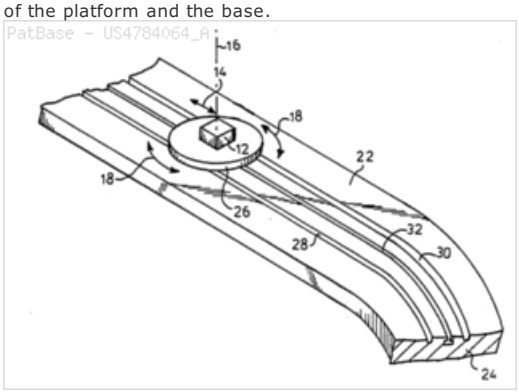
63) Family number: 2595130 (US4784064A)

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Title: Device for positioning an object

Abstract: A device for moving or positioning an object makes use of a track on a base and a circular groove on the platform. The platform holds the object. Balls are captured between the platform and the base which permit independent translation and rotation of the platform with respect to the base, by the simultaneous rolling and sliding of the balls. A mechanism for preloading and interlocking the base and the platform is also provided. The mechanism includes a shaft passing between the platform and the base and two channels formed in the platform. Elements disposed in the channels urge the shaft in opposite directions or selectively locking and disengaging of the platform and the base.

Classifications:
International (IPC 8-9): B23Q1/28 B23Q1/48 B23Q7/14 (Advanced/Invention); B23Q1/25 B23Q1/26 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q3/02 B65G39/18
CPC: B23Q1/28 B23Q1/4804 B23Q7/1426
European: B23Q1/28 B23Q1/48A B23Q7/14K
US: 104/135 104/139 269/309



Family:

Publication number	Publication date	Application number	Application date
US4784064 A	19881115	US19870082307	19870806
US4881727 A	19891121	US19880211478	19880624

Priority:

US19870082307 19870806 US19880211478 19880624

Probable Assignee: DEUTSCH JOSEPH

Assignee(s): (std)**:** DEUTSCH JOSEPH ; NEMIROVSKY ROBERT

Assignee(s): BAYSHORE NEMIROVSKY ; NEMIROVAKY ROBERT

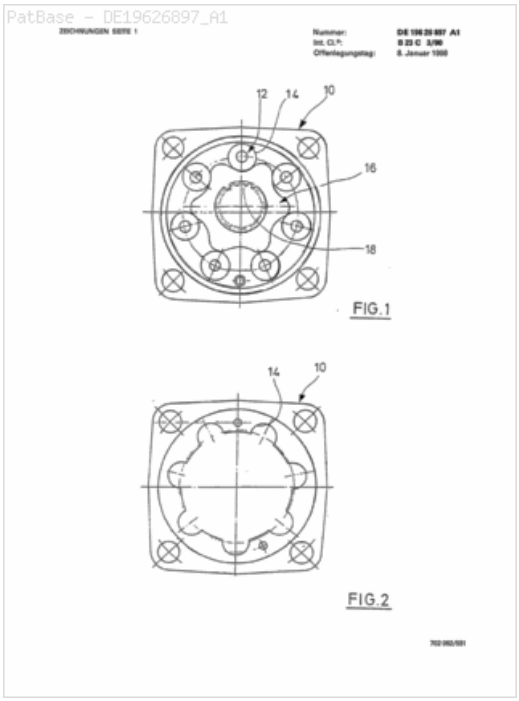
Inventor(s): (std)**:** DEUTSCH JOSEPH ; NEMIROVSKY ROBERT

64) Family number: 13150132 (DE19626897A1)

Title: End finishing method for partially cylindrical bores of housing ring of hydro-motor

Abstract: The partially cylindrical bores (14) are end-finished with a mono-block tool having at least one defined cutter on a high speed spindle in continuous run. The speed of the spindle is 30000 rpm or more. The monoblock tool has a foundation body and CBN cutting plate attached through keyed or force locking engagement. The work is carried out on a vertical finishing machine (20) with a vertically advancing high speed spindle.

Classifications:
International (IPC 8-9): B23C3/00 (Advanced/Invention); B23C3/00 (Core/Invention)
International (IPC 1-7): B23C3/00
CPC: B23C3/00
European: B23C3/00



Family:

Publication number	Publication date	Application number	Application date
DE19626897 A1	19980108	DE19961026897	19960704

Priority:

DE19961026897 19960704

Probable Assignee: HNP MOBILE HYDRAULIK GMBH AND CO

Assignee(s): (std)**:** HNP MOBILE HYDRAULIK GMBH AND CO

Assignee(s): HNP MOBILE HYDRAULIK GMBH AND CO KG ; HNP MOBILE HYDRAULIK GMBH AND CO KG 19370 PARCHIM ; HNP MOBILE HYDRAULIK GMBH AND CO KG 19370 PARCHIM DE

Inventor(s): (std)**:** KOCH WALTER

Inventor(s): KOCH WALTER 34134 KASSEL DE

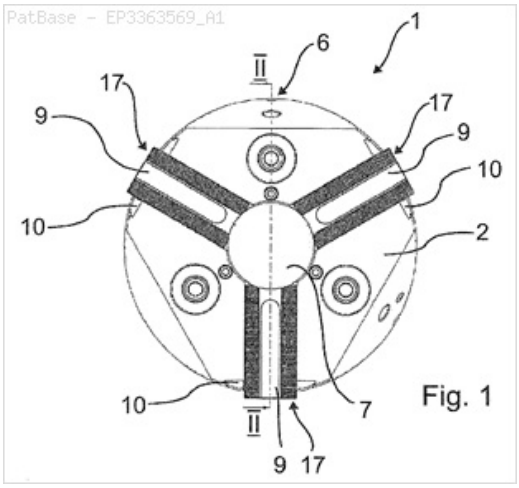
65) Family number: 70852132 (EP3363569A1)

Title: CLAMPING OR GRIPPING DEVICE DISPOSITIF DE SERRAGE OU DE PR

Abstract: Source: EP3363569A1 [DE] Spann- oder Greifeinrichtung (1) mit einem eine Spannachse (X) definierenden Grundkoerper (2), wobei in der vorderen Stirnflaeche (5) des Grundkoerpers (2) mehrere Fuehrungsnuten (8) zur Aufnahme von Spannbacken (9) ausgebildet sind, die sich radial von der aeusseren Umfangsflaeche (6) des Grundkoerpers (2) nach innen erstrecken. An dem Grundkoerper (2) sind Verbindungsmittel vorgesehen, um an dem Grundkoerper (2) aeussere Abdeckelemente (10) loesbar zu fixieren, welche die Fuehrungsnuten (8) an deren offenen Aussenseiten zumindest teilweise verschliessen, wobei die grundkoerperseitigen Verbindungsmittel Steckverbindungsmittel aufweisen, die derart ausgebildet sind, dass die aeusseren Abdeckelemente (10) mit ihnen unter Herstellung einer Steckverbindung, durch welche die aeusseren Abdeckelemente (10) an dem Grundkoerper (2) in radialer Richtung formschluessig fixiert werden, insbesondere von der Vorderseite oder der Rueckseite des Grundkoerpers (2) her in Eingriff bringbar sind.

Machine translation: Clamping or gripping device (1) with a Tensioning axis (X) defining basic body (2), wherein the front face (5) of the main body (2) includes a plurality of guide grooves (8) for receiving clamping jaws (9) are formed, extending radially from the outer circumferential surface (6) of the main body (2). On the main body (2), provision is made for connection means to the main body (2) outer cover elements (10) removably secure the guide grooves (8) on the outer sides at least partially open, wherein the main body close-side connecting means plug connection means, which are designed in such a way that the outer cover elements (10) with them so as to produce a connection, through which the outer cover elements (10) on the base body (2) in the radial direction is fixed in a form-fitting manner, in particular by the front side or the back side of the main body (2) engageable.

Classifications:
International (IPC 8-9): B23B31/00 B23B31/12 B23B31/16 B23Q7/04 B65D59/00 F16J15/06 F16J15/10 (Advanced/Invention)
CPC: B23B31/001 B23B31/16295 B65D59/00



Family:

Publication number	Publication date	Application number	Application date
DE102017103564 A1	20180823	DE201710103564	20170221
EP3363569 A1	20180822	EP20180155623	20180207

Priority:

DE201710103564 20170221

Probable Assignee: SCHUNK GMBH AND CO SPANN U GREIFTECHNIK KG

Assignee(s): (std)**:** SCHUNK GMBH AND CO SPANN U GREIFTECHNIK KG

Inventor(s): (std)**:** HOLSTEIN ALEXANDER ; SIBER MATHIAS

Agent(s): PAUL AND ALBRECHT PATENTANWALTSSOZIETAET

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

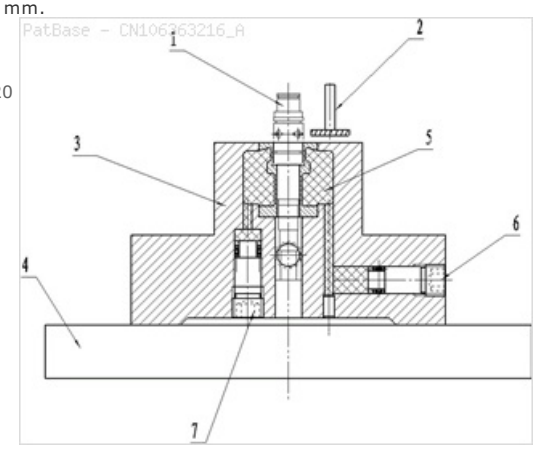
66) Family number: 64803133 (CN106363216A)

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Title: MILLING METHOD OF HIGH-PRECISION CYLINDRICAL HYDRAULIC OIL SEPARATION GROOVE

Abstract: The invention discloses a high-precision milling method of a cylindrical hydraulic oil separation groove and aims to provide a method which realizes high machining efficiency and stable quality and can effectively guarantee high-precision milling of the cylindrical hydraulic oil separation groove. The method is carried out through a technical scheme as follows: an axial positioning fixture (3) is prepared by adopting an elastic positioning locking principle, initial locking pressure of the positioning fixture (3) is adjusted by an initial pressure adjusting screw (7) firstly, then the axial positioning fixture (3) is fixed on a CNC (computer numerical control) number-axis numerical control rotary table (4), the center position of the axial positioning fixture (3) is subjected to alignment within 0.002 mm, then a workpiece (1) is pressed to a hydraulic spring chuck (5) in the axial direction and locked through a locking adjustment screw (6); the workpiece (1) and a machine tool spindle are subjected to the alignment within 0.002 mm, a T-shaped milling cutter (2) is adopted for rough milling and finish milling under the control of numerical control program, milling is performed by a high-precision machining center, and high precision of the oil separation groove in the workpiece is plus or minus 0.001 mm.

Classifications:
International (IPC 8-9): B23C3/28 B23Q17/20 B23Q3/06 (Advanced/Invention)
CPC: B23C3/28 B23C2220/605 B23C2270/08 B23Q3/067 B23Q17/20 B23Q2717/006



Family:

Publication number	Publication date	Application number	Application date
CN106363216 A	20170201	CN201611078637	20161129

Priority:

CN201611078637 20161129

Probable Assignee: SICHUAN LINGFENG AVIATION HYDRAULIC MACHINERY CO LTD

Assignee(s): (std)**:** SICHUAN LINGFENG AVIATION HYDRAULIC MACHINERY CO LTD

Assignee(s): LING AVIATION HYDRAULIC MACHINERY CO LTD SICHUAN ; SICHUAN LINGFENG AVIATION HYDRAULIC MACHINERY CO

Inventor(s): (std)**:** CHEN XIAOFENG ; YU XIANBO ; ZHANG GUOHONG

67) Family number: 34226134 (EP1754562B1)

Title: Device for simultaneously drilling a plurality of coaxial holes

Abstract: The bores could be camshaft bores in a cylinder head or crankshaft bores in a cylinder block or an engine block (3). A base (28) with a vertically movable carriage (33) at its front can be horizontally moved on a machine bed (26). The carriage (33) is equipped with a work-piece clamping unit (27). The drill tool (5) is attached to a spindle (45) only to be moved in a z-direction and integrated in a processing unit (39). The outer end of the drill (5) is held in a counter element during the drilling operation.

Classifications:
International (IPC 8-9): B23B29/02 B23B41/12 (Advanced/Invention); B23B29/00 B23B41/00 (Core/Invention)
CPC: B23B29/02 B23B29/027 B23B41/12
European: B23B29/02 B23B29/02D B23B41/12

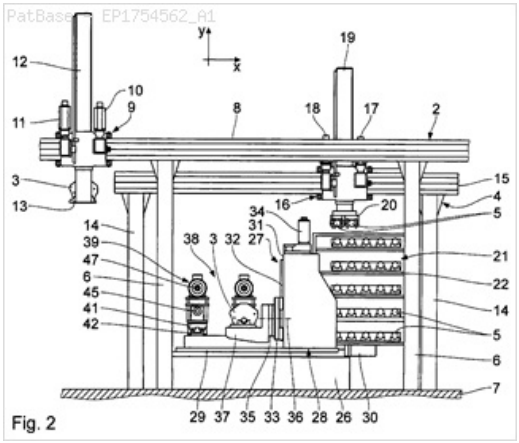


Fig. 2

Family:

Publication number	Publication date	Application number	Application date
DE502005002054 D1	20080103	DE200550002054T	20050819
EP1754562 A1	20070221	EP20050018007	20050819
EP1754562 B1	20071121	EP20050018007	20050819

Priority:

EP20050018007 20050819

Probable Assignee: CROSS HUELLER GMBH

Assignee(s): (std)**:** CROSS HUELLER GMBH

Inventor(s): (std)**:** LOESER HANS LUDWIG DIPL ING ; SCHLEGEL THOMAS DIPL ING

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK NL PL PT RO SE SI SK TR YU

68) Family number: 35575136 (ES2275401B)

Title: DISPOSITIVO ADICIONAL DE CONTROL PARA MAQUINA CON CONTROL NUMERICO

Abstract: The device includes a header coupled to a distance measuring unit through a mechanical connector, in which the distance measuring unit is used to measure the radial distance relative to the header and the tool head provided in a cylindrical unit. A protective component is arranged to cover the distance measuring unit, mechanical connector, and part of the measurement area. An electronic module calculates the relative measurement results. An NC unit is electrically connected to the electronic module.

Classifications:
International (IPC 8-9): B23Q15/22 B23Q17/24 G05B19/18 (Advanced/Invention); B23Q15/20 B23Q17/24 G05B19/18 (Core/Invention)
CPC: B23Q15/22 B23Q17/24 G05B19/18
European: B23Q15/22 B23Q17/24 G05B19/18

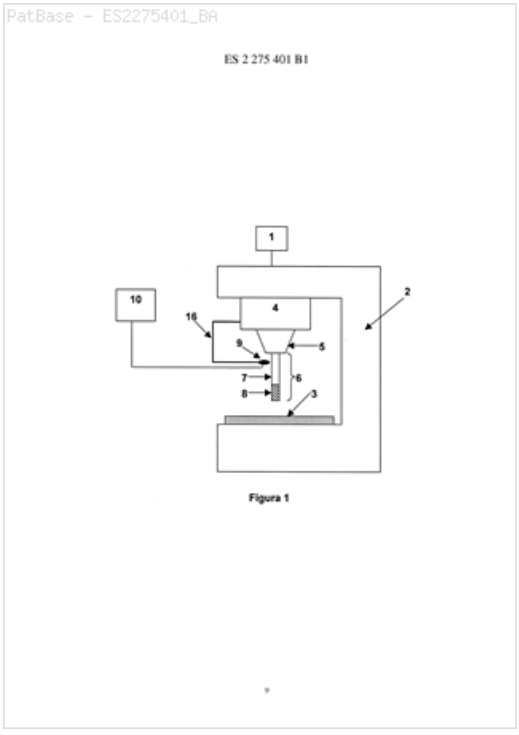


Figura 1

Family:

Publication number	Publication date	Application number	Application date
ES2275401 AA	20070601	ES20050001006	20050426
ES2275401 BA	20080416	ES20050001006	20050426

Priority:

ES20050001006 20050426

Probable Assignee: CONSEJO SUPERIOR INVESTIGACION

Assignee(s): (std)**:** CONSEJO SUPERIOR INVESTIGACION

Assignee(s): CONSEJO SUPERIOR INVESTIG CIENTIFICAS

Inventor(s): (std)**:** ALIQUE LOPEZ JOSE RAMON ; ROS TORRECILLAS SALVADOR ; RAMIREZ ROJAS ADRIANA C ; ARMADA RODRIGUEZ MANUEL ANGEL ; AKINFIEV TEODOR

Inventor(s): TEODOR AKINFIEV ; SALVADOR ROS TORRECILLAS ; MANUEL ANGEL ARMADA RODRIGUEZ ; JOSE RAMON ALIQUE LOPEZ ; ADRIANA C RAMIREZ ROJAS

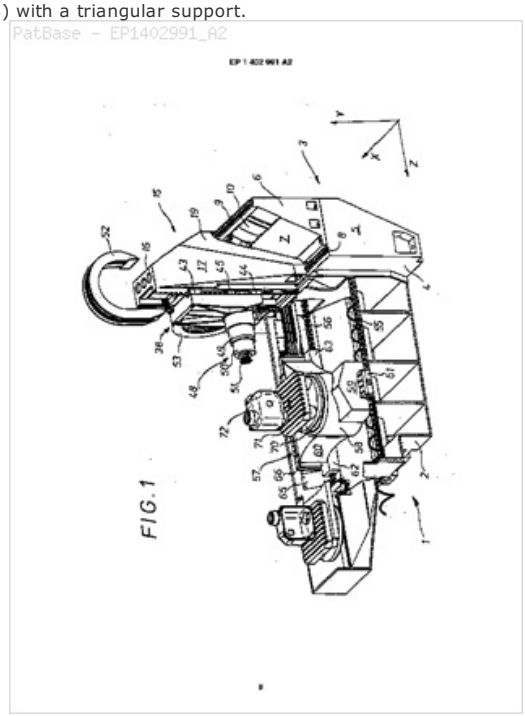
69) Family number: 30420137 (EP1402991A2)

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Title: Machine tool with a column sliding on two guides with a total of three guiding blocks

Abstract: Program controlled machine tool has a driven column (15) with a triangular or tetrahedral construction with a wide forward wall with vertical guides for vertical carriages and at least two sloping, from top to bottom, side walls (17). The driven column is supported on a guide rail (9) on the fixed column (3) with a triangular support.

Classifications:
International (IPC 8-9): B23Q1/01 B23Q39/04 B23Q7/14 (Advanced/Invention);
B23Q1/00 B23Q39/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q1/01 B23Q1/25 B23Q1/62 B23Q39/00 B23Q39/04
CPC: B23Q1/015 B23Q7/1431 B23Q39/04
European: B23Q1/01B B23Q39/04 B23Q7/14K2



Family:

Publication number	Publication date	Application number	Application date
DE10245058 A1	20040408	DE20021045058	20020926
DE10245058 B4	20050525	DE20021045058	20020926
EP1402991 A2	20040331	EP20030021537	20030924
EP1402991 A3	20040526	EP20030021537	20030924

Priority:

DE20021045058 20020926

Probable Assignee: KESSLER KURT

Assignee(s): (std)**:** KESSLER HANS KURT ; KESSLER KURT

Inventor(s): (std)**:** KESSLER HANS KURT ; KESSLER KURT

Designated states: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

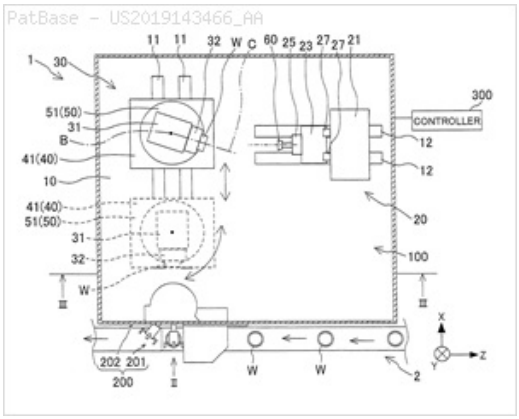
70) Family number: 74340138 (US2019143466A)

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Title: WORKPIECE REPLACING APPARATUS AND MACHINE TOOL

Abstract: A workpiece replacing apparatus delivers a pre-machined workpiece into an intra-machine space inside a machine tool from an extra-machine space outside the machine tool, and delivers a workpiece machined by the machine tool to the extra-machine space from the intra-machine space. The workpiece replacing apparatus includes a secured cover, an arm device, and a movable cover. The secured cover is secured to a securing member of the machine tool. The secured cover defines a partition between the intra-machine space and the extra-machine space. The secured cover is provided with an opening. The arm device delivers the workpieces between the intra-machine space and the extra-machine space through the opening. The movable cover is integral with the arm device or in engagement with the arm device such that the movable cover is operable in conjunction with operation of the arm device. The movable cover closes the opening, with the arm device located in the extra-machine space.

Classifications:
International (IPC 8-9): B23Q7/04 B25J15/00 (Advanced/Invention)
CPC: B23Q7/045 B25J15/00



Family:

Publication number	Publication date	Application number	Application date
DE102018128208 A1	20190516	DE201810128208	20181112
US2019143466 AA	20190516	US20180183997	20181108

Priority:

JP20170218790 20171114

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

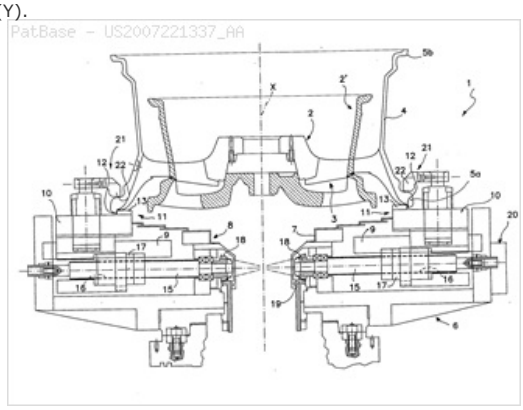
Inventor(s): (std)**:** IMANISHI KOZO ; OOTSUKA YOSHIO

71) Family number: 32558138 (US2007221337A)

Title: DEVICE FOR CLAMPING IN CENTERED POSITION PARTS TO BE SUBJECTED TO MACHINING AND MACHINE

Abstract: A device is described for clamping parts in a centered position which are to be machined, including a device for centring the part on a worktable including at least three centering elements with a regular angular spacing. Each centering element is displaceable along a predetermined radial direction (Y), and there are actuating devices associated with each respective centering element for operational actuation thereof in the translational movement along the corresponding radial direction (Y). Each actuating device, for each centring element, includes a an actuating element capable of being driven in a rotational motion and a first motion transmission device capable of converting the rotational motion of the actuating element into translational motion of the corresponding centering element along the corresponding radial direction (Y), and a second motion transmission device between the actuating elements capable of synchronously transmitting the rotational motion of one of the actuating elements to the other actuating elements so as to impart a synchronized translational movement of the centering elements along the respective radial translation directions (Y).

Classifications:
International (IPC 8-9): B23B31/169 B23Q3/18 B60B30/00 (Advanced/Invention); B23Q3/18 B60B30/00 (Advanced/Non-invention); B23Q3/00 B23Q3/18 B60B30/00 (Core/Invention)
International (IPC 1-7): B23Q3/18 B60B30/00
CPC: B23Q3/062 B23Q3/183
European: B23Q3/06D B23Q3/18B
US: 157/14



Family:

Publication number	Publication date	Application number	Application date
AT411912 E	20081115	AT20040806843T	20041206
CN1997526 A	20070711	CN200480043493	20041206
DE602004017371 D1	20081204	DE200460017371T	20041206
EP1771308 A1	20070411	EP20040806843	20041206
EP1771308 B1	20081022	EP20040806843	20041206
IN03886KN2006 A	20070622	IN2006KN03886	20061221
ITPD20040177 A1	20041002	IT2004PD00177	20040702
KR20070028474 A	20070312	KR20067027814	20061229
MXPA06014829 A1	20070307	MX2006PA14829	20041206
RU2007104030 A	20080810	RU20070104030	20041206
RU2341382 C2	20081220	RU20070104030	20041206
US2007221337 AA	20070927	US20040630636	20041206
WO06003683 A1	20060112	WO2004IT00678	20041206

Priority:

IT2004PD00177 20040702 WO2004IT00678 20041206

Probable Assignee: MAUS SPA

Assignee(s): (std)**:** MAUS S P A ; MAUS SPA ; SAMMARTIN ROBERTO ; VALENTINI BRUNO ; VELENTINI BRUNO ; MACCHINE UTENSILI SPECIALI S P

Assignee(s): MACCHINE UTENSILI SPECIALI S P A QUIEN TAMBIEN GIRA BAJO LA ABREVIATURA DE MAUS S P A ; MACCHINE UTENSILI SPECIALI QUIEN TAMBIEN GIRA BAJO LA ABREVIATURA DE MAUS SPA

Inventor(s): (std): VALENTINI BRUNO ; VELENTINI BRUNO ; BRUNO SAMMARTIN ROBERTO VALENT ; SAMMARTIN ROBERTO

Inventor(s): SAMMARTIN ROBERTO VALENTINI BRUNO ; ROBERTO SAMMARTIN ; BRUNO VALENTINI

Agent(s): FABRIS STEFANO ET AL; RATNERPRESTIA

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

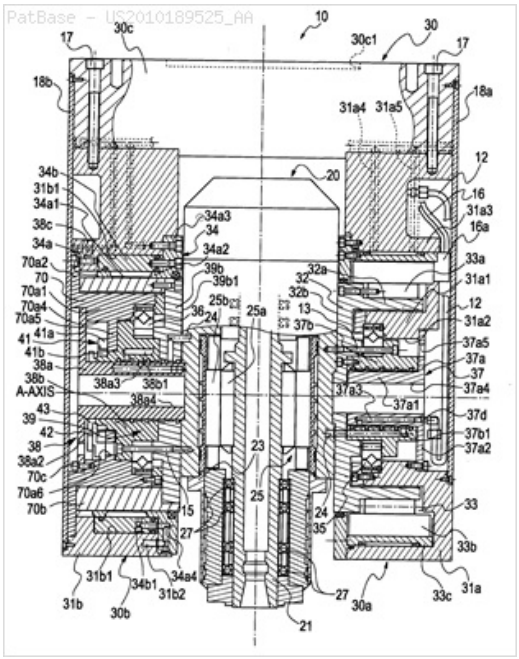
72) Family number: 41746142 (US2010189525A)

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Title: MACHINING HEAD FOR MACHINE TOOL

Abstract: A machining head has a support head component, which includes first and second support segments and a base segment supporting both the first and second support segments, the support segments being disposed opposite to each other across the spindle unit to hold the spindle unit therebetween such that a center of axle thereof is aligned with a rotary axis line thereof, the first and second support segments respectively including support shafts whose opposing end surfaces have the spindle unit secured thereto. The support segments respectively include housings as main bodies that are independent of the base segment. The housings accommodate the support shafts. Each housing is attached to the base segment by means of a plurality of first screw members that are screwed to the base segment and are manipulatable from the outside. The spindle unit is attached to the support shafts by means of a plurality of second screw members that are screwed to the support shafts and are manipulatable from the outside.

Classifications:
International (IPC 8-9): B23B19/02 B23C1/12 B23Q1/50 B23Q1/52 B23Q1/70 B23Q3/12 B23Q5/10 (Advanced/Invention); B23B19/00 B23Q1/00 B23Q1/25 B23Q3/00 (Core/Invention)
CPC: B23Q2220/006 B23Q1/5406 Y10T409/307672 Y10T409/308232 Y10T409/308512 Y10T409/309352
European: B23Q1/54A
US: 409/201 409/211 409/216 409/216S 409/231 409/231P



Family:

Publication number	Publication date	Application number	Application date
CN101583461 A	20091118	CN200780038029	20071016
CN101583461 B	20110608	CN200780038029	20071016
EP2080582 A1	20090722	EP20070829856	20071016
JP2008047772 A1	20100225	JP20080539813T	20071016
JP5004363 B1	20120822	JP20080539813T	20071016
JP5004363 B2	20120822	JP20080539813T	20071016
KR20090077898 A	20090716	KR20097006366	20071016
TW200827092 A	20080701	TW20070138208	20071012
US2010189525 AA	20100729	US20070445600	20071016
US8197164 BB	20120612	US20070445600	20071016
WO08047772 A1	20080424	WO2007JP70122	20071016

Priority:

JP20060284016 20061018 JP20080539813 20071016 WO2007JP70122 20071016

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std): TATSUDA YOSHINORI ; TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH

Assignee(s): TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA CORP

Inventor(s): (std): TATSUDA YOSHINORI ; YOSHINORI TATSUDA

Agent(s): SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

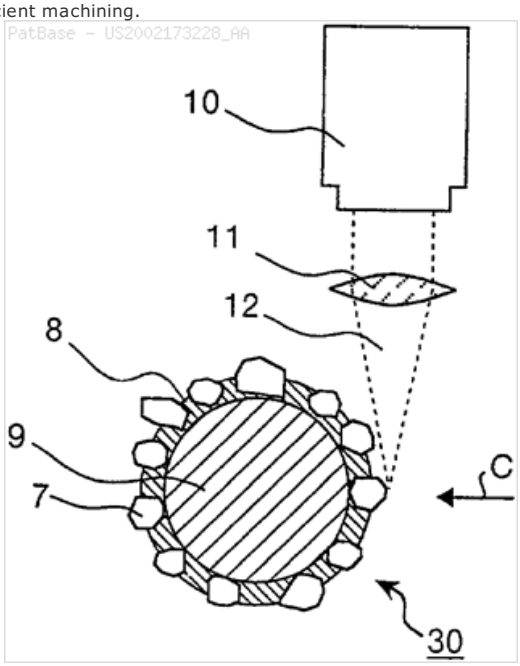
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73) Family number: 28278144 (US2002173228A)

Title: GRINDER AND METHOD OF AND APPARATUS FOR NON-CONTACT CONDITIONING OF TOOL

Abstract: Truing of a grinder is performed by irradiating a laser beam onto abrasive grains on the outermost periphery of the grinder from the tangential direction of the grinder. Truing of the grinder for adjusting the number of working abrasive grains and the shape of the abrasive grains involved in the actual machining is performed under a non-contact condition and at highly accurately, thereby enabling highly accurate and highly efficient machining.

Classifications:
International (IPC 8-9): B23K26/00 B23K26/03 B23K26/08 B23K26/38 B23K26/40 B24B1/00 B24B21/18 B24B53/00 B24B53/007 B24D3/00 B24D5/00 B24D5/06 B24D7/00 B24D7/06 (Advanced/Invention);
B23K101/20 (Advanced/Non-invention);
B23K26/00 B23K26/08 B24B53/00 B24B53/007 B24D3/00 B24D5/00 B24D7/00 (Core/Invention)
International (IPC 1-7): B23F21/23 B23K26/00 B24B1/00 B24B51/00 B24B53/00 B24B53/007 B24D3/00 B24D5/00 B24D5/06 B24D7/00 B24D7/06
CPC: B23K26/3584 B24B53/00 B23K26/032
European: B23K26/00J2E B23K26/03B B24B53/00
US: 125/11.01 125/11.010S 451/177 451/178 451/289 451/443 451/444 451/5 451/54 451/540 451/540S 451/541 451/547 451/548 451/56 451/56P 451/56S 451/5P



Family:

Publication number	Publication date	Application number	Application date
JP2002321155 A2	20021105	JP20010124615	20010423
JP2003305652 A2	20031028	JP20020111549	20020415
JP2007160505 A2	20070628	JP20070036039	20070216
JP4640353 B2	20110302	JP20070036039	20070216
US2002173228 AA	20021121	US20020127610	20020423
US2004142644 AA	20040722	US20040755343	20040113
US6793562 BB	20040921	US20020127610	20020423
US7175509 BB	20070213	US20040755343	20040113

Priority:

JP20010124615 20010423 JP20020111549 20020415 US20020127610 20020423
US20040755343 20040113 JP20070036039 20070216

Probable Assignee: MITSUBISHI DENKI KABUSHIKI

Assignee(s): (std): MITSUBISHI ELECTRIC CORP

Assignee(s): MITSUBISHI DENKI KK ; MITSUBISHI DENKI KABUSHIKI KAISHA ; YOKOTA KOUJI ; NAKASUJI TOMOAKI ; GUNJIMA MUNEHISA ; ITSUBISHI DENKI KABUSHIKI KAISHA ; ITSUBISHI DENKI KK ; MITSUBISHI DENKI K USHIKI AB ; MITSUBISHI DENKI KABUSHIKI

Inventor(s): (std): GUNJIMA MUNEHISA ; HONDA HIROSHI ; KONISHI SHINSUKE ; KORISHIMA MUNEHISA ; NAKASUJI TOMOAKI ; TAKENO YOSHIMIZU ; YOKOTA HIROHITO ; YOKOTA KOUJI

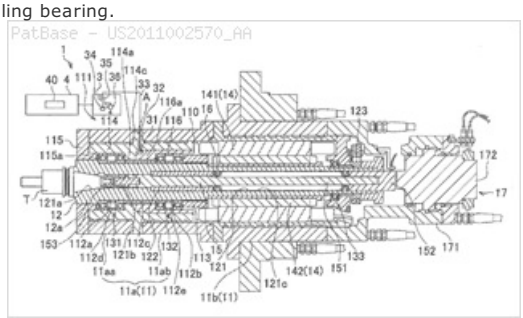
Agent(s): SUGHRUE MION PLLC

74) Family number: 47945144 (US2011002570A)

Title: SPINDLE DEVICE FOR MACHINE TOOL

Abstract: Information regarding various types of machining may be stored in an NC program. Therefore, by controlling preload application means on the basis of the NC program, it is possible to control an amount of preload that is applied to a rolling bearing to a preload amount that can give a spindle characteristic that meets every type of machining. Thus, highly accurate machining is possible. Then, when a preload command value falls out of range of a preload as a controllable region, the preload command value is corrected so as to fall within the range of the preload. That is, an actually controlled preload is regulated to fall within a preset range of a preload. Therefore, it is possible to ensure the stiffness of the rolling bearing or prevent heating and excessive increase in contact pressure of the rolling bearing.

Classifications:
International (IPC 8-9): B23B19/02 B23Q1/26 B23Q1/70 F16C23/06 F16C25/06 (Advanced/Invention)
CPC: Y10T409/309352 B23Q1/70 B23Q1/265 F16C25/08 F16C2322/39
European: B23Q1/26C2 B23Q1/70 F16C25/08
US: 384/563 384/563P 409/231 409/231S



Family:

Publication number	Publication date	Application number	Application date
CN101941083 A	20110112	CN201010216820	20100629
CN101941083 B	20140709	CN201010216820	20100629
DE602010003401 D1	20121227	DE201060003401T	20100701
EP2269767 A1	20110105	EP20100168096	20100701
EP2269767 B1	20121031	EP20100168096	20100701
JP2011011306 A2	20110120	JP20090158869	20090703
JP5560599 B2	20140730	JP20090158869	20090703
US2011002570 AA	20110106	US20100829875	20100702

Priority:

JP20090158869 20090703 EP20100168096 20100701

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP

Inventor(s): (std): MASEKI KATSUHIRO ; TAKASHIMA TOSHIHARU ; SHIBATA TAKAMASA ; OKAWA YUJI ; OGURA KAZUNARI ; TAKASHIMA TOSHIJI ; SAKUGI KATSUHIRO ; TOSHIHARU TAKASHIMA ; KATSUHIRO MASEKI ; YUJI OKAWA ; KAZUNARI OGURA ; TAKAMASA SHIBATA

Inventor(s): OGURA KAZUNARI OSAKA SHI ; SHIBATA TAKAMASA OSAKA SHI ; MASEKI KATSUHIRO OSAKA SHI ; TAKASHIMA TOSHIHARU OSAKA SHI ; OKAWA YUJI OSAKA SHI

Agent(s): TBK; TBK PATENT; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

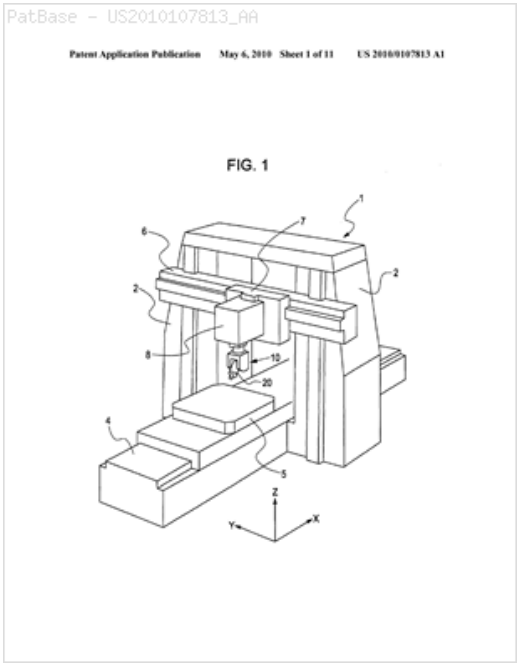
75) Family number: 42150146 (US2010107813A)

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Title: CLAMP SLEEVE

Abstract: A clamp sleeve for an indexing device is provided, the clamp sleeve being capable of providing a desirable clamping force without greatly increasing a fluid pressure, and having a long life. A clamp sleeve 34a has a through hole 34a7 and an annular groove 34a1 continuously provided around an outer periphery of the clamp sleeve 34a and defining a part of a pressure chamber 34d. The annular groove 34a1 includes a pair of inner end surfaces 34e6, 34e6', a groove bottom surface 34e0 extending in parallel to the through hole 34a7, and arcuate first transition surfaces 34e1, 34e1' provided between the inner end surfaces 34e6, 34e6' and the groove bottom surface 34e0. The annular groove 34a1 is provided such that a thickness t1 in a region provided with the groove bottom surface 34e0 is a thickness to allow the region to be deformable. A second transition surface 34e2, 34e2' is provided between at least one of the first transition surfaces 34e1, 34e1' and the groove bottom surface 34e0, the second transition surface 34e2, 34e2' having a further reduced curvature than a curvature of the first transition surfaces.

Classifications:
International (IPC 8-9): B23B31/30 B23Q1/28 B23Q16/06 B23Q16/08 B23Q16/10 (Advanced/Invention); B23Q1/26 B23Q16/00 (Core/Invention)
CPC: B23Q2220/006 B23B31/30 B23Q1/287 B23Q1/5406 B23Q16/102 Y10T74/1494 Y10T279/1216 Y10T409/307672
European: B23Q1/28D B23Q1/54A B23Q16/10C
US: 188/67 279/4.03 409/201 74/813.00LP 74/813L



Family:

Publication number	Publication date	Application number	Application date
AT551150 E	20120415	AT20080711631T	20080220
CN101616771 A	20091230	CN200880001451	20080220
CN101616771 B	20120912	CN200880001451	20080220
DE602008014440 D1	20120524	DE200860014440T	20080220
EP2116329 A1	20091111	EP20080711631	20080220
EP2116329 A4	20110420	EP20080711631	20080220
EP2116329 B1	20120328	EP20080711631	20080220
JP2008213062 A2	20080918	JP20070051347	20070301
JP4996285 B2	20120808	JP20070051347	20070301
KR101268555 B1	20130528	KR20097017764	20080220
KR20090125756 A	20091207	KR20097017764	20080220
TW200914194 A	20090401	TW20080104553	20080205

TWI425995 B	20140211	TW20080104553	20080205
US2010107813 AA	20100506	US20080529085	20080220
US8449233 BB	20130528	US20080529085	20080220
WO08108171 A1	20080912	WO2008JP52825	20080220

Priority:

JP20070051347 20070301 EP20080711631 20080220 WO2008JP52825 20080220

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std)**:** TATSUDA YOSHINORI ; TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH

Assignee(s): TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TSUDAKOMA KOGYO KANAZAWA KK ; TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA CORP

Inventor(s): (std)**:** TATSUDA YOSHINORI ; TATSUTA YOSHINORI ; YOSHINORI TATSUDA

Agent(s): SAMSON AND PARTNER PATENTANWAELTE MBB; SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

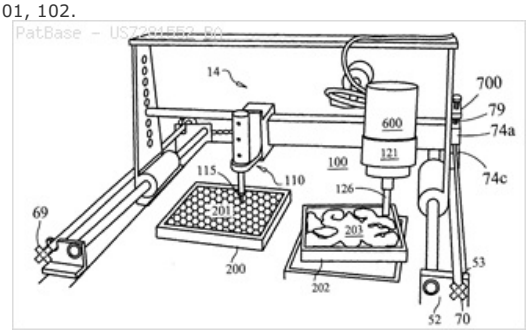
76) Family number: 40456146 (US7281552B)

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Title: WOOD CARVING ASSEMBLY AND A METHOD FOR MAKING THE SAME

Abstract: A carving assembly 10 for use in duplicating a blank or form. The carving assembly 10 includes stylus 112 and a tool holder 120 which are coupled together using a slidable carriage 14 to allow any movement of the stylus to cause a cutting tool 121 mounted in the tool holder 120 to move in the exact same manner. Carriage 14 is mounted upon a frame, assembly which permits sliding motion in two orthogonal directions 101, 102.

Classifications:
International (IPC 8-9): B23C1/16 (Advanced/Invention); B23C1/00 (Core/Invention)
CPC: B27C5/003 B23Q35/10 B44B3/001 B44B3/006 B44B3/02 Y10T409/301232 Y10T409/30252
European: B23Q35/10 B27C5/00B B44B3/00B B44B3/00D B44B3/02
US: 144/144.1 144/3.1 144/31 144/360 409/109 409/86



Family:

Publication number	Publication date	Application number	Application date
US7281552 BA	20071016	US20050082565	20050317

Priority:

US20050082565 20050317

Probable Assignee: COLEMAN GERALD E

Assignee(s): (std)**:** COLEMAN GERALD E ; COLEMAN HARRISON L

Inventor(s): (std)**:** COLEMAN GERALD E ; COLEMAN HARRISON L

77) Family number: 70640148 (DE102017103776B3)

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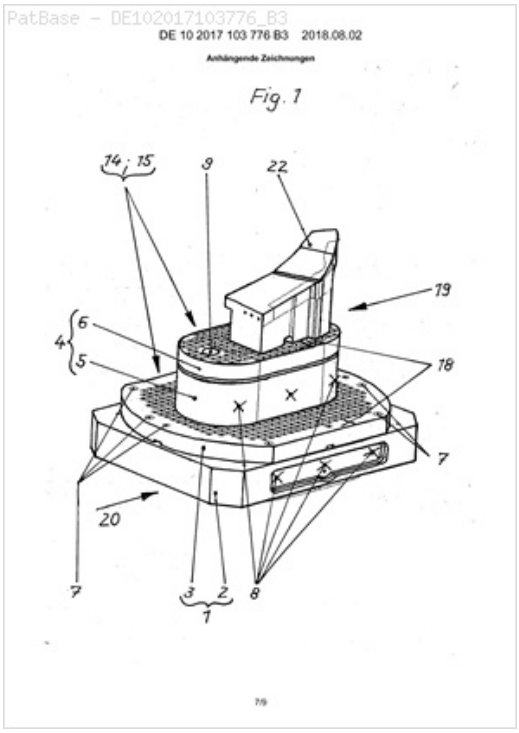
Title: POSITIONIERSYSTEM FUER WERKSTUECK-SPANNKOMPONENTEN Positioning SYSTEM FOR WORKPIECE CLAMPING COMPONENTS (Machine translation)

Abstract: Source: DE102017103776B3 [DE] Gegenueber den fuer die direkte Mehrfach-Positionierung von Werkstuecken (22) genutzten Positioniersystemen, die als• Raster paralleler sich kreuzender T-Nuten,• Bohrungsraster und• Gewindebohrungs-Raster mit grossen Positionierstellen-Abstaenden an Werkzeugmaschinentischen und an modularen Vorrichtungssystemen fuer zu fuegende Werkstueck-Spannkomponenten sowie fuer spezifische Werkstueck-Ausbildungen ausgebildet sind, gilt es mit• flexibler Elementennutzung und• geringen Positionierstellen-Abstaenden in• mehreren Positionierebenen (18) die Toleranzgenauigkeit sowie die Wiederholgenauigkeit der erreichbaren Bearbeitungsstellen der fixierten Werkstuecke (22) am Werkzeug von Bearbeitungsmaschinen zu erhoehen.Die Ausbildung eines Steckbohrungssystems mit einer Reihenanordnung von maximal drei Positionshalte-Bohrungen (9) fuer drei Steckbolzen (11, 12, 13) und die koordinierbare Nutzung eines Rasters engbeabstandeter Positionsbohrungen (14) fuer einen weiteren Steckstift (16) gewaehrleistet flexible Positionierungen und Positionsaenderungen von Werkstueck-Spannkomponenten (21), in den Werkstuecke (22) in mehreren horizontalen Positionierebenen (18) aufgenommen und fixiert sind, mit geringstem Zeitaufwand und engtolerierter Wiederholgenauigkeit.

Machine translation: To the direct multiple positioning of workpieces (22) used as positioning systems• grid parallel intersecting T-grooves,•• threaded bore hole raster and grid, with large distances to provide positioning tool machine tables and modular device to fuegende systems for workpiece clamping components, as well as for specific workpiece configurations, it• flexible elements are formed with low usage and•• Provide positioning intervals in more positioning planes (18) The tolerance accuracy as well as the repeatability of the achievable machining of the workpieces (22) fixed to the tool of the formation of a plug bore to increase processing machines.system with a series arrangement of a maximum of three position and hold holes (9) for three socket pins (11, 12, 13) and the engbeabstandeter position holes using a grid coordinating audible (14) for a further pin (16) ensures flexible positioning, and positional changes of workpiece clamping components (21) in the workpieces (22) in a plurality of horizontal positioning planes (18), and Fixed engtolerierter with a minimum of time and repeatability.

Classifications:
International (IPC 8-9): B23Q3/02 B23Q3/10

B25B11/00 (Advanced/Invention)
CPC: B23Q3/103 B23Q3/183



Family:

Publication number	Publication date	Application number	Application date
DE102017103776 B3	20180802	DE201710103776	20170223

Priority:

DE201710103776 20170223

Probable Assignee: AWEBA WERKZEUGBAU GMBH AUE

Assignee(s): (std)**:** AWEBA WERKZEUGBAU GMBH AUE

Inventor(s): (std)**:** MUEHLMANN THOMAS ; SCHLEMMBACH THOMAS

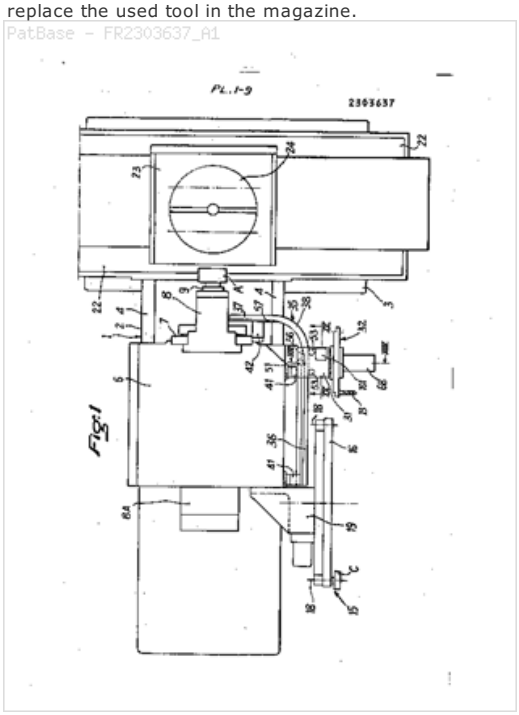
78) Family number: 3538148 (FR2303637A)

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Title: MACHINE TOOL WITH AUTOMATIC TOOL CHANGEOVER - ROTARY MAGAZINE AT SIDE HAS CARRIAGE AND TOOL CLAMP ON TRACK BETWEEN MACHINE SPINDLE AND MAGAZINE

Abstract: The machine tool has a column (6) at 90 deg. to the work table (24). On one side is a rotary magazine (15), holding tools (18) around its periphery. The axis of this magazine is at 90 deg. to the machine spindle (9) and a curved track (35) joins the two together. A carriage (31) run on the track and carries a double tool clamp (32). It is hydraulically operated and first picks a tool (B) out of the magazine. The carriage traverses to the spindle, advances and removes the old tool (A). The clamp rotates, inserts the new tool and returns along the track to replace the used tool in the magazine.

Classifications:
International (IPC 8-9): B23Q3/157 (Advanced/Invention);
B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: B23Q3/1574
European: B23Q3/157C2B3



Family:

Publication number	Publication date	Application number	Application date

FR2303637 A1	19761008	FR19750007811	19750313
FR2303637 B1	19790803	FR19750007811	19750313

Priority:

FR19750007811 19750313

Probable Assignee: RATIER SA FOREST

Assignee(s): (std)**:** RATIER FOREST SA ; RATIER SA FOREST

Assignee(s): RATIER FOREST

79) Family number: 3796149 (DE3431091A1)

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Title: CHAIN MAGAZINE FOR MACHINE TOOLS

Abstract: The invention relates to a chain magazine for machine tools, especially for machining centres, which magazine consists of an endless chain with tool reception devices, a supporting structure with a chain guide on or alongside the machine tool, and a chain drive. So that the chain can be laid with a plurality of parallel loops and can accommodate a larger number of tools, the tool reception devices are arranged with their central axes in the connection line (21) of the chain joint pins (20), the chain links (10) themselves forming the tool reception devices.

Classifications:
International (IPC 8-9): B23Q3/155 (Advanced/Invention);
B23Q3/155 (Core/Invention)
International (IPC 1-7): B23Q3/155
CPC: B23Q3/15526 B23Q3/15724
European: B23Q3/155D2

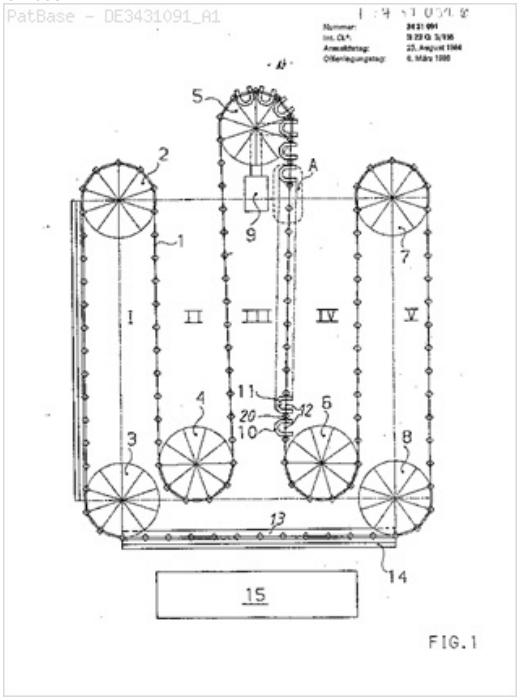


FIG.1

Family:

Publication number	Publication date	Application number	Application date
DE3431091 A1	19860306	DE19843431091	19840823
DE3431091 C2	19891019	DE19843431091	19840823

Priority:

DE19843431091 19840823

Probable Assignee: MAHO WERKZEUGMASCHBAU BABEL

Assignee(s): (std)**:** MAHO AG ; MAHO WERKZEUGMASCHBAU BABEL

Assignee(s): MAHO WERKZEUGMASCHINENBAU BABEL AND CO ; MAHO AG 8962 PFRONTEN DE ; MAHO 8962 PFRONTEN DE AG

Inventor(s): (std)**:** KLICPERA UDO DR ING

Inventor(s): KLICPERA UDO DR ING 8962 PFRONTEN DE

80) Family number: 30247151 (WO9840189A1)

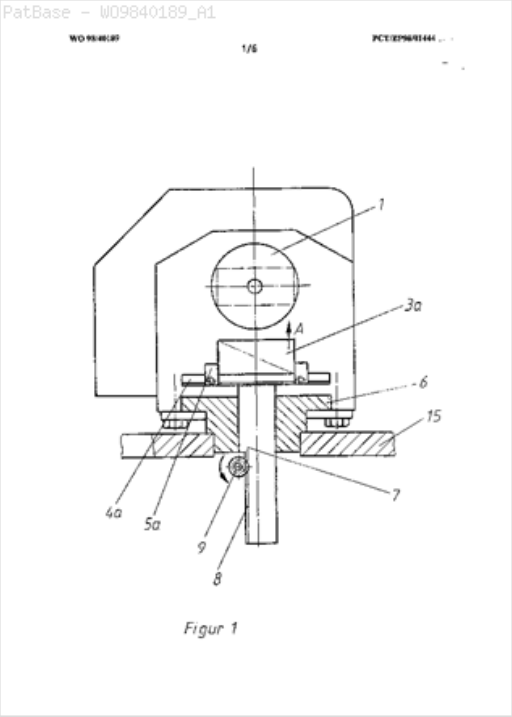
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Title: WORKPIECE FEED DEVICE FOR A MACHINE TOOL

Abstract: The invention concerns a workpiece feed device for a machine tool, said device comprising two clamping parts (1, 2) which delimit a clamping region and have plane clamping faces between which a workpiece (3a) that is to be machined on at least one side can be clamped in an axial movement. The workpiece feed device also comprises two housings (11, 12) which are displaceable towards each other on a work bench, can be secured at any mutual spacing, are each connected to one of the clamping parts and via each of which a clamping force and/or an angle switching movement can be applied to the corresponding clamping part. The workpiece feed device further comprises at least one support (4a) on which the workpiece can be moved into the clamping region such that the workpiece can be clamped between the clamping parts; the at least one support can then be moved back out of the clamping region into its starting position. Preferably, by means of a shaft and a gear unit, a drive unit that is integrated in the machine tool in fixed manner introduces the at least one support into the clamping region which is disposed with a central axis that likewise remains fixed; when the workpiece has been clamped, the drive unit returns the support to its starting position.

Classifications:
International (IPC 8-9): B23Q1/48 B23Q3/10
B23Q7/00 (Advanced/Invention);
B23Q1/25 B23Q3/02 B23Q7/00 (Core/Invention)
International (IPC 1-7): B23Q3/00 B23Q3/06 B23Q7/00 B27C5/04

CPC: B23Q1/4852 B23Q3/104 B23Q7/001 B23Q7/005
European: B23Q1/48E B23Q3/10F B23Q7/00C B23Q7/00K



Figur 1

Family:

Publication number	Publication date	Application number	Application date
DE19710447 A1	19981008	DE19971010447	19970313
DE19710447 C2	19990114	DE19971010447	19970313
DE29800294 U1	19980604	DE19982000294U	19980109
WO9840189 A1	19980917	WO1998EP01444	19980312

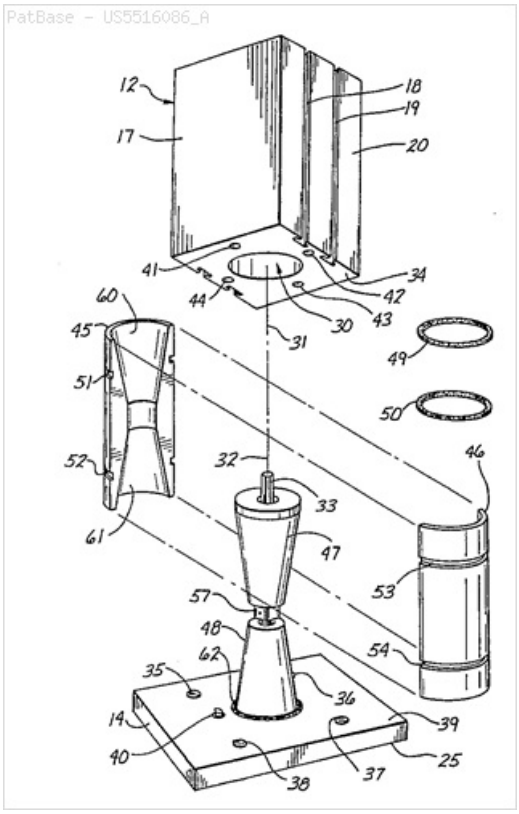
Priority:
DE19971010447 19970313 DE19982000294U 19980109

Probable Assignee: MAGERL BERNHARD
Assignee(s): (std)**:** MAGERL BERNHARD
Assignee(s): MAGERL BERNHARD 84082 LABERWEINTING DE
Inventor(s): (std)**:** MAGERL BERNHARD
Inventor(s): MAGERL BERNHARD 84082 LABERWEINTING DE
Designated states: AT BE CH DE DK ES FI FR GB GR IE IT JP LU MC NL PT SE US

81) Family number: 12535152 (US5516086A)

Title: Workpiece holding method and apparatus

Abstract: A quick-change method for holding a workpiece on a worktable includes the step of providing at least one tombstone module (a workpiece support structure) for holding the workpiece, and a receiver assembly for removably holding the tombstone module on the worktable. The method proceeds by mounting the receiver assembly on the worktable, mounting the workpiece on the tombstone module, and removably mounting the tombstone module on the receiver assembly. In line with the above, an apparatus for holding a workpiece on a worktable (a modular tombstone assembly) includes at least one tombstone module for holding the workpiece, and a receiver assembly for removably holding the tombstone module on the worktable. The receiver assembly includes a base for mounting the receiver assembly on the worktable and an expandable mechanism extending from the base (an expandable mandrel, spindle, axle, pin, bar, shaft, or other elongated member for placement within a bore of the modular tombstone) for holding the tombstone module. The tombstone module includes a block of material with a bore shaped and dimensioned to fit over the expandable mechanism so that expanding the mechanism removably secures the tombstone module to the receiver assembly and thereby to the worktable.
Classifications:
International (IPC 8-9): B23Q3/00 B23Q3/06 B23Q3/10 B25B5/08 B25B5/14 (Advanced/Invention);
B23Q3/00 B23Q3/02 B25B5/00 (Core/Invention)
International (IPC 1-7): B23Q1/25 B23Q3/00
CPC: Y10T29/49787 B23Q3/067 B23Q3/103 B25B5/08 B25B5/147
European: B23Q3/06K B23Q3/10D B25B5/08 B25B5/14D
US: 269/309 269/48.1 269/69 29/411 411/55



Family:

Publication number	Publication date	Application number	Application date
JP11508493 T2	19990727	JP19970504539T	19960626
US5516086 A	19960514	US19940358187	19941216
US5630577 A	19970520	US19950495207	19950627
WO9701416 A1	19970116	WO1996US10909	19960626

Priority:

US19940358187 19941216 US19950495207 19950627 WO1996US10909 19960626

Probable Assignee: TANKERSLEY JAMES E

Assignee(s): (std)**:** TANKERSLEY JAMES E

Inventor(s): (std)**:** TANKERSLEY JAMES E

Designated states: AT BE CH DE DK ES FI FR GB GR IE IT JP LU MC NL PT SE

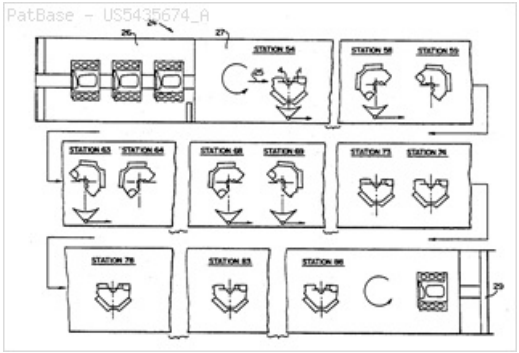
82) Family number: 3460155 (US5435674A)

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Title: PROCESS FOR MANUFACTURING OF WORKPIECES, ESPECIALLY WORKPIECES OF MOTOR VEHICLE DRIVE ASSEMBLIES, AND ALSO A DEVICE FOR APPLICATION OF THE PROCESS

Abstract: PCT No. PCT/EP90/01282 Sec. 371 Date Feb. 25, 1992 Sec. 102(e) Date Feb. 25, 1992 PCT Filed Aug. 4, 1990 PCT Pub. No. WO91/02623 PCT Pub. Date Mar. 7, 1991.The invention relates to a process for production of workpieces (1), especially motor vehicle drive assemblies, on a production line, the workpiece (1) having lateral surfaces (3, 11, 12, 18, 21) extending more or less parallel to a longitudinal axis (4) and also frontal areas (7, 8) extending more or less perpendicular to these surfaces and being pivotable and immobilizable in a number of machining positions for the individual machining steps. For the purpose of machining the lateral surfaces (3, 11, 12, 18, 21) and partial areas (2, 5, 6, 20) of the workpiece (1) accessible from them, the workpiece (1) is moved to the individual production stations with its longitudinal axis (4) vertically directed, at the individual production station is pivoted about the longitudinal axis (4) into the machining position required, and is immobilized and clamped in this position. Application of the process claimed for the invention is made possible by the fact that the workpiece (1) is outfitted with a special adjusting element (adjusting holes 9 in the outer circumference of a frontal surface 8 and in a circular line with the longitudinal axis 4 as center). The production process claimed for the invention yields low cost accompanied by maximum production flexibility and is at the same time suitable for high-output mass production (Fig. 1).

Classifications:
International (IPC 8-9): B23Q7/14 B23Q7/18 (Advanced/Invention); B23Q7/14 B23Q7/16 (Core/Invention)
International (IPC 1-7): B23C3/00 B23Q39/00 B23Q7/14 B23Q7/18
CPC: Y10T408/03 Y10T409/303752 B23Q7/1405 B23Q7/18
European: B23Q7/14B B23Q7/18
US: 408/1R 409/131



Family:

Publication number	Publication date	Application number	Application date
DE3928139 A1	19910228	DE19893928139	19890825
DE59001813 D1	19930722	DE19905001813	19900804
EP0494165 A1	19920715	EP19900913178	19900804
EP0494165 B1	19930616	EP19900913178	19900804
ES2044610 T3	19940101	ES19900913178T	19900804
JP5500032 T2	19930114	JP19900512123T	19900804
US5435674 A	19950725	US19920835427	19920225
WO9102623 A1	19910307	WO1990EP01282	19900804

Priority:

DE19893928139 19890825 DE19905001813 19900804 WO1990EP01282 19900804

Probable Assignee: AUDI AG

Assignee(s): (std)**:** AUDI AG ; AUDI NSU AUTO UNION AG

Assignee(s): AUDI AG 8070 INGOLSTADT DE ; AUDI 8070 INGOLSTADT DE AG ; AUDI A OF GERMANY AG CORP

Inventor(s): (std)**:** MOTZET JOSEF ; MUELLER KARL ; MULLER KARL

Inventor(s): MUELLER KARL 8070 INGOLSTADT DE ; MUELLER KARL W 8070 INGOLSTADT DE

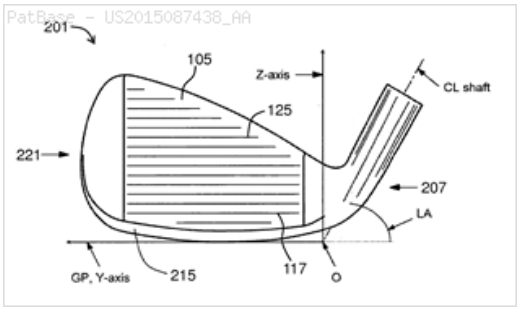
Designated states: AT BE CH DE DK ES FR GB IT JP LU NL SE US

83) Family number: 58774155 (US2015087438A)

Title: DUAL PROCESS GOLF CLUB COMPONENT

Abstract: The invention provides methods of making a component for a golf club by shaping a workpiece by a first process and also shaping the workpiece by a second process that includes electrical discharge machining. A first process such as forging or casting can shape the gross morphology of the workpiece and material can be removed by the second process to form desired features or textures. In certain aspects, the invention provides a golf club head with a club head body having a face, a sole, a toe, a heel, and a hosel extending upwards from a heel-side of the club head body when the club head is at address. A part of the club head body is formed by the first process, with material having been removed from the part by the second process.

Classifications:
International (IPC 8-9): A63B53/04 B23H1/00 B23H5/00 (Advanced/Invention)
CPC: A63B53/047 A63B2053/0479 A63B2053/0445 B23H1/00 B23H9/00
US: 219/69.11 473/331



Family:

Publication number	Publication date	Application number	Application date
US2015087438 AA	20150326	US20130035176	20130924

Priority:

US20130035176 20130924

Probable Assignee: COBRA GOLF INC

Assignee(s): (std)**:** COBRA GOLF INC

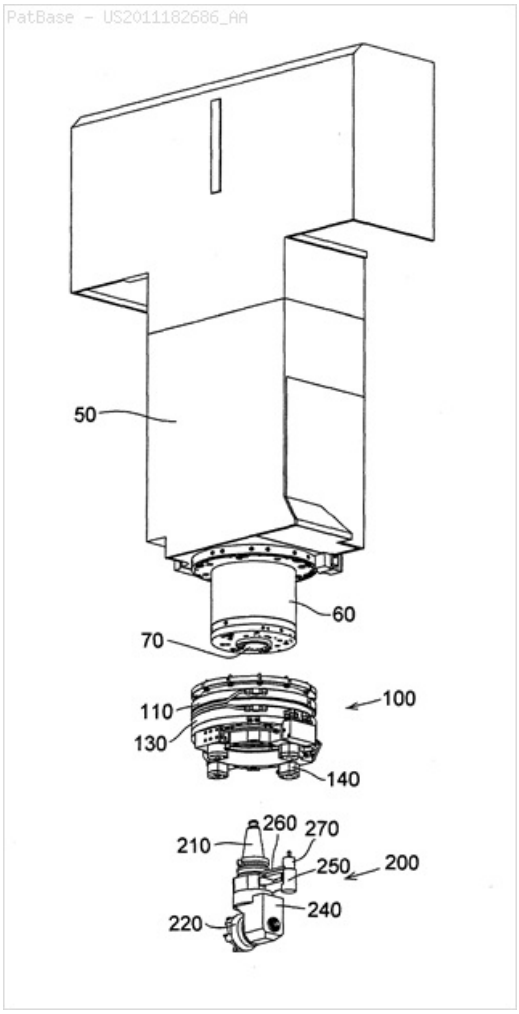
Inventor(s): (std)**:** JOHNSON MATTHEW R ; YAGLEY MICHAEL S

84) Family number: 47616163 (US2011182686A)

Title: ATTACHMENT UNIT FOR FIVE-FACE MACHINING

Abstract: The present invention provides an attachment to be attached to a spindle head of a vertical machining center for gripping an angle tool holder and performing five-face machining. An attachment unit 100 for five-face machining comprises a ring-shaped cylinder member 110 fixed to a lower portion of a spindle head, and a clamp unit 130 directly connected to a piston disposed in the interior of a cylinder member. The clamp unit 130 is equipped with four collet chucks 140 for gripping a pull stud bolt 270 disposed on an arm 250 of an angle tool holder 200 attached to a spindle and drives an angle tool 220.

Classifications:
International (IPC 8-9): B23B31/107 B23C1/12 B23Q16/02 B23Q3/12 B23Q37/00 B23Q5/04 (Advanced/Invention)
CPC: Y10T409/30448 Y10T409/309296 B23Q5/045 B23Q3/12 B23Q16/021
European: B23Q16/02B B23Q3/12 B23Q5/04D2
US: 409/144 409/144P 409/230



Family:

Publication number	Publication date	Application number	Application date
CN102083585 A	20110601	CN200980119767	20090910
CN102083585 B	20130123	CN200980119767	20090910
DE602009012347 D1	20130307	DE200960012347T	20090910
EP2338638 A1	20110629	EP20090843485	20090910
EP2338638 A4	20111102	EP20090843485	20090910
EP2338638 B1	20121226	EP20090843485	20090910
JP2011030432 A1	20130204	JP20100516709T	20090910
JP4565199 B1	20101020	JP20100516709T	20090910
US2011182686 AA	20110728	US20090989473	20090910
US8061939 BB	20111122	US20090989473	20090910
WO11030432 A1	20110317	WO2009JP65870	20090910

Priority:

EP20090843485 20090910 WO2009JP65870 20090910

Probable Assignee: YAMAZAKI MAZAK CORP

Assignee(s): (std): ITO DAISUKE ; USUDA SATOI ; YAMAZAKI MAZAK CORP ; YAMAZAKI MAZAK KABUSHIKI ; YOSHINOBU SATOSHI

Inventor(s): (std): USUDA SATOI ; YOSHINOBU SATOSHI ; ITO DAISUKE ; DAISUKE ITO ; SATOI USUDA ; SATOSHI YOSHINOBU

Agent(s): PATENTANWAELTE OSTRIGA SONNET WIRTHS AND VORWERK; STONA DANIEL ET AL; RENNER OTTO BOISSELLE AND SKLAR LLP; PATENT CORPORATE BODY DAI ICHI KOKUSAI TOKKYO JIMUSHO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

85) Family number: 11870165 (US5482414A)

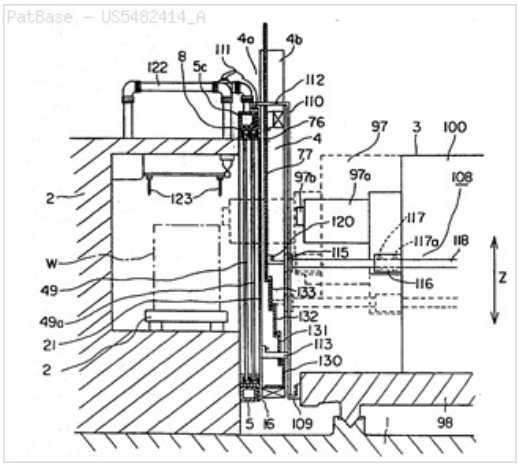
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Title: SLIDE COVER APPARATUS FOR MACHINE TOOL

Abstract: A slide cover apparatus for partitioning a machining head unit from a workpiece support unit comprises first and second cover assemblies. A main board and plural sub-boards of the first cover assembly are telescopically movable in a first horizontal direction, and the main board is formed with a vertically extending rectangular window. A center board and plural sub-boards of the second cover assembly which cover the rectangular window are guided by the main board for vertical movement. The main board is connected with a cross slide table of the machining head unit which is movable in the first horizontal direction, so as to be moved bodily by the cross slide table, while the center board is connected to be moved by a spindle head of the machining head unit. The spindle head on which a tool spindle is rotatably carried extending in a

second horizontal direction perpendicular to the first horizontal direction is guided for vertical movement by a column, which is movable on said cross slide table in the second horizontal direction. The center board is formed with a tool-path hole which permits the tool spindle to pass therethrough, whereby the machining head unit is partitioned from the workpiece support unit except for the tool-path hole.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/01 B23Q11/00 B23Q11/08 (Advanced/Invention);
B23Q1/00 (Advanced/Non-invention);
B23Q1/00 B23Q11/00 B23Q11/08 (Core/Invention)
International (IPC 1-7): B23Q1/00 B23Q11/00 B23Q11/08
CPC: Y10S29/056 B23Q11/0875 B23Q11/0825 Y10T74/219 Y10T409/30392
European: B23Q11/08C B23Q11/08H
US: 160/116 160/202 29/DIG.56 409/134 74/608



Family:

Publication number	Publication date	Application number	Application date
JP2963315 B2	19991018	JP19930259067	19930921
JP2963319 B2	19991018	JP19930297348	19931101
JP6218651 A2	19940809	JP19930259067	19930921
JP7024684 A2	19950127	JP19930297348	19931101
JP8252744 A2	19961001	JP19960071537	19960229
KR100351309 B1	20021206	KR19940023525	19940916
KR19950008031 A	19950415	KR19940023525	19940916
US5482414 A	19960109	US19940309463	19940921

Priority:

JP19920278134 19920922 JP19920258495 19920928 JP19920258496 19920928
JP19930259067 19930921 JP19930297348 19931101 JP19960071537 19960229

Probable Assignee: NAKANO BANKIN KK

Assignee(s): (std): NAKANO BANKIN KK ; TOYODA MACHINE WORKS LTD

Assignee(s): KABUSHIKI KAISHA NAKANO BANKIN ; TOYODA KOKI KABUSHIKI KAISHA ; TOYODA KOKI KK ; TOYODA MACH WORKS LTD

Inventor(s): (std): HAYASHI TAKEHIKO ; MIZUTANI RYUJI ; SUGIYAMA CHUSI ; SUGIYAMA TADASHI

Inventor(s): SUGYAMA TADASHI ; SKIYAMAJUSI ; HAYASI DAKEHIKO ; MIZDA NIRYUGI

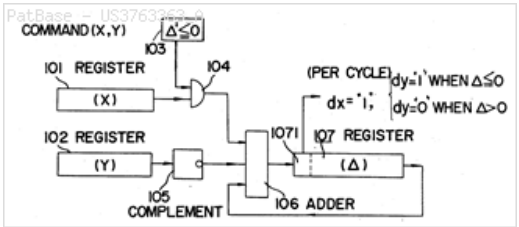
86) Family number: 1195168 (US3763363A)

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Title: NUMERICAL CURVE GENERATOR IN A MACHINE TOOL SYSTEM

Abstract: A method and system for determining the advance of a curve to be created on an X-Y plane, wherein the distances X and Y between the current position of the curve and a specific point assumed in correspondence with the nature of the curve and along the x-axis and the y-axis of the plane are utilized. The large-small relationship of the pulse distribution densities to the axes is decided from the large-small relationship of X and Y. As a result of this decision, the axis of higher pulse distribution density is distributed with pulses and a decision is made whether or not to simultaneously apply pulses to the other axis according to the qualitative value (positive, negative, or zero) of the current operational result as determined by the relationships:

Classifications:
International (IPC 8-9): B23Q5/00 G05B19/18 G05B19/39 G05B19/40 G05B19/404 G05B19/41 G05B19/4103 G05B19/416 G06F17/10 G06F7/60 G06F7/64 G06F7/66 G06F7/68 (Advanced/Invention);
B23Q5/00 G05B19/18 G05B19/19 G05B19/40 G05B19/404 G05B19/41 G05B19/416 G06F17/10 G06F7/60 (Core/Invention)
International (IPC 1-7): B23Q5/00 G05B19/18 G05B19/403 G05B19/41 G05D3/00 G06F1/02 G06F15/34 G06F15/46
CPC: G05B19/39 G05B19/4103 G05B2219/34098 G05B2219/34146 G05B2219/50334 G05B2219/50336 G06F7/64 G06F7/66 G06F7/68
European: G05B19/39 G05B19/4103 G06F7/64 G06F7/66 G06F7/68 S05B219/34098 S05B219/34146 S05B219/50334 S05B219/50336
US: 235/15.2 235/152 708/270 708/274 708/275 708/276 708/277



Family:

Publication number	Publication date	Application number	Application date
DE2114225 A1	19711014	DE19712114225	19710324
DE2114225 C2	19860626	DE19712114225	19710324
GB1353479 A	19740515	GB19710025342	19710419
JP51004220 B4	19760209	JP19700082403	19700919
JP51011745 B4	19760413	JP19700030967	19700409
JP56011325 B4	19810313	JP19700026190	19700327
JP56037561 B4	19810901	JP19700025093	19700324
US3763363 A	19731002	US19710127289	19710323
US3917932 A	19751104	US19730368533	19730611

Priority:

JP19700025093 19700324 JP19700026190 19700327 JP19700030967 19700409
JP19700082403 19700919 US19710127289 19710323 US19730368533 19730611

Probable Assignee: YASKAWA ELECTRIC CORP

Assignee(s): (std): YASKAWA DENKI SEISAKUSHO KITAK ; YASKAWA DENKI SEISAKUSHO KK ; YASKAWA ELECTRIC CORP

Assignee(s): K K YASKAWA DENKI SEISAKUSHO JA ; KABUSHIKI KAISHA YASKAWA DENKI SEISAKUSHO ; KABUSHIKI KAISHA YASKAWA DENKI SEISAKUSHO KITAKYUSHU FUKUOKA JP

Inventor(s): (std): SAITA N ; TANAKA Y ; TANAKA YOICHI ; SAITA NOBUO

Inventor(s): SAITA N JA ; TANAKA Y JA ; TANAKA YOICHI IRUMA SAITAMA JP

87) Family number: 3424168 (US4920631A)

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Title: TOOL RACK FOR MACHINE TOOLS

Abstract: A tool rack includes a rotor mounted in a rotary manner on a column and carrying on its circumference tool magazines in a tight, uninterrupted arrangement over the entire circumference thereof, so that there is no possibility of access for a tool interchanger to the individual tools. A displacement unit with displacement arms positioned above and below the rotor is used for the access to a tool. The displacement arms have magazine grippers which grip a desired, displayed magazine, and advance it over the length of the tools of the adjacent tool holders. By means of the tool interchanger it is now possible to grip the desired tool and bring it to a use point. The rotor thus can be provided with a maximum number of tools, but still permits a very rapid tool exchange, which is particularly advantageous in the case of single-spindle working machines.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/155 B23Q3/157
CPC: Y10T483/1827 Y10T483/1873 B23Q3/15526
European: B23Q3/155D2
US: 211/1.5 211/1.53 29/568 483/61 483/66

PatBase - US4920631_A

Fig. 3

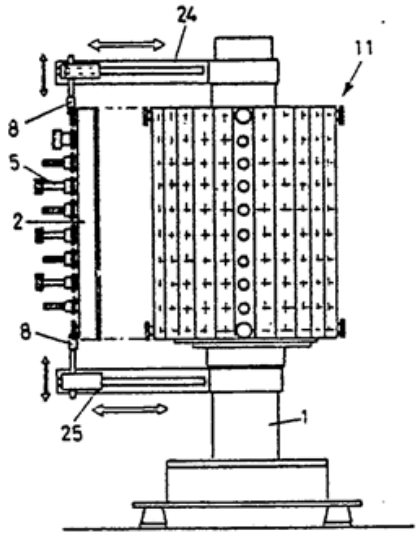
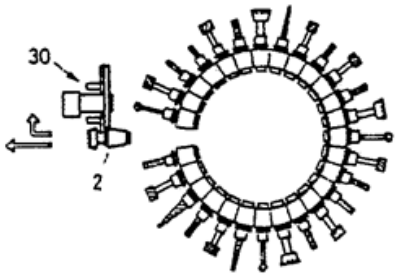


Fig. 4



Family:

Publication number	Publication date	Application number	Application date
CH673610 A	19900330	CH19870003941	19871008
EP0310953 A1	19890412	EP19880116160	19880930
JP1127243 A2	19890519	JP19880254688	19881007
US4920631 A	19900501	US19880251899	19880930

Priority:

CH19870003941 19871008

Probable Assignee: STARRFRASMACHINEN AG

Assignee(s): (std): STARRFRAESMASCHINEN AG

Assignee(s): STARRFRASMACHINEN AG ; STARRFRASMASCHINEN AG ; SHIYUTARUFUREEZUMASHIINEN AG

Inventor(s): (std): NOVAK PETER ; PEETAA NOOFUAKU

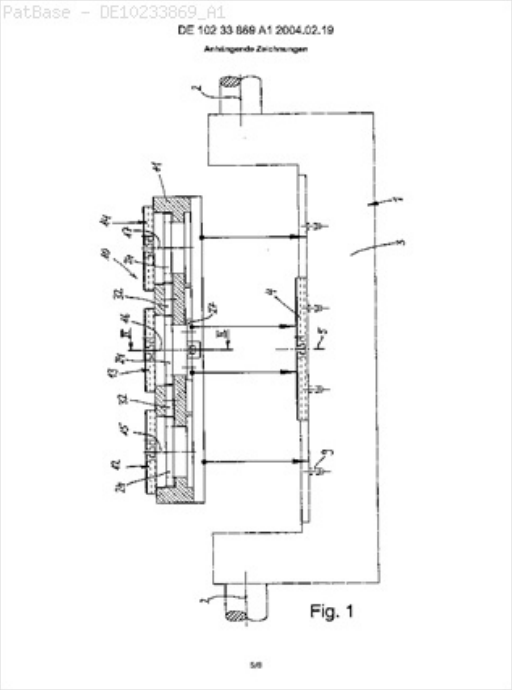
Designated states: AT BE DE ES FR GB IT NL SE

88) Family number: 30310171 (DE10233869A1)

Title: Retrofit resting table for machine tools has detachable resting table bracket with at least two rotating round resting tables

Abstract: The retrofit resting table can be fitted to a CNC machining center. It has a detachable resting table bracket (11) on the machining table (1), on which at least two rotatable round resting tables (12, 13, 14) are mounted so that they are coupled to the base round table (4) in order to make them rotate in the same way as the base round table.

Classifications:
International (IPC 1-7): B23Q1/54
CPC: B23Q1/5406 B23Q5/385 B23Q37/00
European: B23Q1/54A B23Q37/00 B23Q5/38B



Family:

Publication number	Publication date	Application number	Application date
DE10233869 A1	20040219	DE20021033869	20020725
DE10233869 B4	20051208	DE20021033869	20020725

Priority:
DE20021033869 20020725

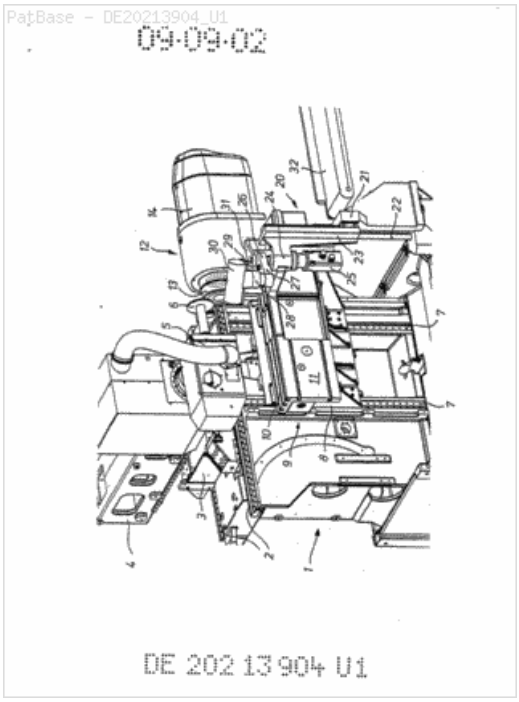
Probable Assignee: HUBER ROLAND
Assignee(s): (std)**:** HUBER ROLAND
Inventor(s): (std)**:** HUBER ROLAND

89) Family number: 28342171 (DE20213904U1)

Title: DEVICE FOR DELIVERING PROCESSED WORKPIECES FROM THE WORKING CHAMBER OF A MACHINE TOOL COMPRISES A HINGE ARM SYSTEM MOUNTED ON A LIFTING UNIT, AND A MECHANISM TRANSFERRING A WORKPIECE FROM A WORKPIECE HOLDER ONTO A SURFACE

Abstract: Device for delivering processed workpieces from the working chamber of a machine tool comprises a lifting unit (20) arranged on a machine part and motor-driven between an upper and a lower position, a hinge arm system (26) mounted on the lifting unit and having elements that are horizontally motor-driven, a workpiece holder (29) supported by the hinge arm system and moved by the lifting unit and the hinge arm system between an upper holding position for the processed workpiece and a lower laterally offset delivery position, and a mechanism transferring the workpiece from the workpiece holder onto a surface (32). Preferred Features: The lifting unit contains a vertical carriage (23) moved on fixed guides by a linear drive (22) and on which is arranged a support bearing (24) for the hinge arm system. The workpiece holder is a dish-like container.

Classifications:
International (IPC 8-9): B23Q7/04 B23Q7/16 B25J18/02 (Advanced/Invention); B23Q7/04 B23Q7/16 B25J18/00 (Core/Invention)
International (IPC 1-7): B25J18/06
CPC: B23Q7/04 B23Q7/16 B25J18/02
European: B23Q7/04 B23Q7/16 B25J18/02



Family:

Publication number	Publication date	Application number	Application date
DE20213904 U1	20030327	DE20022013904U	20020909

Priority:

DE20022013904U 20020909

Probable Assignee: DECKEL MAHO PFRONTEN GMBH

Assignee(s): (std)**:** DECKEL MAHO PFRONTEN GMBH

90) Family number: 65158172 (WO17085975A1)

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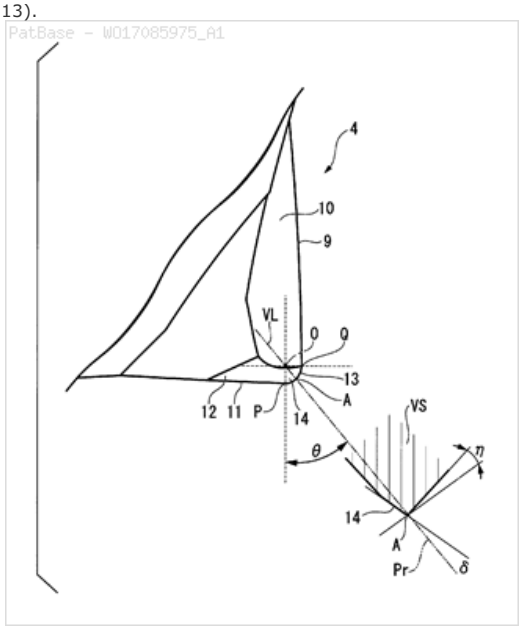
Title: REPLACEABLE-CUTTING-EDGE ROTARY CUTTING TOOL AND INSERT

Abstract: In this replaceable-cutting-edge rotary cutting tool (6), a cutting edge part (4) of an insert (5) is provided with a bottom cutting edge (11), a radiused-corner cutting edge (13), and a chamfered surface (15). The radial-direction rake angle (delta) of the radiused-corner cutting edge (13) has a negative value for the entire blade length of the radiused-corner cutting edge (13), and the radial-direction rake angle (delta) has the smallest value at the intermediate part located between a pair of boundary points (P, Q) of the radiused-corner cutting edge (13).

Classifications:

International (IPC 8-9): B23C5/10 B23C5/20 B23C5/22 (Advanced/Invention)

CPC: B23C5/10 B23C5/20 B23C5/22 B23C2200/203 B23C2200/286 B23C2200/326 B23C2210/165 B23C2210/168



Family:

Publication number	Publication date	Application number	Application date
CN108290231 A	20180717	CN201680066026	20160819
EP3378589 A1	20180926	EP20160865978	20160819
JP2017085975 A1	20171116	JP20160569092T	20160819
JP6086179 B1	20170301	JP20160569092T	20160819
KR20180069016 A	20180622	KR20187013421	20160819
WO17085975 A1	20170526	WO2016JP74240	20160819

Priority:

JP20150223958 20151116 WO2016JP74240 20160819

Probable Assignee: MITSUBISHI HITACHI TOOL ENG LTD

Assignee(s): (std): MITSUBISHI HITACHI TOOL ENG LTD

Assignee(s): MITSUBISHI HITACHI TOOL ENGINEERING LTD

Inventor(s): (std): HAYASHI YUUKI ; INAGAKI FUMIHIKO ; KIUCHI YASUHIRO ; KOBAYASHI YOSHIYUKI ; NAKAMIGAWA TAKAO

Agent(s): HOFFMANN EITLE; SHIGA MASATAKE ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

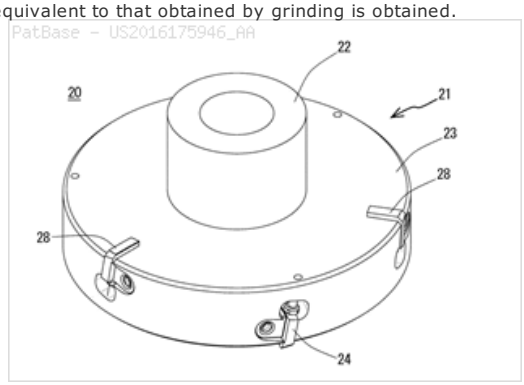
91) Family number: 62699173 (US2016175946A)

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Title: MILLING CUTTER AND MACHINING METHOD USING THE SAME

Abstract: A milling cutter is composed of a tool body having an approximately cylindrical or disk-like shape and a plurality of edge portions provided on at least an outer peripheral portion of one end of the tool body at predetermined intervals along a circumferential direction. The edge portion has a major cutting edge and a minor cutting edge that perform an operation of cutting a workpiece, the major cutting edge is positioned outside the minor cutting edge in a radial direction, and the minor cutting edge has a cutting edge angle that is an angle with respect to a plane orthogonal to a center axis of the tool body and set so as to be an elevation angle open outward in the radial direction. When surface machining is performed on a workpiece with the milling cutter, a high degree of machined surface accuracy equivalent to that obtained by grinding is obtained.

Classifications:
International (IPC 8-9): B23C5/06 B23C5/08 B23C5/20 (Advanced/Invention)
CPC: B23C2210/0442 B23C2220/04 B23C2220/28 B23C5/06 B23C2200/208 B23C2222/14
US: 407/51 409/131



Family:

Publication number	Publication date	Application number	Application date
CN105710427 A	20160629	CN201510896345	20151208
EP3034216 A1	20160622	EP20150200260	20151215
JP2016117113 A2	20160630	JP20140256608	20141218
JP6457257 B2	20190123	JP20140256608	20141218
US2016175946 AA	20160623	US20150959914	20151204
US10029318 BB	20180724	US20150959914	20151204

Priority:

JP20140256608 20141218

Probable Assignee: ADVANCED RESEARCH FOR MFG SYSTEMS LLC

Assignee(s): (std): ADVANCED RES FOR MFG SYSTEMS LLC ; DMG MORI CO LTD ; INTELLIGENT MFG SYSTEMS INT ; INTELLIGENT MFG SYS INT ; DMG MORI SEIKI CO LTD

Assignee(s): INTELLIGENT MANUFACTURING SYSTEMS INTERNATL ; INTELLIGENT MFG SYSTEMS INTERNATL ; DMG MORI SEIKI CO ; ADVANCED RESEARCH FOR MANUFACTURING SYSTEMS LLC ; ADVANCED RESEARCH FOR MFG SYSTEMS LLC ; DMG MORI CO

Inventor(s): (std): NISHIMOTO MASAYA ; SOSHI MASAKAZU ; UEDA EISAKU ; YAMAZAKI KAZUO ; SARAIE HIDENORI ; ARAYA HIDEKI ; Y NISHIMOTO MASAYA

Agent(s): ISARPATENT; MURAKAMI SATOSHI; MILLER MATHIAS AND HULL LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

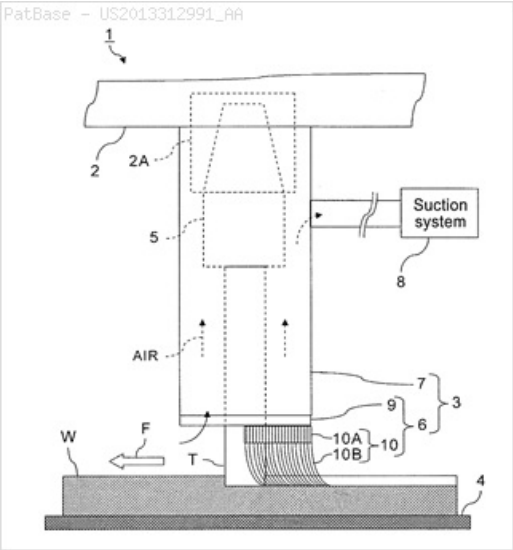
92) Family number: 55198174 (US2013312991A)

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Title: ATTACHMENT FOR DUST COLLECTION FOR CUTTING MACHINING, DUST COLLECTING DUCT FOR MACHINE TOOLS, TOOL HOLDER FOR MACHINE TOOLS, AND MACHINE TOOL

Abstract: An attachment for dust collection for cutting machining includes a rotation mechanism and a dust collection enclosure for enclosing at least part of a tool. The dust collection enclosure is rotatably configured by being fixed to the rotation mechanism. A gap for checking a machining state is provided in the dust collection enclosure.

Classifications:
International (IPC 8-9): B08B15/02 B23B21/00 B23C9/00 B23Q11/00 B23Q11/08 B23Q3/12 (Advanced/Invention)
CPC: B23Q11/0042 B23Q11/0046 B23Q11/0891 Y02P70/171 Y10T409/30392 Y10T409/304088
US: 173/197



Family:

Publication number	Publication date	Application number	Application date
CN103419070 A	20131204	CN201310198405	20130524
CN103419070 B	20160810	CN201310198405	20130524
DE602013004071 D1	20160121	DE201360004071T	20130425
EP2666588 A1	20131127	EP20130165296	20130425
EP2666588 B1	20151209	EP20130165296	20130425
JP2013244556 A2	20131209	JP20120119149	20120525
JP5947110 B2	20160706	JP20120119149	20120525
US2013312991 AA	20131128	US20130892809	20130513
US9527181 BB	20161227	US20130892809	20130513

Priority:

JP20120119149 20120525 EP20130165296 20130425

Probable Assignee: SUBARU CORP

Assignee(s): (std)**:** DMG MORI SEIKI CO LTD ; FUJI HEAVY IND LTD ; MORI SEIKI SEISAKUSHO KK

Assignee(s): MORI SEIKI CO ; SUBARU CORP ; DMG MORI SEIKI CO ; FUJI JUKOGYO KK ; MORI SEIKI CO LTD ; DMG MORI SEIKI CO LTD YAMATOKORIYAMA SHI

Inventor(s): (std)**:** OODE HISAYUKI ; NAKAHATA TATSUO ; MATSUO SHINYA ; HIDETA MORIHIRO ; SATO KOJI ; SATO YASUJI ; OIDE HISAYUKI

Agent(s): VOSSIUS AND PARTNER PATENTANWAELTE RECHTSANWAELTE MBB; VOSSIUS AND PARTNER PATENTANWAELTE RECHTSANWAELTE MBB; SMITH GAMBRELL AND RUSSELL LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

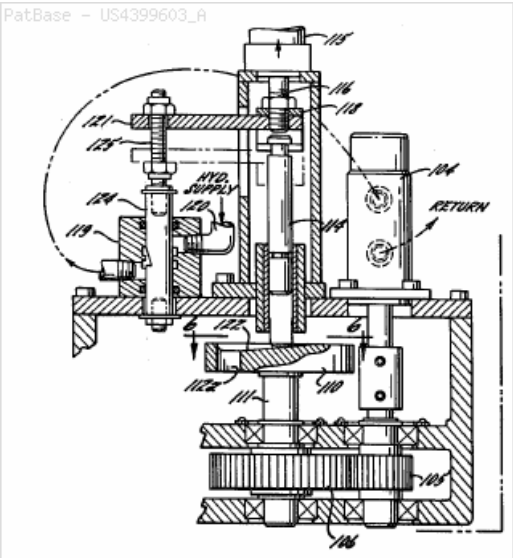
93) Family number: 3844176 (US4399603A)

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Title: POWER GRIP TOOL EXCHANGE ARM FOR MACHINING CENTER

Abstract: An improved tool exchange arm for use in the automatic tool changer of a machining center adapted for boring, drilling, milling, tapping and tool changing operations under numerical control. The tool exchange arm may be incorporated in machining centers of either vertical or horizontal spindle configuration. It operates with current commercial tapered shank toolholders, is capable of precisely and securely positioning itself for engagement with the toolholders to be exchanged, and rotates quickly for tool exchange without sharp impacts at the extremities of its rotational stroke.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: B23Q3/1554 B23Q3/15773 Y10T74/1494 Y10T483/13 Y10T483/176 Y10T483/1767
European: B23Q3/155D3 B23Q3/157D
US: 29/568 294/103.1 294/103R 483/41 483/44 483/7 74/813L



Family:

Publication number	Publication date	Application number	Application date
US4399603 A	19830823	US19800207664	19801117

Priority:

US19800207664 19801117

Probable Assignee: GIDDINGS AND LEWIS

Assignee(s): (std): GIDDINGS AND LEWIS

Assignee(s): GIDDINGS AND LEWIS INC ; CITICORP USA INC

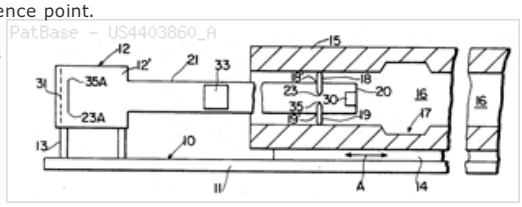
Inventor(s): (std): REED ROBERT E

94) Family number: 29416177 (US4403860A)

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Title: APPARATUS FOR DETERMINING DIMENSIONS

Abstract: Apparatus and method for determining dimensions of an object. In one embodiment, apparatus comprises a support structure, means for positioning an object, at least one gage member having a contact portion for contacting a surface of a positioned object and an edge movable with said contact portion. The gage member is positioned in a contact position in which it is in contact, or nearly in contact, with a position object. The position of the edge is proportional to a dimension of the object between the contacted surface and a reference point of the object. The reference point may be within the object, such as an axis of rotation, or on a surface of the object. A light source is provided to direct light onto the edge and a lens is used to focus the image of the edge on a light detector comprising a plurality of light sensitive elements capable of producing an output signal in response to incident light. Means are provided to analyze the output signals to determine the dimension of the object between the contacted surface and the reference point.



Classifications:

International (IPC 8-9): F02F1/24 G01B11/00 G01B11/08 G01B11/12 G01B11/24 G01S17/46 G01S17/89 G01S5/16 G05B19/401 G05B19/4065 G05B19/42 G06F12/06 (Advanced/Invention); F02F1/24 G01B11/00 G01B11/08 G01B11/24 G01S17/00 G01S5/00 G05B19/401 G05B19/406 G05B19/42 G06F12/06 (Core/Invention)

International (IPC 1-7): B23P13/00 B23P15/00 B24B29/00 B27G23/00 G01B11/00 G01B11/02 G01B11/12 G01B11/14 G01B11/24 G01B11/30 G06F15/46 G06F19/00

CPC: G05B19/4015 B23Q17/0957 G05B2219/37227 G05B2219/37233 G05B2219/37234 G05B2219/37246 G01S7/497 G05B2219/35349 G05B2219/36478 G05B2219/37008 G05B2219/37206 G05B2219/37228 G05B2219/37335 G05B2219/37357 G05B2219/37559 G05B2219/37574 G05B2219/37575 G05B2219/50026 G05B2219/50069 G05B2219/50375 G01S17/89 Y10T403/1641 Y10T29/5136 G01S17/48 F02F1/24 G01B11/08 G01B11/12 G01B11/24 G01B11/2433 G01S5/16 G05B19/401 G05B19/4065 G05B19/4207 G05B2219/50071 G05B2219/50203 G05B2219/50276 Y10T29/4927 Y10T29/49995 Y10T409/303864 G01B11/00 G01S17/46 G06F12/0615 B23K26/361

European: F02F1/24 G01B11/00 G01B11/08 G01B11/12 G01B11/24 G01B11/24G G01S17/46 G01S17/48 G01S17/89 G01S5/16 G05B19/401 G05B19/401C G05B19/4065 G05B19/42B2 G06F12/06C S05B219/35349 S05B219/36478 S05B219/37008 S05B219/37206 S05B219/37227 S05B219/37228 S05B219/37233 S05B219/37234 S05B219/37246 S05B219/37335 S05B219/37357 S05B219/37559 S05B219/37574 S05B219/37575 S05B219/50026 S05B219/50069 S05B219/50071 S05B219/50203 S05B219/50276 S05B219/50375

US: 250/208.1 250/559.08 250/559.33 29/156.4R 29/557 29/564 29/888.06 291/564R 298/880.6 33/178F 33/185R 33/542 33/626 356/1 356/241 356/3.01 356/355 356/371 356/375 356/376 356/378 356/379 356/505 356/600 356/607 356/608 356/613 356/615 356/626 356/628 364/474.05 364/474.15 364/474.16 364/474.17 364/474.37 382/152 403/16 409/133 451/6 451/9 51/165.72 700/163 700/173 700/174 700/175 700/195 711/E12.08

Family:

Publication number	Publication date	Application number	Application date
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DE3105568 A1	19820211	DE19813105568	19810216
EP0648358 A1	19950419	EP19930914062	19930517
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GB2072837 A1	19811007	GB19810007527	19810310
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US4403860 A	19830913	US19800134465	19800327
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US5012574 A	19910507	US19870042527	19870427
US5112131 A	19920512	US19900509295	19900416
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US6138055 A	20001024	US19930161304	19931202
US6161055 A	20001212	US19950566449	19951201
WO9323820 A1	19931125	WO1993US04857	19930517

Priority:

US19800134465 19800327
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US19900577086 19900828
US19920884331 19920518
US19930161304 19931202
US19950566449 19951201

Probable Assignee: LMI TECHNOLOGIES INC

Assignee(s): (std): DIFFRACTO LTD ; GREAT LAKES INTELLECTUAL PROPE ; SENSOR ADAPTIVE MACH ; SENSOR ADAPTIVE MACHINES INC ; SENSOR ADAPTIVE MACHINE INC ; PRYOR TIMOTHY R ; LMI TECHNOLOGIES INC ; LASER MEASUREMENT INT INC

Assignee(s): SENSOR ADAPTIVE MACHINES INC SAMI ; SENSOR ADAPTIVE MACHINES INC (SAMI) ; LMI DIFFRACTO LTD ; GREAT LAKES INTELLECTUAL PROPERTY ; GREAT LAKES INTELLECTUAL PROPERTY LTD ; LASER MEASUREMENT INT

Inventor(s): (std): PRYOR TIMOTHY R SENSOR ADAPTIV ; PRYOR TIMOTHY R

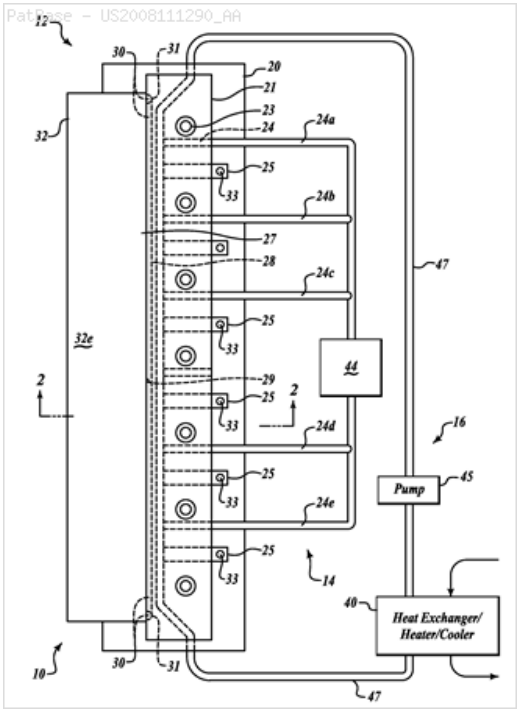
Inventor(s): R PRYOR TIMOTHY
Agent(s): SMART AND BIGGAR
Designated states: AT BE CA CH DE DK ES FR GB GR IE IT JP LU MC NL PT SE US

95) Family number: 41799177 (US2008111290A)

Title: APPARATUS, SYSTEMS AND METHODS FOR WORK PIECE ISOTHERMAL DRY MACHINING AND ASSEMBLY FIXTURES

Abstract: Isothermal work piece holding system uses vibration-damping, low thermal conductivity, low TCE polymer-composite holding body(ies) to damp machine tool vibration and chatter while accurately, rigidly maintaining the work piece in position by vacuum and/or mechanical clamps during machining. Cooling fluid channels having high thermal conductivity plates in contact with the work piece transfer thermal energy to/from it to maintain it isothermal during machining, inspection and assembly, eliminating dimensional changes and increasing process repeatability. Minimizing chatter reduces cycle time and improves surface finish which eliminates manual re-work. The system employs vacuum and coolant fluid pumps, heater/cooler(s), temperature sensor(s) and controller(s) to achieve highly accurate dimensional tolerances machining of parts which reduces error stack-up and assembly costs. Isothermal fixtures are disclosed for assembling parts and automated rivet settings in precise locations with reduced use of shims. The inventive isothermal system is applicable to control of TCE/I^2R effects in linear induction motors.

Classifications:
International (IPC 8-9): B23Q B23Q1/01 B23Q1/28 B23Q11/00 B23Q11/10 B23Q11/12 B23Q11/14 B23Q3/02 B23Q3/06 B23Q3/08 B23Q5/28 B23Q7/00 B25B11/00 (Advanced/Invention); B23Q1/00 B23Q1/26 B23Q11/00 B23Q3/02 B23Q3/06 B23Q5/22 B23Q7/00 B25B11/00 (Core/Invention); B23Q11/12 B23Q11/14 B23Q3/06 (Core/Non-invention)
International (IPC 1-7): B23Q1/28
CPC: Y10T29/49998 B25B11/005 B23Q3/088 B23Q11/141 B23Q11/143
European: B23Q11/14A B23Q11/14B B23Q3/08 B25B11/00C
US: 269/21 269/21P 29/559



Family:

Publication number	Publication date	Application number	Application date
AU2007323895 AA	20080529	AU20070323895	20071113
AU2007323895 BB	20101216	AU20070323895	20071113
BRPI0718669 A2	20131126	BR2007PI18669	20071113
CA2669215 AA	20090511	CA20072669215	20071113
CA2669215 C	20100427	CA20072669215	20071113
CN101573207 A	20091104	CN200780042219	20071113
CN101573207 B	20131106	CN200780042219	20071113
DE602007031195 D1	20130814	DE200760031195T	20071113
EP2081732 A2	20090729	EP20070864318	20071113
EP2081732 A4	20100407	EP20070864318	20071113
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HK1134061 A1	20100416	HK20100102113	20100301
IN02597DN2009 A	20090619	IN2009DN02597	20090421
JP2010509084 T2	20100325	JP20090536538T	20071113
JP5165690 B2	20130321	JP20090536538T	20071113
KR101328434 B1	20131114	KR20097012092	20071113
KR20090089400 A	20090821	KR20097012092	20071113
MY146943 A	20121015	MY20090001710	20071113
RU2009122449 A	20101220	RU20090122449	20071113
RU2417871 C2	20110510	RU20090122449	20071113
TW200911449 A	20090316	TW20070142833	20071113
TWI334809 B	20101221	TW20070142833	20071113
US2008111290 AA	20080515	US20070937231	20071108
US7568275 BB	20090804	US20070937231	20071108
WO08063991 A2	20080529	WO2007US84506	20071113
WO08063991 A3	20080828	WO2007US84506	20071113
WO08063991 B1	20081009	WO2007US84506	20071113

Priority:
US20060865537P 20061113 US20070937231 20071108 EP20070864318 20071113 WO2007US84506 20071113

Probable Assignee: ROBERT JENSEN

Assignee(s): (std): DZHENSEN ROBERT M ; JENSEN ROBERT M ; ROBERT JENSEN ; ROBERT M JENSEN

Assignee(s): JENSEN ROBERT M ORTING

Inventor(s): (std): JENSEN ROBERT M ; DZHENSEN ROBERT M

Inventor(s): JENSEN ROBERT ; JENSEN ROBERT M ORTING ; ROBERT M JENSEN

Agent(s): BALDWINS INTELLECTUAL PROPERTY; DENNISON ASSOCIATES; LUCEY MICHAEL; PURDYLUCEY INTELLECTUAL PROPERTY; WENPING AND CO; JACQUES M DULIN ESQ DBA INNOVATION LAW GROUP LTD; INNOVATION LAW GROUP LTD; JACQUES M; DULIN JACQUES M ET AL

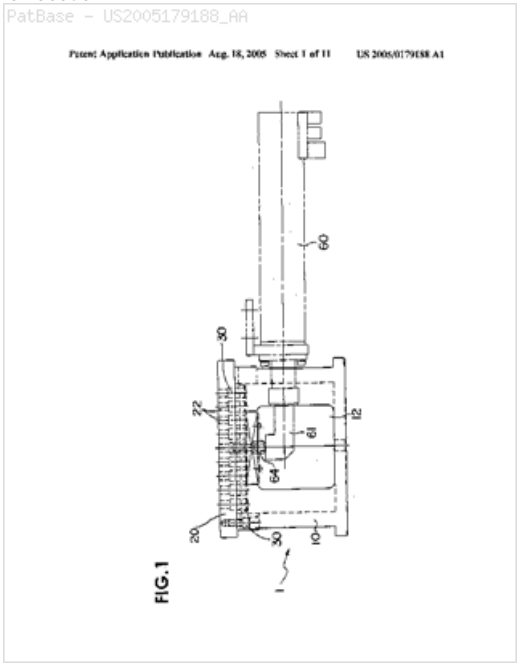
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96) Family number: 32175180 (US2005179188A)

Title: MACHINING JIG

Abstract: The invention provides a standardized machining jig to be used in a machining center for processing various works. A machining jig **1** mounted on an exchange table T_1 of a machining center has a jig base **10** and a pallet **20**, and the pallet **20** is equipped with a large number of even-pitched through holes. Standard bolts **30** are inserted to the through holes, which are prevented from falling to the floor by a stopper plate **80**. Standardized supporting blocks **42, 43** and positioning blocks **50** are fixed to the pallet **20** via bolts **30**. A work **100** is fixed to the supporting blocks and the positioning blocks. The bolts **30** are manipulated via a bolt runner **60** attached to a robot arm.

Classifications:
International (IPC 8-9): B23Q3/00 B23Q3/06 B23Q3/10 B23Q7/00 (Advanced/Invention); B23Q3/00 B23Q3/02 B23Q3/06 B23Q7/00 (Core/Invention)
International (IPC 1-7): B23Q3/00 B23Q3/06 B23Q3/10 B23Q7/00
CPC: B23Q3/103 B23Q3/10
European: B23Q3/10D
US: 269/289R 269/309



Family:

Publication number	Publication date	Application number	Application date
CN100368146 C	20080213	CN200510007988	20050216
CN1657228 A	20050824	CN200510007988	20050216
DE602005000828 D1	20070524	DE200560000828T	20050208
DE602005000828 T2	20080110	DE200560000828T	20050208
EP1566237 A1	20050824	EP20050002598	20050208
EP1566237 B1	20070411	EP20050002598	20050208
JP2005230942 A2	20050902	JP20040040737	20040218
JP4326982 B2	20090909	JP20040040737	20040218
US2005179188 AA	20050818	US20050055429	20050211
US7357385 BB	20080415	US20050055429	20050211

Priority:

JP20040040737 20040218

Probable Assignee: YAMAZAKI MAZAK CORP

Assignee(s): (std): SATO HIROTOSHI ; YAMAZAKI MAZAK CORP

Inventor(s): (std): HIROTOSHI SATO ; SATO HIROTOSHI

Agent(s): MARK D SARALINO GENERAL RENNER OTTO BOISELLE AND SKLAR LLP; RENNER OTTO BOISSELLE AND SKLAR LLP

Designated states: DE FR GB IT

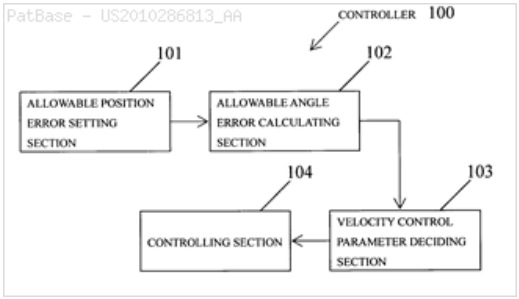
97) Family number: 47528181 (US2010286813A)

Title: CONTROLLER FOR MACHINE TOOL AND FIVE-AXIS SIMULTANEOUS CONTROL MACHINE TOOL CONTROLLED THEREBY

Abstract: It is an object of the present invention to provide a controller for a machine tool and a five axis simultaneous control machine tool controlled thereby which can improve machining accuracy in controlling a pivoting axis of the machine

tool. The controller comprises an allowable position error setting member 101 setting an allowable position error DELTA between a commanded machining position P1 and an actual machining position P2, a velocity control parameter deciding member 103 deciding a velocity control parameter of the pivoting axes of the A-axis and the B-axis in accordance with the allowable position error DELTA being set and a distance of said actual machining position P2 from the pivoting axes of the A-axis and the B-axis, and a controlling member 104 controlling a velocity of the pivoting axes of the A-axis and the B-axis based on the velocity control parameter.

Classifications:
International (IPC 8-9): B23Q15/08 G05B19/404 G05B19/406 G05B19/416 G06F19/00 (Advanced/Invention); B23C3/00 (Advanced/Non-invention)
CPC: G05B19/404 G05B19/4163
European: G05B19/404 G05B19/416A
US: 700/174 700/174P 700/188 700/188S



Family:

Publication number	Publication date	Application number	Application date
DE602010010148 D1	20131107	DE201060010148T	20100504
EP2249221 A2	20101110	EP20100161823	20100504
EP2249221 A3	20120425	EP20100161823	20100504
EP2249221 B1	20130911	EP20100161823	20100504
JP2010262467 A2	20101118	JP20090112572	20090507
JP5293389 B2	20130918	JP20090112572	20090507
US2010286813 AA	20101111	US20100768123	20100427
US8712576 BB	20140429	US20100768123	20100427

Priority:
JP20090112572 20090507 EP20100161823 20100504

Probable Assignee: JTEKT CORP
Assignee(s): (std): JTEKT CORP ; YAMADA YOSHIHIKO
Inventor(s): (std): YAMADA YOSHIHIKO
Inventor(s): YAMADA YOSHIHIKO OSAKA SHI
Agent(s): TBK; TBK PATENT; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

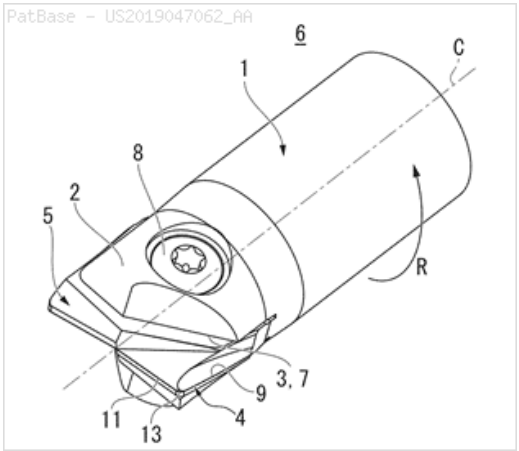
98) Family number: 65158183 (US2019047062A)

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Title: INDEXABLE ROTARY CUTTING TOOL AND INSERT

Abstract: An indexable rotary cutting tool comprising, a twist angle of the outer peripheral cutting edge having a positive value, an axial rake angle of the cutting edge of the corner R at a boundary point between the cutting edge of the corner R and the outer peripheral cutting edge has a positive value, the axial rake angle of the cutting edge of the corner R at the reference point has a negative value, at least the radial rake angle in a region between the boundary point and the reference point in an entire edge length region of the cutting edge of the corner R has a negative value, and the radial rake angle of the cutting edge of the corner R at the reference point is smaller than the radial rake angle of the cutting edge of the corner at the boundary point.

Classifications:
International (IPC 8-9): B23C5/00 B23C5/10 B23C5/20 B23C5/22 (Advanced/Invention)
CPC: B23C5/20 B23C5/22 B23C5/109 B23C5/202 B23C2200/28 B23C2200/326 B23C2210/165 B23C5/2208 B23C5/003 B23C2200/0444 B23C2200/086 B23C2200/203 B23C2200/361 B23C2210/74 B23C2210/503 B23C2250/16 B23C2200/283 B23C5/10



Family:

Publication number	Publication date	Application number	Application date
CN108290233 A	20180717	CN201680070924	20160819
EP3415256 A1	20181219	EP20160889871	20160819
JP2017138170 A1	20180215	JP20160569093T	20160819
JP6086180 B1	20170301	JP20160569093T	20160819
KR20180098665 A	20180904	KR20187022108	20160819
US2019047062 AA	20190214	US20160076495	20160819
WO17138170 A1	20170817	WO2016JP74255	20160819

Priority:

JP20160025175 20160212 WO2016JP74255 20160819

Probable Assignee: MITSUBISHI HITACHI TOOL ENG LTD

Assignee(s): (std): MITSUBISHI HITACHI TOOL ENG LTD

Assignee(s): MITSUBISHI HITACHI TOOL ENGINEERING LTD

Inventor(s): (std): HAYASHI YUUKI ; INAGAKI FUMIHIKO ; KIUCHI YASUHIRO ; KOBAYASHI YOSHIYUKI ; NAKAMIGAWA TAKAO

Agent(s): HOFFMANN EITLE; SHIGA MASATAKE ET AL

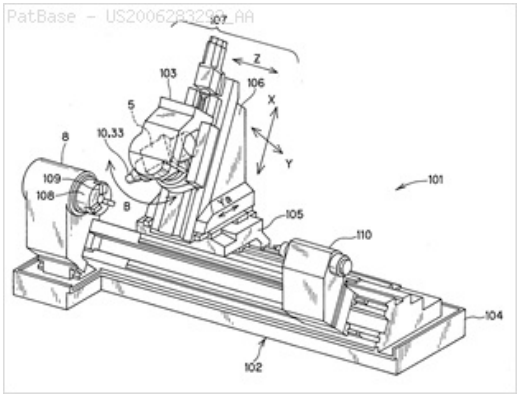
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99) Family number: 34024185 (US2006283292A)

Title: MULTI-AXIS TURNING CENTER AND TURNING METHOD

Abstract: A multi-axis turning center has a spindle head, a spindle rotatably supported by the spindle head, and a table or a headstock for gripping and rotating a workpiece thereon. The table or the headstock is disposed in confronting relation to the spindle. The spindle head is relatively movable in the three mutually transverse axes directions to the workpiece gripped and rotated by the table or the headstock. A multi-point turning tool is mounted on the spindle and having a plurality of tips, for turning the workpiece gripped and supported by the table or the headstock. The spindle head is movable to translate the multi-point turning tool to one of positions around the workpiece, and the tips are selectively used depending on the one of the positions to turn the workpiece.

Classifications:
International (IPC 8-9): B23B3/00 B23B7/00 (Advanced/Invention); B23B3/00 (Advanced/Non-invention); B23B3/00 B23B7/00 (Core/Invention); B23B3/00 (Core/Non-invention)
CPC: Y10T29/5114 Y10T82/10 Y10T82/25 Y10T82/2511 B23B3/065 B23B29/24
European: B23B29/24 B23B3/06B
US: 29/27C 82/1.11 82/117 82/122



Family:

Publication number	Publication date	Application number	Application date
US2006283292 AA	20061221	US20050152174	20050615
US7506423 BB	20090324	US20050152174	20050615

Priority:

US20050152174 20050615

Probable Assignee: MORI SEIKI CO LTD

Assignee(s): (std): MORI SEIKI SEISAKUSHO KK

Assignee(s): MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std): IWABUCHI NAOKI ; IIZUKA MASUHIRO

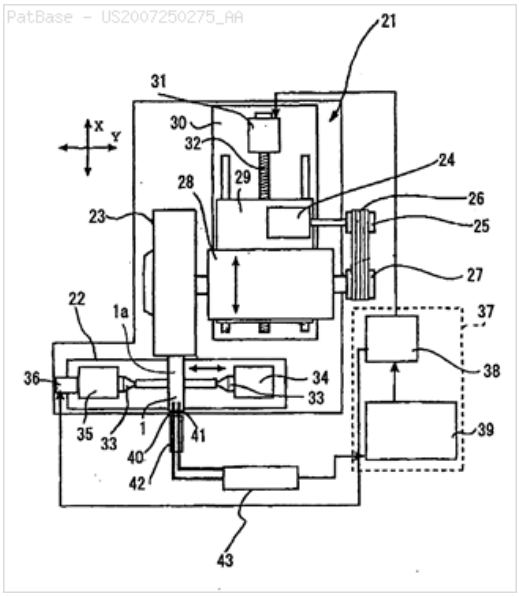
Agent(s): ARMSTRONG KRATZ QUINTOS HANSON AND BROOKS LLP; KRATZ QUINTOS AND HANSON LLP

100) Family number: 32712186 (US2007250275A)

Title: METHOD AND DEVICE FOR DETECTING SURFACE STATE OF WORK PIECE

Abstract: A work piece 1 mounted on a movable table 22 is rotated while adjusting cutting depths of a grinding wheel 23 by means of feed motor so as to perform cylindrical grinding. During the cylindrical grinding, a thermocouple 42 is pushed to and caused to contact the rotating cylindrical grinding surface 1 a of the work piece 1 at a constant pressure and thermoelectromotive force generated by the thermocouple 42 is measured. Surface roughness data corresponding to the measured thermoelectromotive force are obtained on the basis of the thermoelectromotive data obtained by the measurement and correlation between thermoelectromotive force and surface roughness concerning a known standard surface previously obtained and memorized. The surface roughness data are output and displayed on a display section. Therefore, an in-process measurement of surface state of the work piece 1 can be performed, while the machining such as cylindrical grinding is being carried out.

Classifications:
International (IPC 8-9): G01K7/02 B23Q17/00 B23Q17/20 B24B49/10 G01B21/30 G01B5/28 G01K13/08 G01K17/00 G01K7/04 G01N25/20 G06F15/00 (Advanced/Invention); G01K13/08 G01K7/02 (Advanced/Non-invention); G01B5/28 G01K17/00 G01K7/02 G01N25/20 G06F15/00 (Core/Invention)
International (IPC 1-7): G01B5/28 G01K7/02
CPC: G01B21/30 G01K7/02 G01K13/08 G01N25/20
European: G01B21/30 G01K13/08 G01K7/02 G01N25/20
US: 374/179 374/E13.01 374/E7.004 702/133 702/136 702/168 702/33 702/34 73/104



Family:

Publication number	Publication date	Application number	Application date
EP1804021 A1	20070704	EP20050783554	20050909
EP1804021 A4	20120509	EP20050783554	20050909
JP2006028295 A1	20080508	JP20060535212T	20050909
JP2012021992 A2	20120202	JP20110162580	20110725
JP4882069 B1	20120222	JP20060535212T	20050909
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JP4998907 B2	20120815	JP20110162580	20110725
TW200617353 A	20060601	TW20050130977	20050909
TWI267625 B	20061201	TW20050130977	20050909
US2007250275 AA	20071025	US20050661969	20050909
US7463994 BB	20081209	US20050661969	20050909
WO06028295 A1	20060316	WO2005JP17089	20050909

Priority:

JP20040298203 20040910 JP20060535212 20050909 WO2005JP17089 20050909
JP20110162580 20110725

Probable Assignee: OKAYAMA UNIV

Assignee(s): (std)**:** OHASHI KAZUHITO ; OHASI KAZUHITO ; OKAYAMA UNIV ; TSUKAMOTO SHINYA ; UNIV OKAYAMA

Assignee(s): OKAYAMA UNIVERSITY

Inventor(s): (std)**:** OHASI KAZUHITO ; TSUKAMOTO SHINYA ; OHASHI KAZUHITO

Agent(s): SUGIMURA KOSAKU; OLIFF AND BERRIDGE PLC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

101) Family number: 64163187 (US2016346884A)

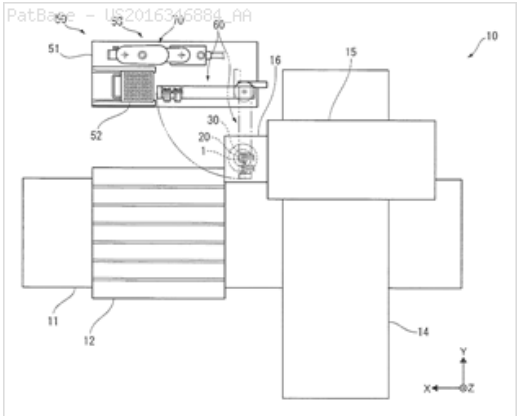
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Title: MACHINE TOOL

Abstract: A machine tool includes: a spindle head; a spindle rotatably supported on the spindle head; a chuck unit configured to chuck a tool inserted in an axis direction of the spindle; a tool holder configured to hold the tool attached to the chuck unit; and a rotary arm configured to move the tool holder to a reachable position of the spindle. The tool holder is supported on the rotary arm by a support mechanism, and the support mechanism includes a displacement following mechanism configured to support the tool holder on the rotary arm in a manner to be capable of displacing the tool holder in a direction intersecting an axis of the tool.

Classifications:

International (IPC 8-9): B23B31/20 B23C5/26 B23Q3/12 B23Q3/155 B23Q3/157 B23Q3/16 B23Q5/04 (Advanced/Invention); B23B31/26 B23C1/00 B23C1/06 B23Q1/01 (Advanced/Non-invention)
CPC: B23Q3/15713 B23B31/201 B23C1/002 B23Q1/012 B23Q3/15773 B23Q2003/155414 B23Q2003/155418 B23Q2003/155421 B23Q2003/155428 B23Q2003/155442 Y10S483/902 Y10T279/17529 Y10T409/307728 Y10T409/309464 Y10T483/176 Y10T483/1776 B23Q3/1554 B23Q3/157 B23C5/26 B23Q3/12 B23Q5/04 B23Q2003/155411
US: 483/49



Family:

Publication number	Publication date	Application number	Application date
CN106181508 A	20161207	CN201610352838	20160525
CN106181508 B	20180529	CN201610352838	20160525
JP2016221625 A2	20161228	JP20150110178	20150529
KR101841830 B1	20180323	KR20160063991	20160525
KR20160140443 A	20161207	KR20160063991	20160525
TW201706069 A	20170216	TW20160114733	20160512
TWI630979 B	20180801	TW20160114733	20160512
US2016346884 AA	20161201	US20160166800	20160527
US10086485 BB	20181002	US20160166800	20160527

Priority:

JP20150110178 20150529 KR20160063991 20160525

Probable Assignee: TOSHIBA KIKAI KK

Assignee(s): (std): TOSHIBA KIKAI KK ; TOSHIBA MACHINE CO LTD

Assignee(s): TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA MACH CO LTD

Inventor(s): (std): MASUDA HIROMI ; TSUKITA YUTAKA ; KOKUBO MITSUNORI ; ITANI SHINYA ; UCHIMURA HIROSHI ; HIROMI MASUDA ; HIROSHI UCHIMURA ; YUTAKA TSUKITA ; SHINYA ITANI ; MITSUNORI KOKUBO

Agent(s): DLA PIPER LLP US

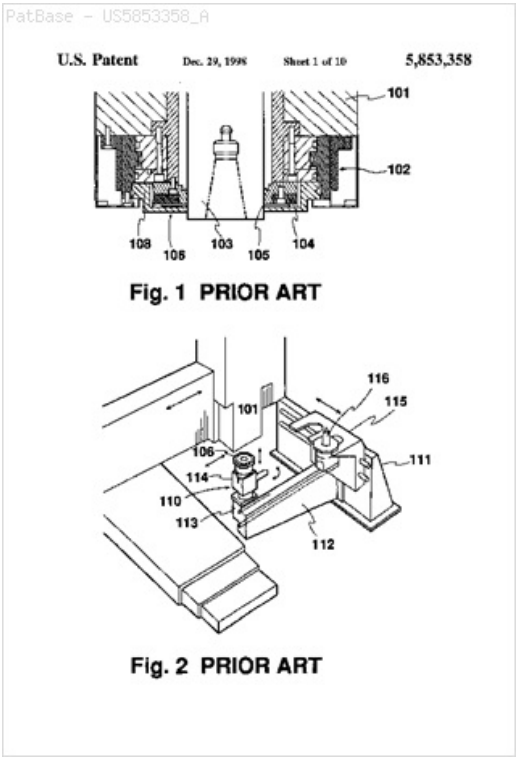
102) Family number: 11349198 (US5853358A)

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Title: METHOD AND MACHINE TOOL FOR MOUNTING AND DISMOUNTING BLIND COVER

Abstract: A method and an apparatus for mounting and dismounting a blind cover, which is used for protecting an exposed surface, from cutting fluid and chips. The blind cover is held and carried by a blind cover carrier having a shank mountable into a main spindle and a pot of a tool magazine, and a flange provided with a gripping groove to be gripped by a tool changing arm. The blind cover for protecting the exposed surface of the coupling is held by openable engaging pawls provided on the blind cover carrier. The blind cover carrier holding the blind cover is carried and mounted to the main spindle in the same way as the tool and the attachment. The blind cover and the coupling are provided with respective engaging pawls. The engaging and disengaging operation of the respective engaging pawls and the mounting and dismounting operation of the blind cover to the exposed surface of the coupling are executed by a swivel indexing function of the main spindle.

Classifications:
International (IPC 8-9): B23Q11/08 B23Q3/155 B23Q3/157 (Advanced/Invention);
B23Q11/08 B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q11/08 B23Q3/155 B23Q3/157
CPC: Y10T483/10 Y10T483/115 Y10T483/1736 B23Q3/15713 B23Q11/0883 B23Q2003/155453
European: B23Q11/08J B23Q3/157C
US: 483/1 483/3 483/31



Family:

Publication number	Publication date	Application number	Application date
JP3547903 B2	20040728	JP19960097526	19960326
JP9253974 A2	19970930	JP19960097526	19960326
US5853358 A	19981229	US19970823204	19970324

Priority:

JP19960097526 19960326

Probable Assignee: OKUMA CORP

Assignee(s): (std): OKUMA MACHINERY WORKS LTD

Assignee(s): OKUMA CORP ; OKUMA MACH WORKS LTD

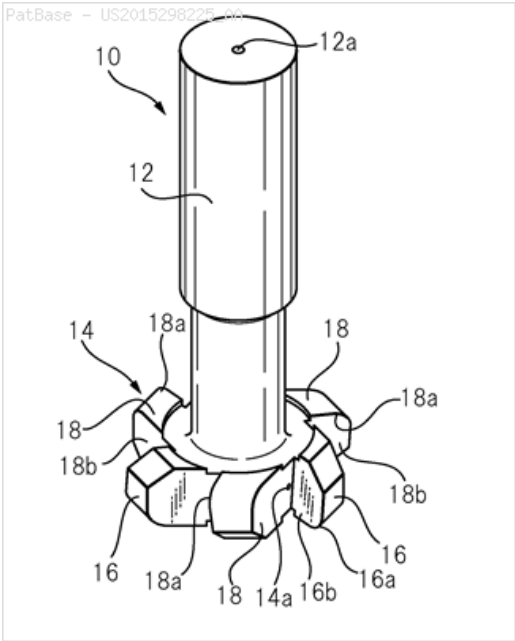
Inventor(s): (std): TAKENAKA KOJI

103) Family number: 56393199 (US2015298225A)

Title: T-SHAPED CUTTER, RIB-MACHINING METHOD AND AIRPLANE PART

Abstract: On the perimeter of a head (14) that is bonded on one end of the shank (12) of a T-shaped cutter, multiple end cutting edge sections (16) with a cutting edge (16a) on the tip side of the T-shaped cutter (10) and multiple upper edge sections (18) with a cutting edge (18a) on the base end side are disposed alternating in the circumferential direction of the T-shaped cutter. The cutting edges (16a, 18a) of the end cutting edge sections (16) and the upper edge sections (18) form an integral structure with the shank (12) and the head (14).

Classifications:
International (IPC 8-9): B23C1/12 B23C3/00 B23C5/10 B23C5/12 B23C5/16 B23C5/28 B64C1/12 (Advanced/Invention)
CPC: B64C1/12 B23C5/1054 B23C3/00 B23C2215/04 B23C2250/12 B23P15/34 B23C2222/28 B23C1/12
US: 244/129.1 407/11 407/56 409/131



Family:

Publication number	Publication date	Application number	Application date
CA2889088 AA	20150420	CA20122889088	20121031
CA2889088 C	20170926	CA20122889088	20121031
CN104768686 A	20150708	CN201280076753	20121031
CN104768686 B	20170405	CN201280076753	20121031
EP2915616 A1	20150909	EP20120887558	20121031
EP2915616 A4	20160608	EP20120887558	20121031
EP2915616 B1	20190116	EP20120887558	20121031
JP2014068710 A1	20160908	JP20140544126T	20121031
JP5940167 B1	20160629	JP20140544126T	20121031
US2015298225 AA	20151022	US20120439920	20121031
US9776257 BB	20171003	US20120439920	20121031
WO14068710 A1	20140508	WO2012JP78198	20121031

Priority:
WO2012JP78198 20121031

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std): MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE ; MAKINO MILLING MACHINES CO LTD

Assignee(s): MAKINO MILLING MACHINES CO ; MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD ; UENO HIROSHI ; MIYAMOTO RYOICHI

Inventor(s): (std): UENO HIROSHI ; MIYAMOTO RYOICHI

Agent(s): GOUDREAU GAGE DUBUC; LAVERY DE BILLY LLP; THUM BERNHARD; AOKI ATSUSHI; SHIMADA TETSURO; MORRISON AND FOERSTER LLP; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

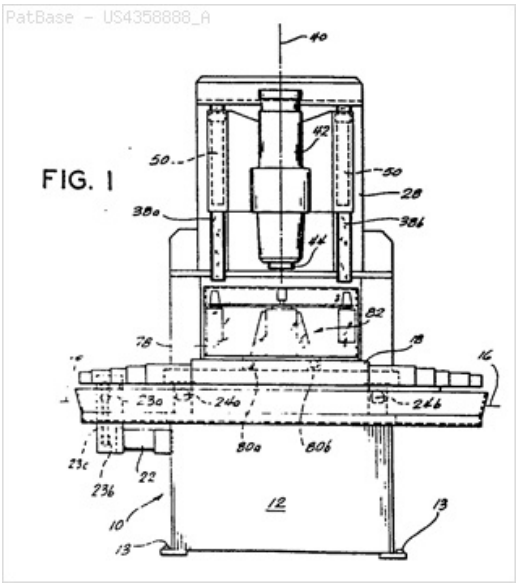
104) Family number: 2330201 (US4358888A)

Title: AUTOMATIC TOOL CHANGER WITH INTERNAL TOOL STORAGE MAGAZINE

Abstract: A vertical spindle numerically controlled machining center includes a stationary bed or base on which a workpiece holding table is slidably mounted for movement along a first axis. A vertically extending upright or column, having a vertically reciprocal spindlehead slidably mounted thereon, is slidably mounted on the bed for movement along a second axis perpendicular to the first axis so that the spindlehead overlies a portion of the table. Within the upright is a recess adjacent to the bed. A tool storage magazine is located in the recess and is slidably mounted on the bed for movement through the recess along an axis parallel to the second axis. During a tool change cycle, the toolholder then held in the spindle is returned to the tool storage magazine by first moving the spindlehead to the ready position and then moving the tool storage drum toward the spindlehead to engage the tool then held in the spindle. To provide the spindle with a new tool, the spindlehead is first moved upwardly to clear the toolholder shank and then the tool storage drum is indexed to position a new tool directly beneath the spindle so that the spindle can engage the tool when the spindlehead is moved downwardly to the ready position.

Classifications:

International (IPC 8-9): B23B11/00 B23B29/24 B23Q3/155 B23Q3/157 F15B13/00 F15B15/00 (Advanced/Invention); B23B11/00 B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23B11/00 B23B29/24 B23Q3/155 B23Q3/157 B23Q7/02 F15B13/00 F15B15/00
CPC: Y10T29/5107 Y10T408/37 Y10T483/179 B23Q3/15526 B23Q3/15706
European: B23Q3/155D2 B23Q3/157B
US: 29/26A 29/568 408/35 414/223.01 483/54



Family:

Publication number	Publication date	Application number	Application date
BR8106677 A	19820629	BR19810006677	19811016
CA1178799 A1	19841204	CA19810446580	19811006
CA1178799 A2	19841204	CA19840446580	19840201
CA1178800 A1	19841204	CA19810387424	19811006
DE3176056 D1	19870507	DE19813176056	19811014
EP0050797 A2	19820505	EP19810108320	19811014
EP0050797 A3	19830720	EP19810108320	19811014
EP0050797 B1	19870401	EP19810108320	19811014
IL63992 A0	19820131	IL19810063992	19811005
IL63992 A1	19850929	IL19810063992	19811005
JP1311156 C3	19860411	JP19810164899	19811015
JP57096749 A2	19820616	JP19810164899	19811015
JP59027309 B4	19840704	JP19810164899	19811015
KR19830007211 A	19831014	KR19810003904	19811015
KR830007211 A	19831014	KR19810003904	19811015
KR850001596 B1	19851024	KR19810003904	19811015
US4358888 A	19821116	US19800197641	19801016

Priority:

US19800197641 19801016 CA19810387424 19811006 CA19810446580 19811006 CA19840446580 19840201

Probable Assignee: KEARNEY AND TRECKER CORP

Assignee(s): (std): KEARNEY AND TRECKER CORP

Assignee(s): KEARNEY AND TRECKER CORPORATIO ; KEARNEY AND TRECKER CORPORATIO WEST ALLIS WI A COR ; SIPEK CHARLES B ; ZANKL FRANK ; CITICORP USA INC ; CLEEK ALVIN L ; KEANII ANDO TORETSUKA CORP

Inventor(s): (std): ZANKL FRANK ; SIPEK CHARLES B ; SIEPEK CHARLES B ; FANKEL FRANK ; CLEEK ALVIN L ; CLEEK ALBIN L ; CHAARUZU BII SHIPETSUKU ; ZANKL F ; SIPEK C ; FURANKU ZANKURU ; CHIYAARUZU BII SHIPETSUKU ; ARUBIN ERU KURIIKU

Agent(s): SWABEY MITCHELL HOULE MARCOUX AND SHER; REINHOLD COHN AND PARTNERS

Designated states: BE CH DE FR GB IT LI NL SE

105) Family number: 23366202 (US5466102A)

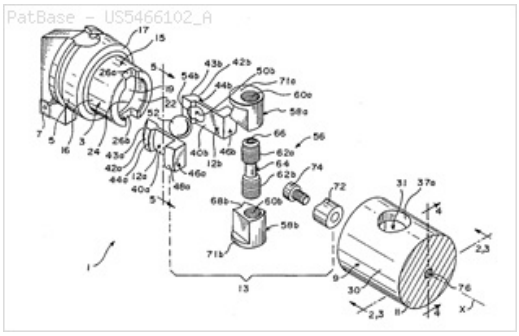
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Title: SYSTEM FOR COUPLING MACHINE TOOLS

Abstract: A coupling system (1) is provided for lockably coupling together machine tool components that comprises a male coupling (3) having a recess (19) at a distal end that includes follower surfaces (24), and female coupling (9) having an opening (31) disposed along its longitudinal axis for receiving the distal end of the male coupling (3), and a pair of opposing jaw members (12) pivotally mounted in the opening (31) and having cam surfaces (44) engagable with the follower surfaces (24) of the male coupling (3). The system (1) includes a drive train (13) for pivotally moving the jaw members (12) apart in order to interengage the cam (44) and follower surfaces (24) of the female (5) and male (3) couplings that includes an axially movable, ball-shaped element (52) disposed in opposing recesses (50) present in the jaw members (12) for prying the jaw members (12) apart, a pair of opposing wedge members (58) for moving the ball-shaped drive element (52) axially toward the free ends of the jaw members (12), and a screw (64) having right and left hand threads on either of its ends for moving the wedge members (58) toward and away from one another. The drive train (13) generates high clamping forces between the male (3) and female (5) couplings in a small envelope and with a large degree of mechanical advantage.

Classifications:
International (IPC 8-9): B23B29/00 B23B29/04 B23B31/00 B23B31/02 B23B31/107 B23B31/117 B23B31/26 C12N9/12 C12P19/62 (Advanced/Invention);
B23B29/00 B23B31/02 (Advanced/Non-invention);
B23B29/00 B23B31/02 B23B31/10 C12N9/12 C12P19/00 (Core/Invention)
International (IPC 1-7): B23B29/00 B23B29/04 B23B31/00 B23B31/02 B23B31/103 B23B31/107 B23B31/117 B23B31/26 C12P21/06

CPC: Y10T82/2589 Y10T279/1037 Y10T279/1095 Y10T403/591 Y10T403/604 Y10T408/95 Y10T408/957 Y10T409/309408 Y10T409/309464 Y10T409/30952 C12N9/1205 B23B29/046 B23B31/1071 B23B31/1074 C12P19/623
European: B23B29/04C B23B31/107B B23B31/107P C12N9/12C C12P19/62A M12N207/00
US: 279/2.1 279/2.24 403/322 403/322.1 403/328 408/239.00A 408/239.00R 408/239A 408/239R 409/232 409/233 409/234 435/190 435/320.1 435/325 435/6 435/6.15 435/6.18 435/69.1 435/91.2 536/23.2 536/25.2 82/160



Family:

Publication number	Publication date	Application number	Application date
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AU199512097 A1	19950703	AU19950012097	19941116
AU681222 B2	19970821	AU19950012097	19941116
BRPI9408215 A	19970826	BR1994PI08215	19941116
CA2175379 AA	19960429	CA19942175379	19941116
CA2175379 C	19990914	CA19942175379	19941116
CN1052436 C	20000517	CN19941094318	19941116
CN1136288 A	19961120	CN19941094318	19941116
DE0734298 T1	19970213	DE19950903121T	19941116
DE69409832 D1	19980528	DE19946009832	19941116
DE69409832 T2	19981015	DE19946009832T	19941116
EP0734298 A1	19961002	EP19950903121	19941116
EP0734298 B1	19980422	EP19950903121	19941116
ES2092459 T1	19961201	ES19950903121T	19941116
ES2092459 T3	19980716	ES19950903121T	19941116
IN02295DE1996 A	20160831	IN1996DE02295	19961024
JP2858955 B2	19990217	JP19940516768T	19941116
JP9506043 T2	19970617	JP19940516768T	19941116
KR100193087 B1	19990615	KR19960703121	19960613
KR19960706385 A	19961209	KR19960703121	19941116
KR960706385 A	19961209	KR19960703121	19960613
RU2104828 C1	19980220	RU19960115125	19941116
RU96115125 A	19980910	RU19960115125	19960716
US5466102 A	19951114	US19930168802	19931216
US5722806 A	19980303	US19950556115	19951109
US6399324 BA	20020604	US19950485069	19950607
WO9516533 A1	19950622	WO1994US13217	19941116

Priority:

US19930168802 19931216 WO1994US13217 19941116 US19950485069 19950607
US19950556115 19951109

Probable Assignee: KENNAMETAL INC

Assignee(s): (std)**:** KENNAMETAL INK ; KENNAMETAL INC ; PFIZER

Assignee(s): PFIZER INC ; KENNAMETAL INC LATROBE PA US ; KENNAMETAL PC INC ; KENNAMETARU INC ; ERICKSON ROBERT A

Inventor(s): (std)**:** BARKLEY ANTHONY L ; DENOYA CLAUDIO D ; ERICKSON R A ; ERICKSON ROBERT ; STUTZMAN ENGWALL KIM J ; ROBERT AEHRIKSON ; ROBERT A ERICKSON ; R A ERICKSON ; R A ERICKSEN ; ERICKSON ROBERT A ; ERICKSEN R A ; ROBERT A EHRIKSON

Inventor(s): ERITSUKUSON ROBAATO EE ; ROBERT A.EHRIKSON[US] ; ROBERT ALFRED ERICKSON ; ANTHONY LEE BRKLEY

Agent(s): PHILLIPS ORMONDE FITZPATRICK; SMART AND BIGGAR

Designated states: AT AU BE BR CA CH CN DE DK ES FR GB GR IE IT JP KR LI LU MC NL PT RU SE

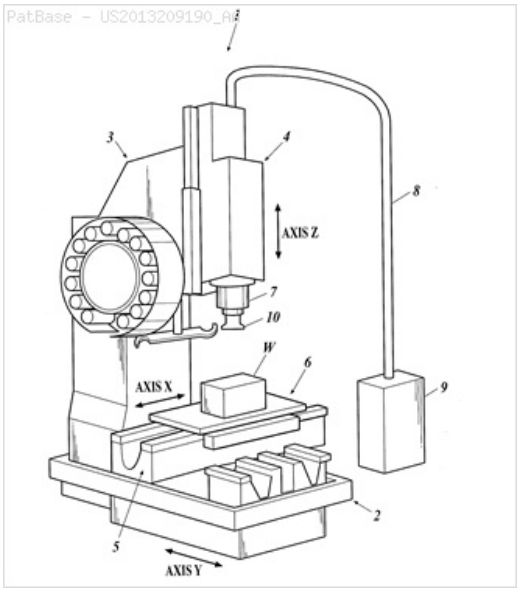
106) Family number: 51041202 (US2013209190A)

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Title: COVER FOR CUTTING TOOL, HOLDER FOR CUTTING, AND CUTTING DEVICE

Abstract: A cutting tool cover set to a cutting tool which includes a hollow shaft body and at least one insert attached to an end face of the shaft body and cuts by bringing the insert into contact with a work while rotating the shaft body. The cutting tool cover includes: a body portion fixed to a top end portion of the shaft body; and an extension portion extended outward from the circumferential edge of the body portion in the entire circumference of the top end portion of the body portion to cover the surface of the work.

Classifications:
International (IPC 8-9): B23C9/00 B23Q11/00 B23Q11/08 B23Q9/00 (Advanced/Invention); B23Q3/157 (Advanced/Non-invention)
CPC: B23B2270/30 B23B2270/62 B23C2230/045 Y10T409/30392 B23Q11/0046 B23C9/00 B23C2226/27 B23Q11/08 Y10T407/11 Y10T409/304088 B23Q3/1574
European: B23C9/00 B23Q11/08C L23C226/27
US: 407/2 409/137



Family:

Publication number	Publication date	Application number	Application date
CN103180074 A	20130626	CN201180051396	20111014
CN103180074 B	20160831	CN201180051396	20111014
EP2633933 A1	20130904	EP20110836041	20111014
EP2633933 A4	20140409	EP20110836041	20111014
EP2633933 B1	20181003	EP20110836041	20111014
JP2012056902 A1	20140320	JP20120540769T	20111014
JP5689893 B1	20150325	JP20120540769T	20111014
US2013209190 AA	20130815	US20110881104	20111014
US9937598 BB	20180410	US20110881104	20111014
WO12056902 A1	20120503	WO2011JP73616	20111014

Priority:

JP20100240684 20101027 JP20120540769 20111014 WO2011JP73616 20111014

Probable Assignee: SUBARU CORP

Assignee(s): (std): DMG MORI SEIKI CO LTD ; FUJI HEAVY IND LTD ; HIDETA MORIHIRO ; SATO KOJI ; SAITO MANABU ; OODE HISAYUKI ; MORI SEIKI SEISAKUSHO KK ; INAMASU YASUHIRO ; MATSUO SHINYA ; HITACHI TOOL ENG ; MITSUBISHI HITACHI TOOL ENG LTD ; TOUMA SHOUJIROU ; SUBARU CORP

Assignee(s): DMG MORI SEIKI CO ; MITSUBISHI HITACHI TOOL ENGINEERING LTD ; HITACHI TOOL ENGINEERING LTD ; MORI SEIKI CO LTD ; MORI SEIKI CO ; FUJI JUKOGYO KABUSHIKI KAISHA ; FUJI JUKOGYO KK

Inventor(s): (std): HIDETA MORIHIRO ; INAMASU YASUHIRO ; MATSUO SHINYA ; OODE HISAYUKI ; SAITO MANABU ; SATO KOJI ; TOUMA SHOUJIROU

Agent(s): VOSSIUS AND PARTNER; VOSSIUS AND PARTNER PATENTANWAELTE RECHTSANWAELTE MBB; ARAFUNE YOSHIO; ARAFUNE HIROSHI; SMITH GAMBRELL AND RUSSELL LLP; ARAFUNE HIROSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

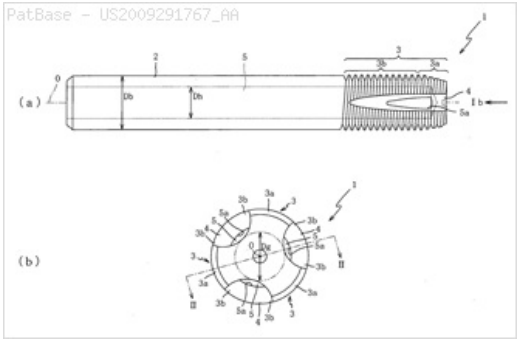
107) Family number: 41913204 (US2009291767A)

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Title: TAP

Abstract: A tap is designed in such a way that chips are aspirated and discharged forcibly so that the pollution of the environment can be prevented and the cleaning can be simplified. The tap includes an intake hole, and the intake hole includes openings. Accordingly, air intake is performed through the intake hole, so that the chips generated in the cutting can be aspirated from the openings forcibly. Therefore, because the chips can be discharged without using cutting fluids, pollution of the environment can be prevented. Further, because the chips can be aspirated from the openings, and the chips aspirated from the openings can be discharged from the intake hole of the tap, the chips are not scattered on the work piece, and thus a cleaning process of the work piece can be simplified.

Classifications:
International (IPC 8-9): B21J13/02 B23G1/44 B23G5/00 B23G5/06 (Advanced/Invention); B23G5/00 B23G5/06 (Advanced/Non-invention); B23G5/00 (Core/Invention)
CPC: Y10T408/455 Y10T408/50 Y10T408/9048 B23G5/005 B23G2200/24 B23G2210/04 B23G2240/08 B23G5/06
European: B23G5/00B B23G5/06 L23G200/24 L23G210/04 L23G240/08
US: 408/222 408/59 408/59S 408/67 470/198 470/198P



Family:

Publication number	Publication date	Application number	Application date
CN101296772 A	20081029	CN200680026103	20061130
CN101296772 B	20100929	CN200680026103	20061130
DE112006002713 T5	20090618	DE200611002713T	20061130
JP2008068816 A1	20100311	JP20070520606T	20061130
JP4522451 B1	20100811	JP20070520606T	20061130
JP4522451 B2	20100811	JP20070520606T	20061130
KR100924976 B1	20091104	KR20087002373	20061130
KR20080069164 A	20080725	KR20087002373	20061130
US2009291767 AA	20091126	US20060918560	20061130
US8147343 BB	20120403	US20060918560	20061130
WO08068816 A1	20080612	WO2006JP324030	20061130

Priority:

WO2006JP324030 20061130 WO2006JP324030 20080129

Probable Assignee: OSG CORP

Assignee(s): (std): OHHASHI SEIJI ; OSG CORP ; SUGANO HIROTO

Inventor(s): (std): SUGANO HIROTO ; OHHASHI SEIJI ; HIROHITO KANNO ; SEIJI OHASHI

Inventor(s): KANNO HIROHITO ; OHASHI SEIJI

Agent(s): MURAMATSU AND ASSOCIATES; PATENT FIRM SHINMEI CENTURY

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

108) Family number: 61645209 (WO16020063A1)

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Title: ADAPTER AND METHOD FOR CLAMPING SMALL CYLINDRIDAL WORKPIECES

Abstract: An adapter (1) for securing a steep-angle tapered clamping tool (20) to a quick-acting clamping system comprises a planar bearing surface (2) for supporting the adapter (1) on the quick-acting clamping system, and a clamping bolt (3) which is arranged on the bearing surface (2) and is designed to be accommodated on the quick-acting clamping system and secure the adapter (1) to the quick-acting clamping system when the quick-acting clamping system is actuated; a cavity (4) in the adapter (1) has a conical wall section (5) for accommodating a steep-angle taper (21) of the steep-angle tapered clamping tool (20).

Classifications:

International (IPC 8-9): B23Q1/00 B23Q3/06 B23Q3/10 B25B1/20 B25B1/24 B25H3/00 (Advanced/Invention)

CPC: B23Q3/06 B23Q3/061 B23Q1/0072

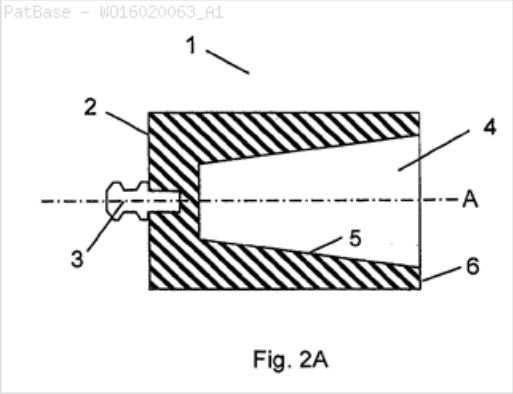


Fig. 2A

Family:

Publication number	Publication date	Application number	Application date
DE102014011830 A1	20160211	DE201410011830	20140808
WO16020063 A1	20160211	WO2015EP01620	20150805

Priority:

DE201410011830 20140808

Probable Assignee: AUTOMATIK PLASTICS MACHINERY

Assignee(s): (std): AUTOMATIK PLASTICS MACHINERY ; MAAG AUTOMATIK GMBH

Assignee(s): AUTOMATIK PLASTICS MACHINERY GMBH

Inventor(s): (std): BICKERT STEFAN

Agent(s): SPRANGER STEPHAN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

109) Family number: 1593210 (US4429443A)

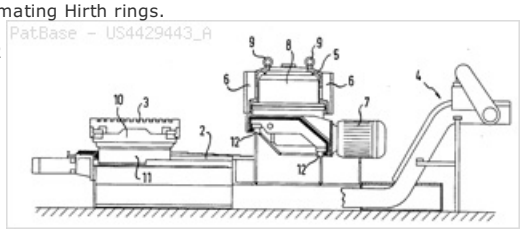
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Title: MACHINE TOOL

Abstract: The specification is directed to a method of operating a machine tool which enables a machining center, a transfer line or a flexible manufacturing system to be rapidly converted from the manufacture of one work piece to the manufacture of another workpiece. This is achieved by mounting all the tools associated with one series of machining steps on a common

carrier unit and adapting the carrier unit so that it can be placed quickly in position on the machine tool and automatically centered in a variety of positions so that each of the individual tools can be brought into a desired machining relationship with the workpiece. The tools can comprise both stationary and driven tools and the machine tool is adapted to allow relative movement between the workpiece and the individual tools so as to carry out the desired machining steps. The tools can be preadjusted in their mounts before the carrier unit is placed on the machine tool and are to be stored already mounted on the carrier units to avoid tool losses when not in use. During machinery the tools preferably remain in the mounts but in one embodiment tools can be withdrawn from the mounts and transferred to a machining head. The carrier units are preferably of bell-like form and located on machine tools by means of a pair of mating Hirth rings.

Classifications:
International (IPC 8-9): B23B1/00 B23B39/16 B23B39/20 B23P23/02 B23Q3/155 B23Q39/02 (Advanced/Invention);
B23B1/00 B23B39/00 B23P23/00 B23Q3/155 B23Q39/00 (Core/Invention)
International (IPC 1-7): B23B1/00 B23B39/20 B23C3/00 B23Q3/155
CPC: B23Q2039/004 B23Q39/02 B23Q3/15506 Y10T29/5107 Y10T29/5154 Y10T29/5155 Y10T29/5167 B23Q2003/1558
European: B23Q3/155B B23Q39/02
US: 29/26A 29/39 29/40 29/48.5A 29/568



Family:

Publication number	Publication date	Application number	Application date
DD150018 A5	19810812	DD19800220389	19800411
DE2934395 A1	19810312	DE19792934395	19790824
DE2934395 C2	19830922	DE19792934395	19790824
DE2950934 A1	19810625	DE19792950934	19791218
DE2950934 C2	19870129	DE19792950934	19791218
FR2463660 A1	19810227	FR19800008421	19800415
FR2463660 B1	19860307	FR19800008421	19800415
GB2056350 A1	19810318	GB19800009967	19800325
GB2056350 B2	19830608	GB19800009967	19800325
IT1144068 A	19861029	IT19800048866	19800603
IT8048866 A0	19800603	IT19800048866	19800603
JP1302487 C3	19860214	JP19800068821	19800523
JP56033209 A2	19810403	JP19800068821	19800523
JP60023936 B4	19850610	JP19800068821	19800523
SU1238723 D	19860615	SU19802911250	19800423
US4429443 A	19840207	US19820397397	19820712

Priority:

DE19792934395 19790824 DE19792950934 19791218 US19800132441 19800321

Probable Assignee: DIEDESHEIM GMBH MASCHF

Assignee(s): (std): DEIDEISUHAIMU GMBH MASCHF ; DIEDESHEIM GMBH MASCHF ; WITTMANN ERICH ; KELLER WOLFGANG ; KOELBLIN ROLF

Assignee(s): MASCHF DIEDESHEIM GMBH ; MASCHINENFABRIK DIEDESHEIM GMBH ; MASCHINENFABRIK DIEDESHEIM GMBH 6950 MOSBACH DE ; MASHIINENFUABURIIKU DEIDEISUHAIMU GMBH ; DIEDESHEIM MASCHF DIEDESHEIM GMBH DE ; DIEDESHEIM MASCHINENFABRIK DIEDESHEIM GMBH DE

Inventor(s): (std): KOLBLIN ROLF ; ROLF KELBLIN ; RORUFU KERUBURIN ; URUFUGANGU KERAA ; VITTMANN ERIKH ; VOLFGANG KELLER ; WITTMANN ERICH ING GRAD ; ERIKH VITTMANN ; ERITSUHI UITSUTOMAN ; KELBLIN ROLF ; KELLER VOLFGANG ; WITTMANN ERICH ; KOELBLIN ROLF ; KELLER WOLGANG ; KELLER WOLFGANG

Inventor(s): KELLER WOLFGANG DE ; KOELBLIN ROLF DE ; KELLER WOLFGANG 6950 MOSBACH DE ; WITTMANN ERICH ING GRAD 7100 HEILBRONN DE ; WITTMANN ING GRAD ERICH ; WITTMANN ERICH DE

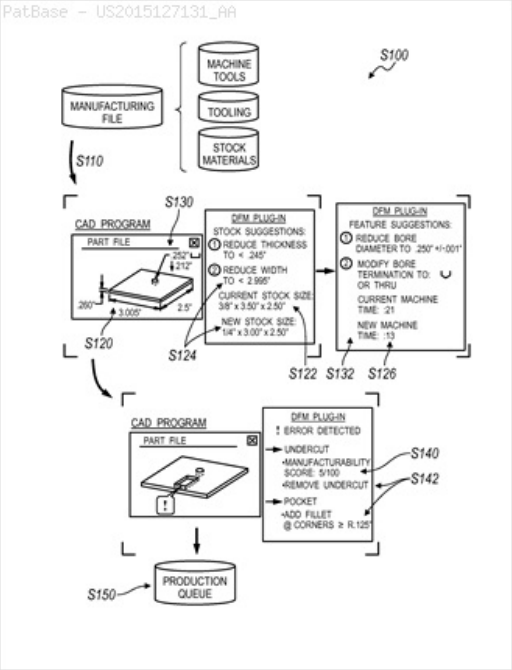
110) Family number: 59069211 (US2015127131A)

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Title: METHOD FOR IMPLEMENTING DESIGN-FOR-MANUFACTURABILITY CHECKS

Abstract: One variation of a method for implementing design-for-manufacturing checks during construction of a virtual model of a real part includes: in response to insertion of a virtual feature into the virtual model, estimating a minimum stock geometry for the real part based on the virtual feature; selecting a first material stock cross-section from a set of available material stock cross-sections of a material designated for the real part based on the minimum stock geometry; at a first time, prompting a user to adjust a dimension of the virtual feature to enable production of the real part with a second material stock cross-section in the set of material stock cross-sections, less than the first material stock cross-section; at a second time succeeding the first time, submitting, to a manufacturing facility and over a computer network, an order for production of a unit of the real part according to the virtual model.

Classifications:
International (IPC 8-9): G01B21/00 G01B5/008 G05B19/00 G05B19/4063 G05B19/4069 G05B19/4097 G05B19/418 G06F17/50 G06F19/00 G06Q30/00 G06Q30/02 G06Q30/06 G06Q50/04 (Advanced/Invention)
CPC: G06Q30/0611 G06Q30/0283 G05B19/41875 G01B21/00 G05B2219/35134 G06F2217/12 G06Q30/0635 G05B19/4097 G01B5/008 G05B2219/37205 G05B2219/35193 Y02P80/40 G05B2219/35218 G05B2219/49123 Y02P90/265
US: 1/1 700/97 700/98 702/81 702/84 705/26.4



Family:

Publication number	Publication date	Application number	Application date
EP3058496 A1	20160824	EP20140854740	20141017
EP3058496 A4	20170712	EP20140854740	20141017
JP2016536672 T2	20161124	JP20160520154T	20141017
JP6249538 B2	20171220	JP20160520154T	20141017
US2015127131 AA	20150507	US20140517734	20141017
US2015127480 AA	20150507	US20140517711	20141017
US2016033251 AA	20160204	US20150807050	20150723
US2016033960 AA	20160204	US20150807350	20150723
US2016259323 AA	20160908	US20160153100	20160512
US2016370790 AA	20161222	US20160233349	20160810
US2017270578 AA	20170921	US20170611096	20170601
US2018253770 AA	20180906	US20180971102	20180504
US2018329393 AA	20181115	US20180045984	20180726
US2019064772 AA	20190228	US20180172376	20181026
US9367063 BB	20160614	US20140517734	20141017
US9441936 BB	20160913	US20150807350	20150723
US9697554 BB	20170704	US20140517711	20141017
US10061299 BB	20180828	US20160153100	20160512
US10146208 BB	20181204	US20160233349	20160810
WO15058147 A1	20150423	WO2014US61241	20141017
WO15058152 A1	20150423	WO2014US61250	20141017
WO16018717 A1	20160204	WO2015US41764	20150723

Priority:

US20130892367P 20131017 US20130892370P 20131017 US20140030261P 20140729
US20140517711 20141017 US20140517734 20141017 WO2014US61250 20141017
US20150807050 20150723 US20150807350 20150723 US20160153100 20160512
US20160233349 20160810 US20170611096 20170601 US20180971102 20180504
US20180045984 20180726 US20180172376 20181026

Probable Assignee: PLETHORA CORP

Assignee(s): (std): PLETHORA CORP

Assignee(s): VENTURE LENDING AND LEASING IX INC ; VENTURE LENDING AND LEASING VII INC ; VENTURE LENDING AND LEASING VIII INC

Inventor(s): (std): PINKSTON NICHOLAS J ; HERRMAN JEREMY ; STULTS JONATHAN ; PINKSTON NICK

Agent(s): STANNERS DAVID RALPH; KITA AOYAMA INT PATENT BUREAU; JEFFREY; DIANA; SCHOX JEFFREY; LIN DIANA

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

111) Family number: 47488212 (US2012039680A)

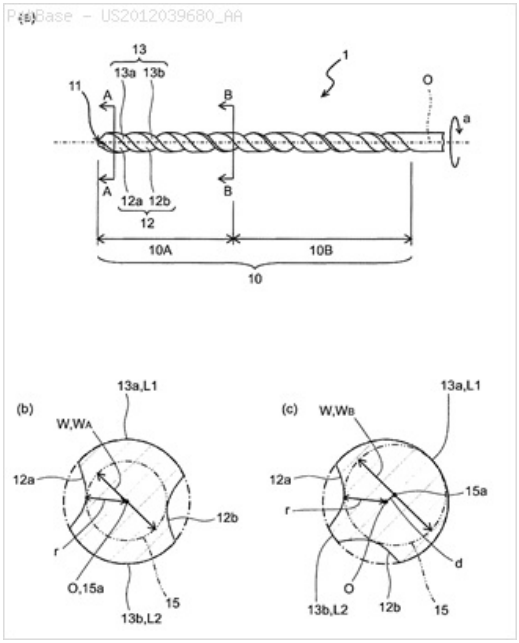
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Title: DRILL AND METHOD OF CUTTING WORKPIECE USING THE SAME

Abstract: A drill of the present invention includes a first cutting edge and a second cutting edge each located at a front end of a cylindrical cutting part; a first flute and a second flute connected to the first cutting edge and the second cutting edge, respectively, in which the first and second flutes are positioned helically from a front end to a rear end on a peripheral section of the cutting part; and a first land and a second land each extended from the front end to the rear end on the peripheral section of the cutting part, in which the first and second lands are being located portions between the first flute and the second flute, respectively. The first flute and the second flute are separately extended from the front end to the rear end.

The cutting part includes a first region in which a diameter of an inscribed circle in a cross section perpendicular to a rotation axis of the cutting part increases in a direction away from the front end and toward the rear end. A method of cutting a workpiece using the drill is also provided.

Classifications:
International (IPC 8-9): B23B41/00 B23B51/00 B23B51/02 (Advanced/Invention); H05K3/00 (Advanced/Non-invention)
CPC: B23B2251/043 B23B2251/046 B23B2251/245 H05K3/0047 Y10T408/03 Y10T408/909 Y10T408/9097 B23B51/02
European: B23B51/02 L23B251/04H L23B251/04H1 L23B251/24B5 T05K3/00K4D
US: 408/1.00RP 408/1R 408/227 408/230 408/230S



Family:

Publication number	Publication date	Application number	Application date
JP2010125881 A1	20121025	JP20110511356T	20100326
JP5385976 B1	20140108	JP20110511356T	20100326
JP5385976 B2	20140108	JP20110511356T	20100326
KR101319455 B1	20131017	KR20117020868	20100326
KR20110113768 A	20111018	KR20117020868	20100326
US2012039680 AA	20120216	US20100260895	20100326
US8882411 BB	20141111	US20100260895	20100326
WO10125881 A1	20101104	WO2010JP55368	20100326

Priority:

JP20090107911 20090427 JP20090129332 20090528 WO2010JP55368 20100326 JP20110511356 20100326

Probable Assignee: KYOCERA CORP

Assignee(s): (std): KOIKE YOSHIFUMI ; KYOCERA CORP ; OGAWA HIROSHI

Inventor(s): (std): KOIKE YOSHIFUMI ; OGAWA HIROSHI

Agent(s): VOLPE AND KOENIG PC; FUKAI TOSHIKAZU

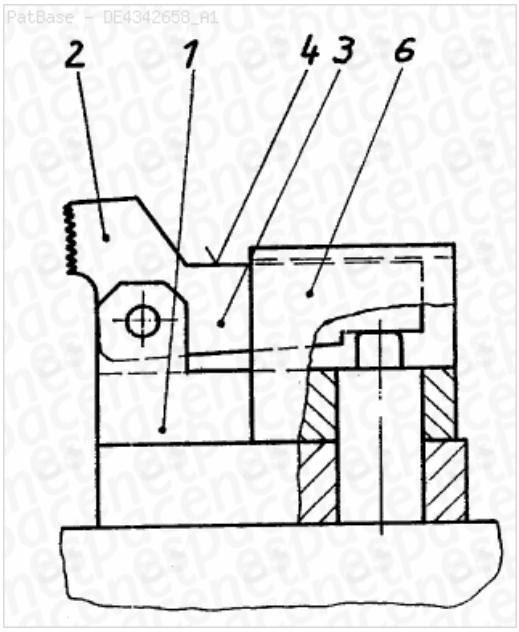
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

112) Family number: 11579215 (DE4342658A1)

Title: Pivoted workpiece clamping jaw

Abstract: The clamping device has a bearing block (1) to which an impact element or restraining device (6) is fitted. The supporting and moving arm (3) of the pivoted jaw (2) has its upper side or a head side coming in contact with it. The impact element may be in the form of a hook, or inverted U-shaped, or be in the form of a spacer composed of pieces of flexible elastic material. The bearing block may be a separate item. The thrust rod (10) of a hydraulic cylinder is fitted under the end of the supporting and moving arm of the jaw. The swing of the arm and jaw is limited by the position of the arm against the impact element, which is fixed to the bearing block on both sides.

Classifications:
International (IPC 8-9): B25B5/04 B25B5/06 B25B5/10 B25B5/16 (Advanced/Invention); B25B5/00 (Core/Invention)
International (IPC 1-7): B23Q3/06 B25B11/00
CPC: B25B5/04 B25B5/061 B25B5/104 B25B5/108 B25B5/163
European: B25B5/04 B25B5/06B B25B5/10E B25B5/10E3 B25B5/16B



Family:

Publication number	Publication date	Application number	Application date
DE4342658 A1	19950622	DE19934342658	19931214

Priority:

DE19934342658 19931214

Probable Assignee: HOHENSTEIN VORRICHTUNGSBAU

Assignee(s): (std)**:** HOHENSTEIN VORRICHTUNGSBAU ; HOHENSTEIN VORRICHTUNGSBAU U

Assignee(s): HOHENSTEIN VORRICHTUNGSBAU UND SPANNSYSTEME GMBH 0 ; HOHENSTEIN VORRICHTUNGSBAU UND SPANNSYSTEME GMBH 09337 HOHENSTEIN ERNSTTHAL DE

Inventor(s): (std)**:** SCHMIEDEL FRITZ DIPL ING ; KOERNIG PETER DIPL ING ; HERZOG DAGMAR

Inventor(s): HERZOG DAGMAR 09337 HOHENSTEIN ERNSTTHAL DE ; KOERNIG PETER DIPL ING FH 09353 OBERLUNGWITZ DE ; SCHMIEDEL FRITZ DIPL ING FH 09394 HOHNDORF DE

113) Family number: 56019218 (US2014076115A)

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Title: METHOD AND APPARATUS FOR CUTTING ONE OR MORE GROOVES IN A CYLINDRICAL ELEMENT

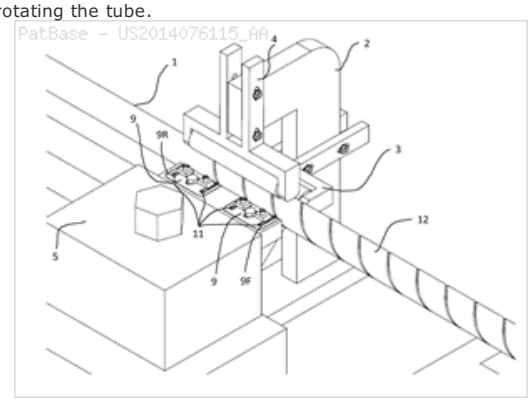
Abstract: Embodiments of the subject invention relate to a method and apparatus for cutting one or more grooves in a cylindrical element. In specific embodiments, the one or more grooves are cut into an outer surface of the cylindrical element. The cylindrical element can be solid, or can have one or more hollow portions. In a specific embodiment, the cylindrical element is a hollow tube. Embodiments also pertain to a cylindrical element having one or more grooves cut in an outer surface of the cylindrical element. Further specific embodiments are directed to cylindrical elements having one or more grooves that can be utilized as a drapery or curtain tube, where the one or more grooves, in combination with rotation of the cylindrical element, can be used for moving the drapery to one or more positions along the tube, such as from an open position for the drapery or curtain to a closed position for the drapery or curtain, by engaging an interconnecting element between the drapery or curtain and the one or more grooves while rotating the tube.

Classifications:

International (IPC 8-9): A47H1/00 A47H1/02 A47H1/102 A47H1/142 A47H1/18 A47H13/02 A47H15/00 A47H23/00 A47H5/02 A47H5/06 B23B1/00 B23B29/26 B23B3/00 B23B5/08 B23Q1/76 E05F15/77 E06B7/082 E06B7/10 E06B9/24 E06B9/266 E06B9/322 E06B9/36 E06B9/388 E06B9/40 E06B9/56 E06B9/68
E06B9/72 (Advanced/Invention);
E06B9/72 (Advanced/Non-invention)

CPC: E06B9/40 E06B9/72 B23Q1/766 Y10T82/10 B23B1/00 A47H5/0325 Y10T29/49826 A47H2001/0215 A47H1/142 A47H2005/025 A47H5/06 A47H1/02 A47H13/02 A47H23/06 A47H23/00 B23B3/00 B23B5/08 B23B29/26 B23B2215/72 B23B2220/12 B23B2220/445 B23B2260/024 A47H5/02 A47H1/102 E06B9/68

US: 1/1 160/108 160/121.1 160/310 160/331 160/405 160/7 160/84.02 160/84.06 29/428 82/1.11



Family:

Publication number	Publication date	Application number	Application date
AU2013315024 AA	20140320	AU20130315024	20130917
AU2013315024 BB	20180802	AU20130315024	20130917
BR112015005201 A2	20170704	BR20151105201	20130917
CA2884098 AA	20150304	CA20132884098	20130917
CA2884098 C	20181120	CA20132884098	20130917
CA3020098 AA	20140320	CA20133020098	20130917
CN104684441 A	20150603	CN201380048357	20130917
CN104684441 B	20181030	CN201380048357	20130917
DE602013037026 D1	20180530	DE201360037026T	20130917

EP2895036 A1	20150722	EP20130837043	20130917
EP2895036 A4	20160727	EP20130837043	20130917
EP2895036 B1	20180502	EP20130837043	20130917
IN01964DN2015 A	20160831	IN2015DN01964	20150311
JP2015531663 T2	20151105	JP20150532153T	20130917
JP6238320 B2	20171129	JP20150532153T	20130917
US2014076115 AA	20140320	US20130841732	20130315
US2014076503 AA	20140320	US20130029210	20130917
US2014076505 AA	20140320	US20130843617	20130315
US2014076508 AA	20140320	US20130842586	20130315
US2015107788 AA	20150423	US20140535987	20141107
US2015272370 AA	20151001	US20150719438	20150522
US2016143470 AA	20160526	US20140786877	20140410
US2017172333 AA	20170622	US20170450892	20170306
US2017181562 AA	20170629	US20170439071	20170222
US2017238747 AA	20170824	US20170491602	20170419
US2018255953 AA	20180913	US20180979570	20180515
US9095907 BB	20150804	US20130842586	20130315
US9095908 BB	20150804	US20130029210	20130917
US9615687 BB	20170411	US20150719438	20150522
US9999313 BB	20180619	US20140786877	20140410
WO14043711 A1	20140320	WO2013US60197	20130917
WO14043712 A1	20140320	WO2013US60203	20130917
WO14043713 A1	20140320	WO2013US60205	20130917
WO14169093 A1	20141016	WO2014US33602	20140410

Priority:

US20120702093P 20120917	US20130841732 20130315	US20130842586 20130315
US20130843617 20130315	US20130810949P 20130411	US20130817954P 20130501
CA20132884098 20130917	US20130029210 20130917	EP20130837043 20130917
WO2013US60205 20130917	US20130901985P 20131108	US20140786877 20140410
WO2014US33602 20140410	US20140535987 20141107	US20150719438 20150522
US20150786877 20151023	US20170439071 20170222	US20170450892 20170306
US20170491602 20170419	US20180979570 20180515	CA20182884098 20181018

Probable Assignee: CURRENT PRODUCTS CORP

Assignee(s): (std): HOMERUN HOLDINGS CORP ; QMOTION INC ; CURRENT PRODUCTS CORP

Assignee(s): CURRENT PRODUCTS CORP PENSACOLA ; FOX MICHAEL D ; OMOTION INC ; MATTHEWS DANIEL T ; LEE GERALD ASHLEY ; MULLET WILLIS JAY

Inventor(s): (std): LEE GERALD ASHLEY ; MULLET WILLIS JAY ; FOX MICHAEL D ; MATTHEWS DANIEL T ; HAND RICHARD SCOTT ; WILLIS JAY MULLET ; DANIEL T MATTHEWS ; MICHAEL D FOX ; GERALD ASHLEY LEE ; BRUNK DARRIN W ; MCCARTHY DALE ; MULLET WILLIS J ; THEWS DANIEL T ; ASBURY HARRY EDWARD

Inventor(s): MULLET WILLIS JAY GULF BREEZE ; MATTHEWS DANIEL T PENSACOLA ; FOX MICHAEL D PENSACOLA ; LEE GERALD ASHLEY MILTON

Agent(s): DAVIES COLLISON CAVE; AJ PARK; MACRAE AND CO; ROBIC; EISENFUEHR SPEISER PATENTANWAELTE RECHTSANWAELTE PARTGMBB; WALKER ROSS THOMSON; EIP; KITA AOYAMA INT PATENT BUREAU; ZARLEY LAW FIRM PLC; BROWNWINICK LAW FIRM; CHRISTOPHER A; PARKER JAMES S ET AL; PROSKEY CHRISTOPHER A ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

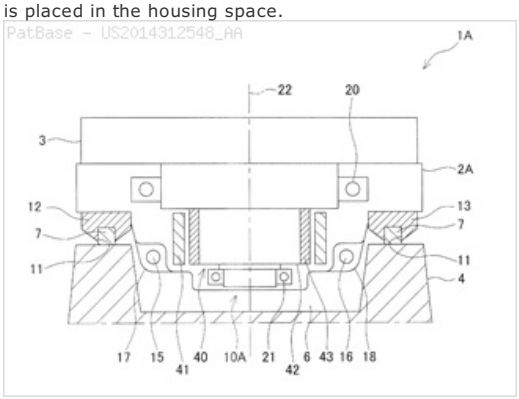
114) Family number: 57608218 (US2014312548A)

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Title: MACHINE TOOL

Abstract: A machine tool includes a slide table supported by an upper portion of a main body of the machine tool so as to be horizontally slidable, a rotary table provided on the slide table so as to be rotationally indexable about a vertical axis extending in the direction that is orthogonal to the direction of horizontal slide movement of the slide table, and a motor provided in the slide table to rotate the rotary table. A housing space is formed in the main body to house a lower portion of the slide table. At least a part of the motor provided in the slide table is placed in the housing space.

Classifications:
International (IPC 8-9): B23Q1/01 B23Q1/25 B23Q1/48 B23Q1/62 B23Q5/10 (Advanced/Invention)
CPC: B23Q1/48 Y10T409/305824 B23Q1/4852 B23Q5/10 B23Q2220/004
US: 269/58



Family:

Publication number	Publication date	Application number	Application date
CN104108026 A	20141022	CN201410147938	20140414
CN104108026 B	20180316	CN201410147938	20140414

DE102014205943 A1	20141023	DE201410205943	20140331
JP2014213389 A2	20141117	JP20130089528	20130422
JP6137928 B2	20170531	JP20130089528	20130422
US2014312548 AA	20141023	US20140203938	20140311
US9649735 BB	20170516	US20140203938	20140311

Priority:

JP20130089528 20130422

Probable Assignee: OKUMA CORP

Assignee(s): (std)**:** OKUMA MACHINERY WORKS LTD

Assignee(s): OKUMA CORP

Inventor(s): (std)**:** YOSHIDA MAKOTO ; YOSHIDA MUTSUMI

Agent(s): BURR AND BROWN PLLC

115) Family number: 52097220 (WO12136601A1)

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Title: WORKPIECE CLAMPING FIXTURE, MACHINE TOOL, METHOD FOR RELEASABLY MOUNTING A WORKPIECE DEVICE AND WORKPIECE MACHINING METHOD

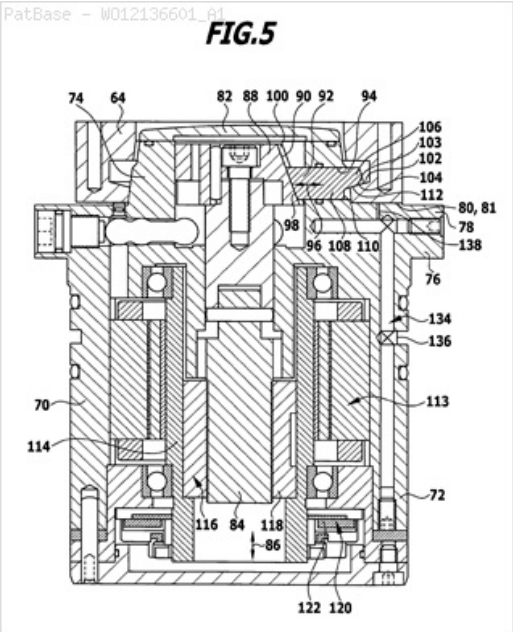
Abstract: A workpiece clamping fixture which is intended for a machine tool and on which a workpiece device can be releasably mounted is proposed and comprises at least one movable interlocking element, which can be made to engage on the workpiece device, a displacing device, which is displaceable and on which the at least one interlocking element is supported, at least one electric motor, which drives the displacing movement of the displacing device, and a displacement measuring device, for determining the position of the displacing device.

Classifications:

International (IPC 8-9): B23Q1/00 B23Q1/26 B23Q17/00 B23Q3/00 B23Q5/027 (Advanced/Invention)

CPC: B23Q1/0081 B23Q17/003

European: B23Q1/00D B23Q1/00D3A B23Q17/00C2



Family:

Publication number	Publication date	Application number	Application date
DE102011001866 A1	20121011	DE201110001866	20110407
WO12136601 A1	20121011	WO2012EP55889	20120330

Priority:

DE201110001866 20110407

Probable Assignee: MAG IAS GMBH

Assignee(s): (std)**:** BUEHRLE HANS DIETER ; GRUENER MATTHIAS ; MAG IAS GMBH

Inventor(s): (std)**:** GRUENER MATTHIAS ; BUEHRLE HANS DIETER

Agent(s): HOEGER STELLRECHT AND PARTNER

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

116) Family number: 44936220 (WO10046570A1)

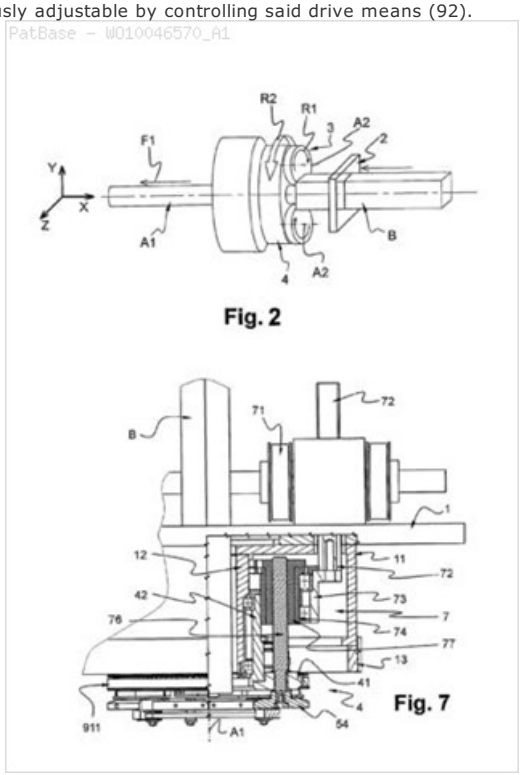
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Title: METHOD AND DEVICE FOR PRODUCING PARTS, IN PARTICULAR ELONGATE PARTS OF REVOLUTION, BY MACHINING A BAR FIXED IN ROTATION

Abstract: Device for manufacturing elongate parts of revolution, in particular made of wood, having a variable cross section in the longitudinal direction, by machining a bar (B), the device comprising a fixed chassis (1) bearing guide means (2) for guiding said bar in translation and maintaining it fixed in rotation, a turning assembly (4) which is rotated and comprises a plate (41) and at least two rotating tools (3) supported by movable supports (5) guided with respect to the plate and on which the tools are rotated about respective axes of rotation (A2) substantially parallel to the main axis, and the device comprises means for controlling the position of the supports which comprise drive means (92) fastened to the chassis and mechanical transmission means (71 to 76) providing a connection between said drive means and said supports (5), such that the

distance between the axes of the tools and the main axis is continuously adjustable by controlling said drive means (92).

Classifications:
International (IPC 8-9): B23D79/12 B27C5/00 B27C5/08 B27L3/00 B27L9/00 B27M3/22 (Advanced/Invention);
B23D79/00 B27C5/00 B27L3/00 B27L9/00 B27M3/22 (Core/Invention)
CPC: B27C5/08 B27C5/00 B27C7/005 B27L9/00 B27M3/22
European: B27C5/00 B27C5/08 B27C7/00C B27L9/00 B27M3/22



Family:

Publication number	Publication date	Application number	Application date
DE602009018018 D1	20131010	DE200960018018T	20091023
EP2361173 A1	20110831	EP20090760922	20091023
EP2361173 B1	20130814	EP20090760922	20091023
FR2937576 A1	20100430	FR20080005860	20081023
FR2937576 A3	20100430	FR20080005860	20081023
FR2937576 B1	20121207	FR20080005860	20081023
FR2937576 B3	20121207	FR20080005860	20081023
FR2943574 A3	20101001	FR20090001583	20090331
FR2943574 B3	20110617	FR20090001583	20090331
WO10046570 A1	20100429	WO2009FR01243	20091023

Priority:

FR20080005860 20081023 FR20090001583 20090331 EP20090760922 20091023
WO2009FR01243 20091023

Probable Assignee: SIIMO SAS

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Assignee(s): FRANCAISE DE FABRICATION D ARTICLES DE PECHE SOC ; SOCIETE FRANCAISE DE FABRICATION D ARTICLES DE PECHE ; SOFFAP SOCIETE FRANCAISE DE FABRICATION D ARTICLES DE PECHE ; SOFFAP SOC FRANCAISE DE FABRICATION D ARTICLES DE PECHE

Inventor(s): (std): FROMHOLZ CHRISTIAN

Inventor(s): CHRISTIAN FROMHOLZ

Agent(s): OFFICE FREYLINGER SA; SOFFAP SOC FRANCAISE DE FABRICATION DARTICLES DE PECHE; LECLAIRE JEAN LOUIS

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

117) Family number: 41981228 (US2010034610A)

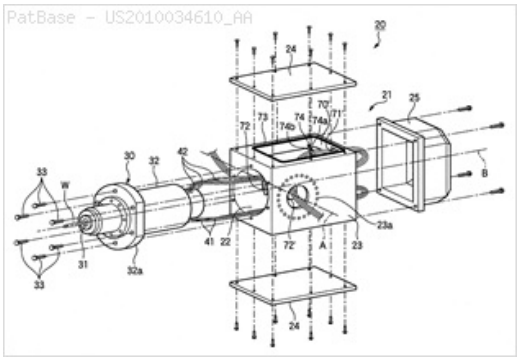
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Title: SPINDLE DEVICE AND MACHINING CENTER INCLUDING THE SAME

Abstract: To provide a spindle device and a machining center, in which spindle replacement can be carried out in an extremely short time, downtime during maintenance is short, and productivity is high. In a spindle device 20, there are provided wirings 41, 42 extended from a spindle 30 and wired to support arms via a bracket 21, and joint components 74, each provided at a position a predetermined length extended from extended parts for the wirings 41, 42, are accommodated within the bracket 21.

Classifications:
International (IPC 8-9): B23B19/02 B23C1/20 B23Q1/00 B23Q1/70 (Advanced/Invention);
B23B19/00 B23Q1/00 (Core/Invention);
B23B19/02 B23Q1/00 B23Q1/70 (Core/Non-invention)
CPC: Y10T409/307672 Y10T409/308288 Y10T409/308512 Y10T409/309296 Y10T409/309352 B23Q1/70 B23Q1/0009
European: B23Q1/00B B23Q1/70
US: 409/201 409/201S 409/212 409/212S 409/216 409/230 409/231

409/231P



Family:

Publication number	Publication date	Application number	Application date
CN101563186 A	20091021	CN200780046804	20071031
CN101563186 B	20110511	CN200780046804	20071031
JP2008161946 A2	20080717	JP20060351015	20061227
JP2008161947 A2	20080717	JP20060351016	20061227
JP5138213 B2	20130206	JP20060351016	20061227
JP5281744 B2	20130904	JP20060351015	20061227
TW200841980 A	20081101	TW20070150414	20071226
TWI344884 B	20110711	TW20070150414	20071226
US2010034610 AA	20100211	US20070519225	20071031
US7891920 BB	20110222	US20070519225	20071031
WO08078455 A1	20080703	WO2007JP71255	20071031

Priority:

JP20060351015 20061227 JP20060351016 20061227 WO2007JP71255 20071031

Probable Assignee: NSK LTD

Assignee(s): (std): INAGAKI YOSHIFUMI ; IWASAKI OSAMU ; NSK LTD ; TSUDAKOMA IND CO LTD ; YONEYAMA HIROKI ; TATSUDA YOSHINORI

Assignee(s): TSUDAKOMA CORP ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA KOGYO KK ; NSK LTD JP

Inventor(s): (std): TATSUTA YOSHINORI ; YOSHINORI TATSUDA ; YOSHIFUMI INAGAKI ; YONEYAMA HIROKI ; TATSUDA YOSHINORI ; OSAMU IWASAKI ; IWASAKI OSAMU ; INAGAKI YOSHIFUMI ; HIROKI YONEYAMA

Agent(s): SUGHRUE-265550; SUGHRUE 265550; SUGHRUE MION PLLC; OGURI SHOHEI ET AL

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

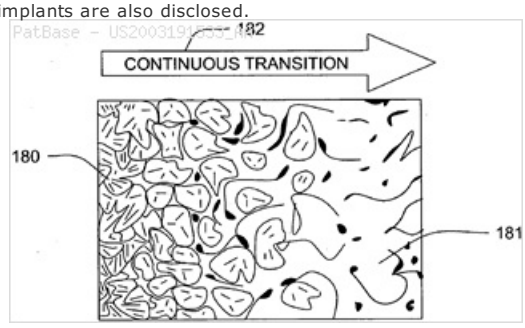
118) Family number: 29173232 (US2003191533A)

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Title: ARTICULATING DIAMOND-SURFACED SPINAL IMPLANTS

Abstract: Articulating diamond-surfaced spinal implants are disclosed. Materials which may be used to make the spinal implants and manufacturing and finishing techniques for making the implants are also disclosed.

Classifications:



International (IPC 8-9): A61B17/58 A61B17/86 A61F A61F2/00 A61F2/28 A61F2/30 A61F2/32 A61F2/34 A61F2/36 A61F2/38 A61F2/40 A61F2/42 A61F2/44 A61F2/46 A61F2/60 A61L27/00 A61L27/02 A61L27/04 A61L27/06 A61L27/08 A61L27/30 B05D3/06 B22F3/00 B22F3/10 B22F3/22 B22F5/00 B22F7/04 B22F7/06 B23C5/10 B23H5/04 B24B1/00 B24B9/16 B24D18/00 B24D3/02 B28B1/00 B28B3/00 B29C43/00 B29C43/16 B29C43/36 B29C65/02 B32B15/04 B32B19/00 B32B3/26 B32B5/18 B32B9/00 C01B31/06 C04B33/32 C04B34/653 C04B35/52 C04B35/634 C04B35/64 C04B35/645 C04B35/653 C22C13/00 C22C26/00 C22C29/10 C22C30/04 C22C32/00 C22C33/02 C23C14/06 C23C16/27 E21B10/36 (Advanced/Invention);
A61B17/86 A61F2/00 A61F2/30 A61F2/32 A61F2/34 A61F2/36 A61F2/38 A61F2/40 A61F2/44 A61F2/46 A61L27/00 B22F3/24 B29K503/04 B29L31/00 (Advanced/Non-invention);
A61B17/58 A61F2/28 A61F2/30 A61F2/32 A61F2/36 A61F2/38 A61F2/42 A61F2/44 A61F2/60 A61L27/00 B05D3/06 B22F3/10 B22F3/22 B22F7/06 B23C5/10 B23H5/00 B24D18/00 B29C43/00 B32B3/26 C04B35/52 C04B35/622 C22C26/00 C22C33/02 C23C14/06 C23C16/26 E21B10/36 (Core/Invention);
A61B17/68 A61F2/00 A61F2/36 A61F2/46 (Core/Non-invention);
A61F A61L (Subclass/Invention)

International (IPC 1-7): A61B A61C3/00 A61F2/00 A61F2/28 A61F2/30 A61F2/32 A61F2/34 A61F2/36 A61F2/38 A61F2/44 A61F2/60 A61L27/00 A61L27/02 A61L27/06 A61L27/08 B05D3/06 B22F3/10 B22F7/04 B24D3/02 B29C65/02 C04B33/32 C04B35/653 C22C29/10 C23C14/28 C23C16/18 C23F1/00 E21B10/36

CPC: A61F2/30749 A61F2002/30685 A61F2220/0008 A61L27/045 B29C43/361 B29C2043/043 B29K2303/04 B22F2005/001 B23B2240/28 B23C5/1009 B23C2210/03 B23C2226/125 B23C2226/315 B23H5/04 B24D18/00 A61F2/28 A61F2/34 A61F2/4014 A61F2/42 A61F2002/30986 A61L27/06 B29C2043/3615 B29K2105/101 Y10T428/24942 Y10T428/252 Y10T428/265 Y10T428/30 F16C33/12 C23C14/0611 C23C16/27 B32B15/04 Y10T428/12715 Y10T428/12722 Y10T428/12993 A61F2/36 B29C43/36 B29C2043/3618 B22F1/0003 B22F3/12 Y10T428/12042 Y10T428/12049 Y10T428/12479 Y10T428/12625 Y10T428/12639 Y10T428/12646 Y10T428/12708 Y10T428/249953 A61F2/4425 A61F2002/30092 A61F2002/30331 A61F2002/30392 A61F2002/30433 A61F2002/30434 A61F2002/30441 A61F2002/30451 A61F2002/30578 A61F2002/30649 A61F2002/30836 A61F2002/30841 A61F2002/3085 A61F2002/30884 A61F2002/30904 A61F2002/3097 A61F2002/30971 A61F2002/3611 A61F2002/3631 A61F2002/443 A61F2002/4631 A61F2210/0014 A61F2220/0041 A61F2220/0058 A61F2310/00167 A61F2310/00269 A61F2310/00293 A61L27/306 B22F2003/247 B24B9/162 B29C43/006 B29C43/16 B29K2503/04 B29L2031/7532 C04B35/52 C04B35/634 C04B35/645 C04B2235/3839 C04B2235/3856 C04B2235/3886 C04B2235/427 C04B2235/5436 C04B2235/5445 C04B2235/5472 C22C26/00 C22C2026/006 B22F7/062 C22C29/067

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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

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Title: MULTI-FUNCTION MACHINE TOOL WHICH PERMITS COMPLEX MACHINING OF LONG PIECES

Abstract: PCT No. PCT/FR89/00242 Sec. 371 Date Jan. 22, 1990 Sec. 102(e) Date Jan. 22, 1990 PCT Filed May 22, 1989 PCT Pub. No. WO89/11374 PCT Pub. Date Nov. 30, 1989.The machine tool of the invention combines the following three features: the workpiece holder (22) rotates around an axis (C) which is referred to as horizontal turning axis and is parallel to one (X) of the three orthogonal axes (X, Y, Z), the said axis (C) overlying a table (12) the flat upper-face of which is parallel to said turning axis (C) and comprises means for fastening one or more support and/or centering means (15, 24); the toolholder (38) comprises two clamping mandrels, one for a stationary tool and the other for a rotary tool; the workpiece holder is in relation with drive means (23, 25) which confer upon it one of the three kinematics of the following kinematic group: immobilization in a given angular position, a so-called slow speed of rotation for milling operations which are not parallel to the axis (C), and a so-called high speed for the turning.

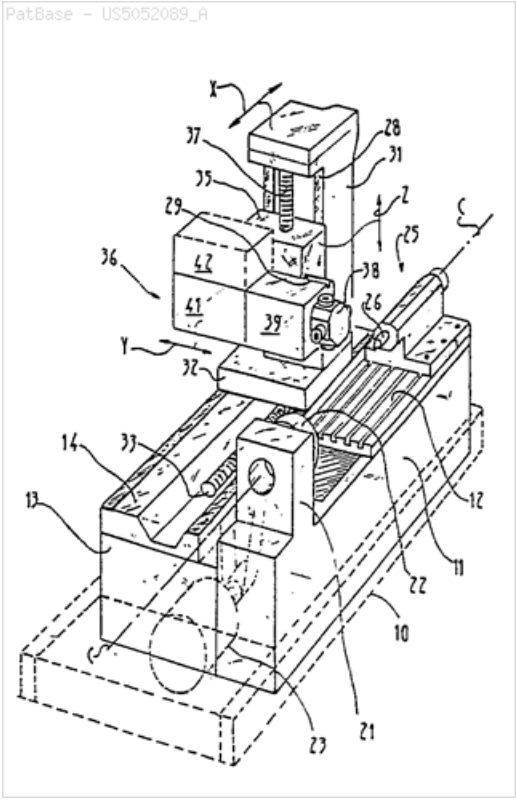
Classifications:

International (IPC 8-9): B23B3/16 B23Q1/00 B23Q1/01 B23Q1/56 (Advanced/Invention); B23B3/00 B23Q1/00 B23Q1/25 (Core/Invention)

International (IPC 1-7): B23B11/00 B23B3/16 B23Q1/00 B23Q1/02 B23Q3/155 B23Q5/22

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JP2504371 T2	19901213	JP19890505570T	19890522
US5052089 A	19911001	US19900465084	19900122
WO8911374 A1	19891130	WO1989FR00242	19890522

Priority:

FR19880007261 19880525 EP19890906136 19890522 WO1989FR00242 19890522

Probable Assignee: SOMAB SA

Assignee(s): (std)**:** SOMAB SA

Assignee(s): SOMAB SA A CORP ; SOMAB A CORP OF FRANCE SA ; SOMAB S A ; SOMAB S A MOULINS FR

Inventor(s): (std)**:** GADAUD ANDRE ; GAGNAL MICHEL

Inventor(s): MICHEL GAGNAL ; GAGNAL MICHEL F 78380 BOUJIVAL FR ; GADAUD ANDRE F 91700 STE GENEVIEVE DES BOIS FR ; ANDRE GADAUD

Designated states: AT BE CH DE FR GB IT JP LI LU NL SE US

120) Family number: 2750232 (DD223087A)

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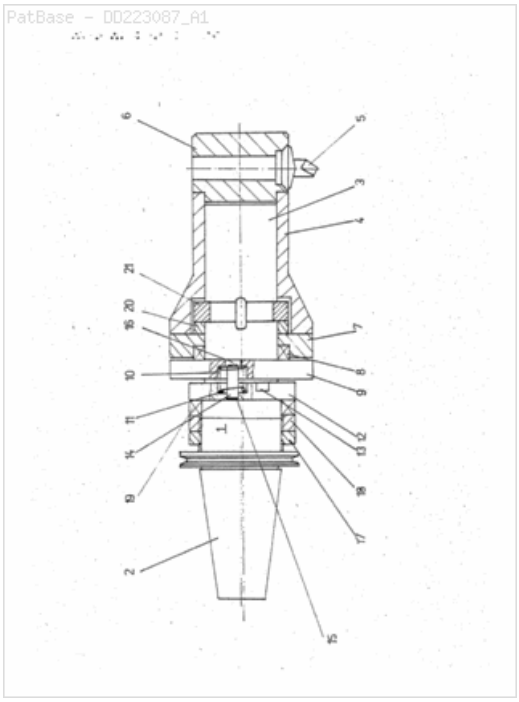
Title: AUTOMATISCH NACHSTELLBARE FEINBOHRSTANGE AUTOMATICALLY ADJUSTABLE FEINBOHRSTANGE (Machine translation)

Abstract: Source: DD223087A [DE] [Source: Claim 1] 1. Automatisch nachstellbare Feinbohrstange mit einer in der Arbeitsspindel zentrisch gelagerten Werkzeugaufnahme, die einen zu deren Drehachse parallel verlaufenden und exzentrisch angeordneten Halter fuer die Werkzeugschneide aufnimmt, der in Bohrstellung durch axialen Kraftschluss drehfest mit der Werkzeugaufnahme verbunden ist, wobei diese Verbindung fuer den Zeitraum der Schneidennachstellung aufgehoben wird und werkzeugexterne technische Mittel den nunmehr zur Werkzeugaufnahme drehbeweglichen Schneidenhalter in einer verdrehsicheren Lage zu der mittels Spindelrichteinrichtung verstellten Arbeitsspindel halten, gekennzeichnet dadurch, dass der Halter (4) fuer die Werkzeugschneide (5) in deren Richtung axial federbelastet sowie in bezug auf die Werkzeugaufnahme (2) dreh- und laengsbeweglich ausgebildet ist und mit einem werkzeuginternen, ortsfesten Anschlag (20) in einer Reibschlussverbindung steht, die in Abhaengigkeit der axialen Werkzeugbewegung fuer die Schneidennachstellung zeitweise aufhebbar ist.

Machine translation: [Source: claim 1] 1 automatically adjustable Feinbohrstange with a centrically mounted in the spindle sleeve that takes a parallel to its axis of rotation and eccentrically arranged holder for the cutting edge, which is connected with this connection for the period of the cutting adjustment shall be repealed in the drilling position by axial traction rotation set with the tool holder and tool-external technical resources keep the drehbeweglichen now to the tool holder cutting holder in a safe location to the spindle blocked by means of spindle setting device, marked that the holder (4) for the cutting edge (5) in their direction is axial spring loaded and trained on the tool holder (2) swivel and longitudinal mobile and is available with an internal tool, fixed stop (20) in a friction end connection that is temporarily resolved in relation to the axial movement of tool for cutting adjustment.

Classifications:
International (IPC 8-9): B23B29/08 (Advanced/Invention);

B23B29/00 (Core/Invention)
International (IPC 1-7): B23B29/08



Family:

Publication number	Publication date	Application number	Application date
DD223087 A1	19850605	DD19840262151	19840423

Priority:

DD19840262151 19840423

Probable Assignee: WERKZEUGMASCH HECKERT VEB

Assignee(s): (std): WERKZEUGMASCH HECKERT VEB

Assignee(s): VEB WERKZEUGMASCHINENKOMBINAT FRITZ HECKERT KARL MARX STADT DD

Inventor(s): (std): WEBER HORST ; LUTZE HANS ; IMHOF GUENTER ; ILLGEN KLAUS ; BORCHARDT FOLKER

Inventor(s): WEBER HORST DD ; BORCHARDT FOLKER DD ; ILLGEN KLAUS DD ; IMHOF GUENTER DD ; LUTZE HANS DD

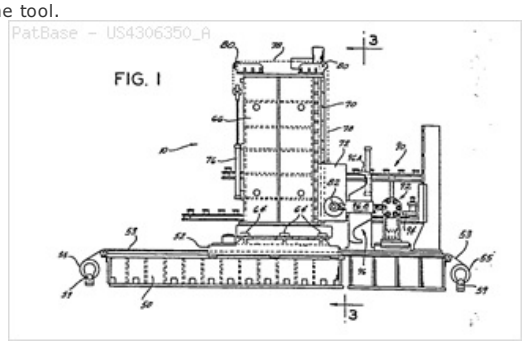
121) Family number: 15366235 (US4306350A)

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Title: AUTOMATIC TOOL CHANGER AND TOOL STORAGE ARRANGEMENT FOR MACHINE TOOL

Abstract: A combined tool storage and tool change arrangement for use with a machine tool of the type which includes a power driven rotatable spindle having a socket which receives a tool shank of a predetermined size. The tool storage arrangement comprises a main tool storage magazine with a plurality of tool receiving sockets sized to respectively receive a tool having a shank of said predetermined size. Means is provided for moving the main tool storage magazine whereby to present a predetermined tool receiving socket and the tool therein to a first tool transfer point. An auxiliary tool storage magazine is provided for receiving and storing a plurality of tools having shanks of a different size than said predetermined size. The auxiliary tool storage magazine has a shank of said predetermined size whereby the auxiliary tool storage magazine may be stored in a socket of the main tool storage magazine. Means is provided for transferring a predetermined tool storage magazine having a desired assortment of tools thereon from the main tool storage magazine to a tool transfer station contiguous the spindle of the machine tool. A tool transfer means is provided for transferring the predetermined tool from the auxiliary tool storage magazine to the spindle of the machine tool.

Classifications:
International (IPC 8-9): B23Q3/157 (Advanced/Invention); B23Q3/157 (Core/Invention)
International (IPC 1-7): B23P23/02 B23Q1/08 B23Q3/155 B23Q3/157
CPC: Y10T29/49819 Y10T483/10 Y10T483/175 Y10T483/1755 Y10T483/1845 B23Q3/15773
European: B23Q3/157D
US: 211/1.56 211/105 29/426.3 29/568 483/1 483/37 483/39 483/63



Family:

Publication number	Publication date	Application number	Application date
BR8102898 A	19820202	BR19810002898	19810511
CA1146347 A1	19830517	CA19810371917	19810227
DE3166792 D1	19841129	DE19813166792	19810508
EP0040501 A1	19811125	EP19810302053	19810508
EP0040501 B1	19841024	EP19810302053	19810508
IL62255 A0	19810520	IL19810062255	19810302
IL62255 A1	19850731	IL19810062255	19810302
JP1271593 C3	19850625	JP19810070582	19810511

JP57027639 A2	19820215	JP19810070582	19810511
JP59049859 B4	19841205	JP19810070582	19810511
KR19830005966 A	19830914	KR19810001507	19810501
KR830005966 A	19830914	KR19810001507	19810501
KR840000439 B1	19840407	KR19810001507	19810501
US4306350 A	19811222	US19800149124	19800512

Priority:

US19800149124 19800512 CA19810371917 19810227

Probable Assignee: KEARNEY AND TRECKER CORP

Assignee(s): (std): KEARNEY AND TRECKER CORP

Assignee(s): KIELMA ERVIN J ; CITICORP USA INC ; DAILEY FRANK E

Inventor(s): (std): KIELMA ERVIN J ; KIELMA E ; FURANKU II DEIRII ; DAILEY FRANK E ; DAILEY F ; AABIN JIEI KIIRUMA ; AABIN JEI KIIRUMA

Agent(s): SHERMAN; REINHOLD COHN AND PARTNERS

Designated states: BE CH DE FR GB IT LI NL SE

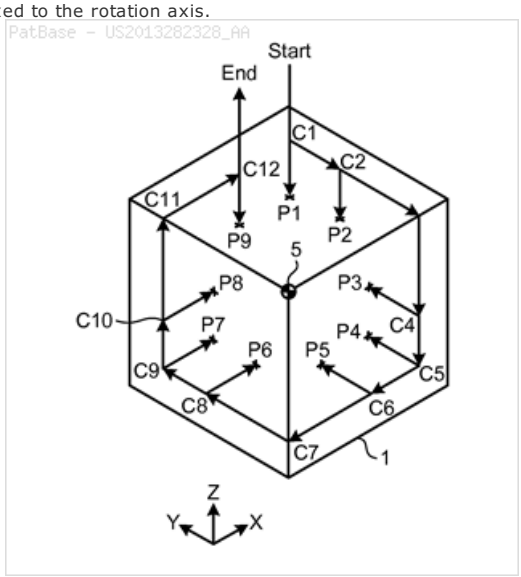
122) Family number: 51505240 (US2013282328A)

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Title: ERROR MEASURMENT DEVICE AND ERROR MEASUREMENT METHOD

Abstract: The present invention has a rotation-axis geometric-deviation measuring step of measuring a position and a tilt of a rotation-axis center line by measuring a position of a point on a surface of a workpiece fixed to a rotation axis, a geometric-deviation-parameter setting step of setting a correction amount of the measured position and tilt of the rotation-axis center line in a numerical control device, a workpiece-installation-error measuring step of measuring an installation position and a tilt of the workpiece with reference to the position of the rotation-axis center line, and a workpiece-installation-error parameter setting step of setting the measured installation position and tilt of the workpiece in the numerical control device, and accordingly enables measurement of a position and a tilt of the rotation axis center by measuring the position of a point on the workpiece surface in a state where the workpiece is fixed to the rotation axis.

Classifications:
International (IPC 8-9): B23Q17/00 B23Q17/22 G05B19/401 (Advanced/Invention)
CPC: G05B19/401 B23Q17/2291
European: B23Q17/22L
US: 702/150



Family:

Publication number	Publication date	Application number	Application date
CN103328154 A	20130925	CN201180065712	20110124
CN103328154 B	20160810	CN201180065712	20110124
DE112011104760 T5	20131219	DE201111104760T	20110124
JP2012101742 A1	20140630	JP20110553027T	20110124
JP4959028 B1	20120620	JP20110553027T	20110124
US2013282328 AA	20131024	US20110977781	20110124
WO12101742 A1	20120802	WO2011JP51236	20110124

Priority:

WO2011JP51236 20110124

Probable Assignee: MITSUBISHI ELECTRIC CORP

Assignee(s): (std): IUCHI TAKAHIRO ; IUCHI YUKIHIRO ; MITSUBIHI ELECTRIC CORP ; MITSUBISHI ELECTRIC CORP ; ONO SHUNRO ; SATO RYUTA

Inventor(s): (std): SATO RYUTA ; IUCHI TAKAHIRO ; ONO SHUNRO ; IUCHI YUKIHIRO

Agent(s): SAKAI HIROAKI

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

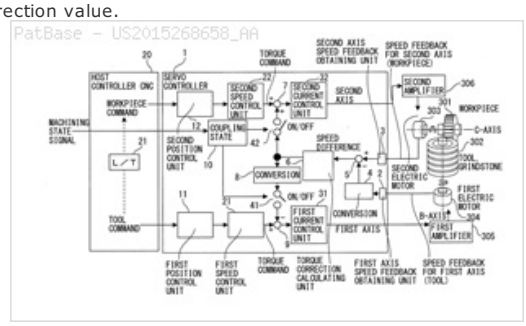
123) Family number: 60396244 (US2015268658A)

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Title: SERVO CONTROLLER FOR REDUCING INTERFERENCE BETWEEN AXES IN MACHINING

Abstract: The servo controller of the present invention includes a first axis speed feedback obtaining unit, a second axis speed feedback obtaining unit configured to obtain an amount of speed feedback for a second axis synchronizing with a first axis, a speed conversion unit configured to convert an amount of speed feedback for the first axis by using a conversion coefficient, a speed difference calculating unit configured to calculate a speed difference between the converted amount of speed feedback for the first axis and the amount of speed feedback for the second axis, a torque correction calculating unit configured to calculate a torque correction value by using the speed difference, a second axis torque command correcting unit using the torque correction value, a torque correction value converting unit using the conversion coefficient, and a first axis torque command correcting unit using the converted torque correction value.

Classifications:
International (IPC 8-9): B23Q15/00 B23Q15/18 G05B19/18 G05B19/19 G05B19/25 G05B19/404 H02P5/50 (Advanced/Invention)
CPC: G05B19/19 G05B2219/50225 G05B2219/50234 G05B19/18
US: 1/1 318/570



Family:

Publication number	Publication date	Application number	Application date
CN104965482 A	20151007	CN201510125799	20150320
CN104965482 B	20170609	CN201510125799	20150320
DE102015003243 A1	20150924	DE201510003243	20150313
DE102015003243 B4	20170921	DE201510003243	20150313
JP2015186295 A2	20151022	JP20140058642	20140320
JP5863860 B2	20160217	JP20140058642	20140320
US2015268658 AA	20150924	US20150662409	20150319
US9304504 BB	20160405	US20150662409	20150319

Priority:
JP20140058642 20140320

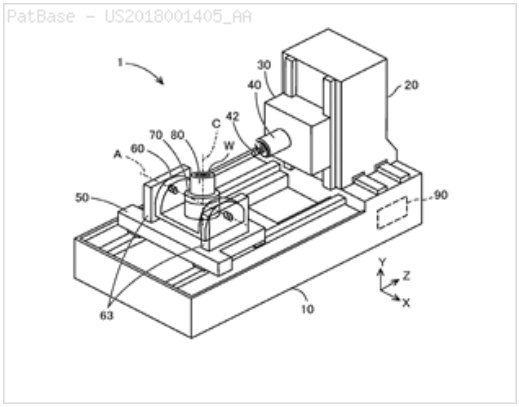
Probable Assignee: FANUC CORP
Assignee(s): (std): FANUC CORP ; FANUC LTD
Inventor(s): (std): SONODA NAOTO
Agent(s): AOKI ATSUSHI; TSURUTA JUNICHI; RATNERPRESTIA

124) Family number: 68076244 (US2018001405A)

Title: GEAR CUTTING TOOL, GEAR MACHINING DEVICE, AND GEAR MACHINING METHOD

Abstract: To provide a gear cutting tool capable of supplying a coolant liquid to an optimum position even when cutting edges are reground. The gear cutting tool includes the tool body having a plurality of blades on an outer peripheral surface thereof and a center hole, and a nozzle provided in the center hole of the tool body so that a fixed position in the tool body is adjustable. The nozzle includes a flow channel which allows supplied coolant liquid to flow into the center hole of the tool body, and discharge the coolant liquid toward the plurality of blades.

Classifications:
International (IPC 8-9): B23F19/10 B23F21/00 B23F21/10 B23F23/12 B23F5/00 B23F5/16 B23F5/20 B23F9/08
B23Q11/10 (Advanced/Invention);
B23F21/10 B23F5/16 (Advanced/Non-invention)
CPC: B23F23/12 B23F5/163 B23F21/10 B23C5/28 B23Q11/1023



Family:

Publication number	Publication date	Application number	Application date
CN107552893 A	20180109	CN201710522777	20170630
DE102017114088 A1	20180104	DE201710114088	20170626
JP2018001343 A2	20180111	JP20160131376	20160701
JP2018024060 A2	20180215	JP20160157718	20160810
JP2018024062 A2	20180215	JP20160157866	20160810
US2018001405 AA	20180104	US20170631513	20170623

Priority:
JP20160131376 20160701 JP20160157718 20160810 JP20160157866 20160810

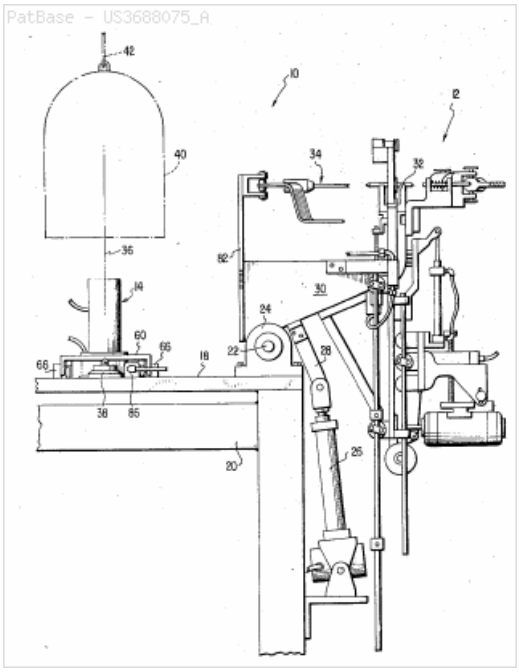
Probable Assignee: JTEKT CORP
Assignee(s): (std): JTEKT CORP
Assignee(s): N A
Inventor(s): (std): YOSHIMITSU OKADA ; OTANI TAKASHI ; OTANI HISASHI ; OKADA YOSHIMITSU ; NATSUDA KAZUKI ;

125) Family number: 1020245 (US3688075A)

Title: MECHANICAL/NONMECHANICAL MACHINING CENTER

Abstract: A combination of mechanical and non-mechanical machining capabilities are integrated into a single machining center. Both the mechanical and the non-mechanical machining equipment are mounted for selective movement between a non-working position completely clearing the work area and a working position for conducting machining operations along a common centerline.

Classifications:
International (IPC 8-9): B23K15/08 H01J37/30 (Advanced/Invention); B23K15/08 H01J37/30 (Core/Invention)
International (IPC 1-7): B23K15/00 B23P23/04
CPC: H01J37/3002 B23K15/08 Y10T408/34 Y10T408/93
European: B23K15/08 H01J37/30A
US: 219/121.12 219/121.18 219/121.22 219/121EB 408/22 408/236



Family:

Publication number	Publication date	Application number	Application date
US3688075 A	19720829	US19700100060	19701221

Priority:
US19700100060 19701221

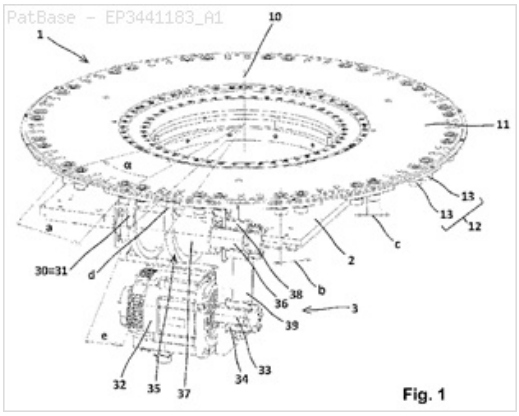
Probable Assignee:	CUPLER JOHN A
Assignee(s): (std)**:**	CUPLER JOHN A
Assignee(s):	JOHN A CUPLER
Inventor(s): (std)**:**	CUPLER JOHN A
Inventor(s):	JOHN A CUPLER

126) Family number: 71610246 (EP3441183A1)

Title: POSITIONABLE ROTARY TABLE TABLE ROTATIVE POSITIONNABLE

Abstract: A positionable rotary table (1), particularly a table of a machine tool, comprising a supporting disc (11) for securing semi-finished products to be machined in a gradual stepwise process, which comprises a drive device (3) arranged below the level of the supporting disc (11), whereby the drive device (3) comprises a drive servo-motor (32) with an output shaft (33) provided with a toothed pulley (34) and a cam (30) whose driven shaft (37) parallel to an output shaft of the servo-motor (32) is provided with a toothed pulley (38), the toothed pulleys (34, 38) being connected to each other by a backlash-free toothed belt, whereby near the circumference of the supporting disc (11) are arranged a plurality of rotary bodies (13) extending with their rotary portions downwards out of the supporting disc (11), whereby their axes of rotation lie on a circle whose axis is the axis (10) of rotation of the supporting disc (11). The rotary rolling bodies (13) are arranged in pairs (12) and the cam (30) is an axial cam formed by a protrusion (35) of a continuous helix (31) having a length of at least two thread pitches, whereby the cross-section of the of the protrusion (35) has the shape of a parallelogram whose side walls are at least partially in contact with the surfaces of at least one pair of rotary rolling bodies (13), whereby the cross-section of the protrusion (35) has over the entire length of the helix (31) a defined variable shape, the sides of the helix (31) being structurally in permanent contact with the surfaces of at least one pair (12) of rotary rolling bodies (13).

Classifications:
International (IPC 8-9): B23Q1/52 B23Q1/66 B23Q16/00 B23Q16/02 B23Q5/10 B23Q7/02 B25H1/08 B25H1/10 F16H25/04 F16H53/00 (Advanced/Invention)
CPC: B23Q5/10 B23Q1/522 B23Q16/025 B23Q2220/004 F16H53/00



Family:

Publication number	Publication date	Application number	Application date
CZ20170443 A3	20181017	CZ20170000443	20170802
CZ307493 B6	20181017	CZ20170000443	20170802
EP3441183 A1	20190213	EP20180185752	20180726

Priority:

CZ20170000443 20170802

Probable Assignee: VUTS A S

Assignee(s): (std)**:** VUTS A S

Assignee(s): VUTS AS

Inventor(s): (std)**:** TOMAS VACLAV ; RICHTER ALES

Agent(s): MUSIL DOBROSLAV

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

127) Family number: 67317247 (US2017308065A)

Title: OPERATION ORDER SYSTEM

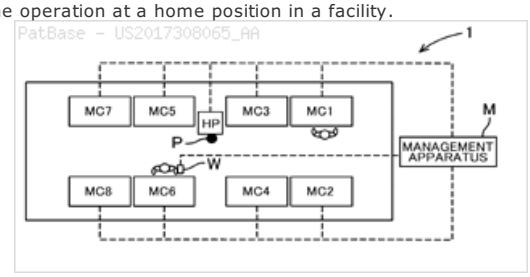
Abstract: An operation order system includes a management apparatus that manages processing executed by a plurality of processing machines and operations performed on the processing machines by operators and that determines a next operation for each operator based on an operation state of the operator, and portable terminal that can be carried by the operator and via which the operator can input the operation state of the operator so that the portable terminal transmits the input operation state to the management apparatus through wireless communication, the portable terminal receives the next operation from the management apparatus through wireless communication and displays the received next operation. The portable terminal receives, as the operation state, operation start information or operation completion information input from the operator indicating that the operator has started or completed the operation at a home position in a facility.

Classifications:

International (IPC 8-9): G05B11/01 G05B19/4155 G05B19/418 G06Q10/06 G06Q50/04 (Advanced/Invention)

CPC: G05B19/4155 G05B2219/31455 G05B19/418 G05B19/41865 G05B2219/32211 G06Q10/063 Y02P90/18 Y02P90/20

US: 700/27



Family:

Publication number	Publication date	Application number	Application date
CN107368045 A	20171121	CN201710270653	20170424
DE102017108685 A1	20171026	DE201710108685	20170424
JP2017199151 A2	20171102	JP20160088503	20160426
US2017308065 AA	20171026	US20170492140	20170420
US10289099 BB	20190514	US20170492140	20170420

Priority:

JP20160088503 20160426

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

Assignee(s): N A

Inventor(s): (std)**:** YOSHIKAWA KAZUKI ; YAMAGUCHI YUJI ; AONO TOSHIO ; NAKAGAWA TOMOYUKI ; TOMOYUKI NAKAGAWA ; KAZUKI YOSHIKAWA ; TOSHIO AONO ; YUJI YAMAGUCHI

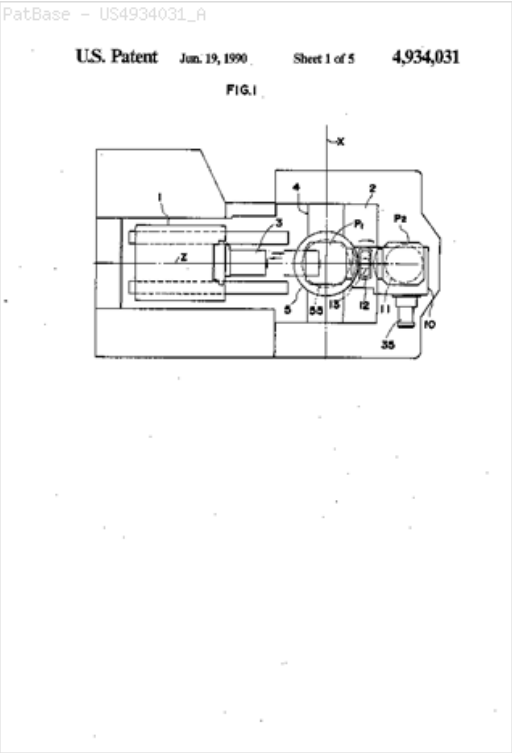
Agent(s): OBLON MCCLELLAND MAIER AND NEUSTADT LLP

128) Family number: 3177248 (US4934031A)

Title: AUTOMATIC PALLET CHANGER

Abstract: An automatic pallet changer includes a pallet supporter for receiving a first pallet, a table for receiving a second pallet on the machine, a pallet exchanger arm carried on a supporting shaft disposed between the pallet supporter and the table, the exchanger arm being rotative around the supporting shaft and movable up and down along it, the exchanger arm carrying the first pallet at one hand and the second pallet at the other hand.

Classifications:
International (IPC 8-9): B23Q7/00 B23Q7/14 (Advanced/Invention); B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q41/02 B23Q7/00 B23Q7/14 B65G47/00
CPC: Y10T29/5124 Y10T29/5196 B23Q7/1431
European: B23Q7/14K2
US: 198/346.1 29/33P 29/563 414/744.3



Family:

Publication number	Publication date	Application number	Application date
DE68920667 D1	19950302	DE19896020667	19890823
DE68920667 T2	19950518	DE19896020667T	19890823
EP0356216 A2	19900228	EP19890308538	19890823
EP0356216 A3	19920226	EP19890308538	19890823
EP0356216 B1	19950118	EP19890308538	19890823
JP2059246 A2	19900228	JP19880209171	19880823
US4934031 A	19900619	US19890397131	19890822

Priority:
JP19880209171 19880823

Probable Assignee: MORI SEIKI SEISAKUSHO KK
Assignee(s): (std): MORI SEIKI SEISAKUSHO KK
Assignee(s): MORI SEIKI SEISAKUSHO NARA JP KK ; KABUSHIKI KAISHA MORI SEIKI SEISAKUSHO ; KABUSHIKI KAISHA MORI SEIKI SEISAKUSHO NARA JP
Inventor(s): (std): MAEDA NORIHIDE ; TERAOKA MASANOBU
Inventor(s): TERAOKA MASANOBU TENRISHI NARA JP ; MAEDA NORIHIDE KASHIHARASHI NARA JP
Designated states: CH DE FR GB IT LI

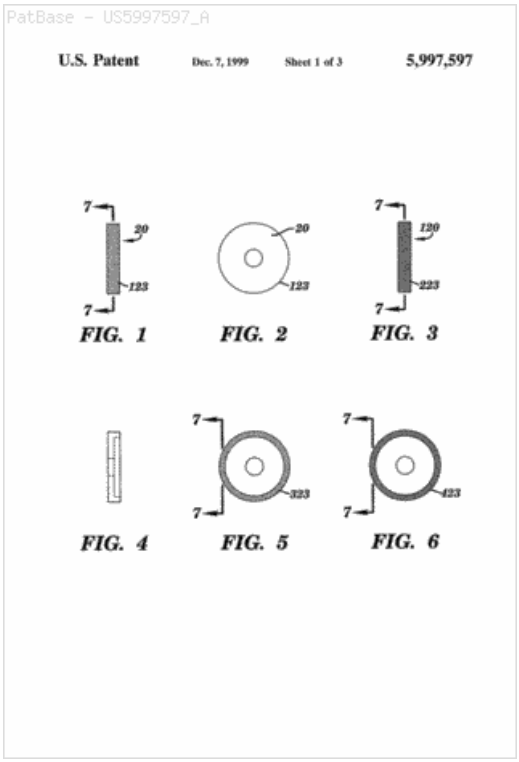
129) Family number: 11906248 (US5997597A)

Title: Abrasive tool with knurled surface

Abstract: An abrasive tool includes a steel core having at least one cutting face which is knurled to provide a uniform texture of recesses of predetermined size. A single layer of abrasive grain such as diamond, synthetic diamond, and/or cubic boron nitride having a grit size which is less than the predetermined size of the recesses is brazed onto the cutting face so that the single layer of abrasive grain follows the texture of the cutting face to facilitate coolant and swarf transport for improved tool life, power consumption and workpiece surface finish.

Classifications:
International (IPC 8-9): B24D18/00 B24D5/00 B28D1/12 (Advanced/Invention)
International (IPC 1-7): B23F21/03 B24D18/00 B24D3/00
CPC: B24D5/00 B24D18/00 B28D1/12
European: B24D18/00 B24D5/00 B28D1/12
US: 451/527 451/547 51/295 51/307 51/309

PatBase - US5997597_A



Family:

Publication number	Publication date	Application number	Application date
US5997597 A	19991207	US19980028405	19980224

Priority:

US19980028405 19980224

Probable Assignee: NORTON CO

Assignee(s): (std)**:** NORTON CO

Assignee(s): NORTON COMPANY

Inventor(s): (std)**:** HAGAN JOHN

130) Family number: 28041253 (US2004113346A)

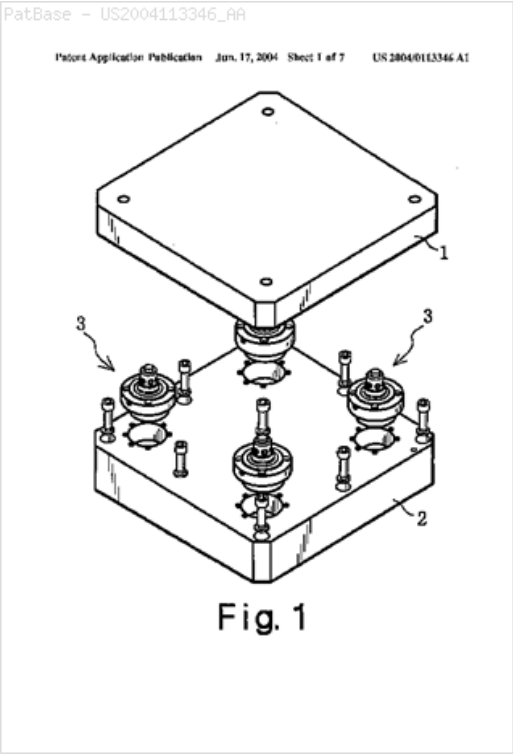
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Title: WORK PALLET POSITIONING AND FIXING DEVICE

Abstract: The present invention presents a work pallet positioning and fixing device capable of positioning in both horizontal and vertical directions through elastic deformation of an annular engaging portion, wherein the engaging portion can elastically deform along the entire periphery and even locally in a circumferential direction thereof. When work pallet (1) is positioned and fixed on base body (2) by means of a positioning device (3), engaging portion (66) formed integrally with a bush (60) is capable of elastically deforming in a direction of diametrical expansion due to annular escape groove (68), and the engaging portion is provided with a plurality of slits (70), and the engaging portion (66) can deform easily in the direction of diametrical expansion and the annular tapered surface (67) of the engaging portion (66) is kept in a state of being in tight contact with the annular tapered surface (23) of sleeve shaft (10b). Accordingly, the work pallet (1) can be accurately positioned to the base body (2) in horizontal and vertical directions, and in addition, there is no lowering of the positioning accuracy due to chips or the like.

Classifications:

International (IPC 8-9): B23Q1/00 B23Q3/00 B23Q3/06 B23Q3/18 B23Q7/14 (Advanced/Invention);
B23Q1/00 B23Q3/06 B23Q3/18 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q1/00 B23Q1/08 B23Q3/00 B23Q3/06 B23Q3/18 B23Q7/14
CPC: B23Q3/18 B23Q1/0081
European: B23Q1/00D B23Q1/00D3 B23Q3/18 B23Q7/14K
US: 269/309 269/309P



Family:

Publication number	Publication date	Application number	Application date
EP1410874 A1	20040421	EP20020747716	20020723
EP1410874 A4	20041027	EP20020747716	20020723
JP2003039264 A2	20030212	JP20010223490	20010724
JP4762448 B2	20110831	JP20010223490	20010724
TWI244423 B	20051201	TW20020121588	20020920
US2004113346 AA	20040617	US20040481736	20040115
US6955347 BB	20051018	US20040481736	20040115
WO03009964 A1	20030206	WO2002JP07415	20020723

Priority:

JP20010223490 20010724 WO2002JP07415 20020723

Probable Assignee: PASCAL ENGINEERING CORP

Assignee(s): (std): KAWAKAMI TAKAYUKI ; KIMURA SEIJI ; KITAURA ICHIRO ; PASCAL KK ; KURODA TAKAYUKI ; PASCAL CORP ; PASCAL ENG CORP

Assignee(s): PASCAL ENGINEERING CORP

Inventor(s): (std): KAWAKAMI TAKAYUKI ; KIMURA SEIJI ; KITAURA ICHIRO ; KURODA ITTETSU ; KURODA TAKAYUKI

Agent(s): JORDAN AND HAMBURG LLP

Designated states: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR US

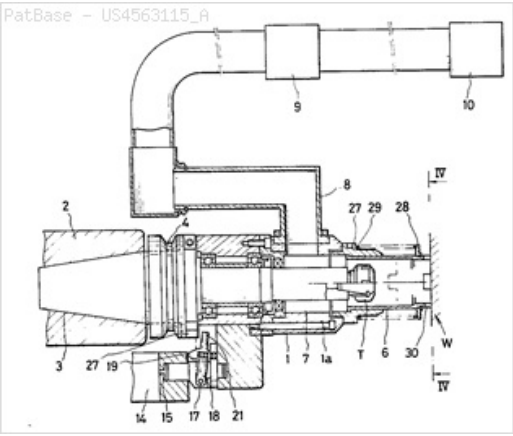
131) Family number: 2088256 (US4563115A)

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Title: CUTTING MACHINE HAVING STOCK SUCTION MEANS

Abstract: A unit case having the shape of a hollow cylinder is demountably mounted in a tapered hole of a spindle by use of a unit holding member and a stock suction nozzle is demountably mounted on the tip end portion of said unit case through a cover member. An end of a suction pipe led to the inside of the hollow of said unit case is fixed on the rear end portion of said unit case, and a stock suction means such as a vacuum pump is provided on the other end portion of said suction pipe through a cleaner.

Classifications:
International (IPC 8-9): B23Q11/00 B25J19/00 (Advanced/Invention); B23Q11/00 B25J19/00 (Core/Invention)
International (IPC 1-7): B08B15/04 B23B47/34 B23C7/00 B23Q11/00 B23Q11/02 B23Q11/06 B27G3/00 B29C17/10
CPC: B23Q2220/008 Y10S408/71 B23Q11/006 B23Q11/0046 B25J19/00 B25J19/0058 Y10T408/50 Y10T408/98 Y10T409/30392 Y10T409/304088
European: B23Q11/00F1 B23Q11/00F5 B25J19/00 B25J19/00H
US: 408/241G 408/67 408/710 409/134 409/137 451/456 51/273



Family:

Publication number	Publication date	Application number	Application date
DE3333267 A1	19840322	DE19833333267	19830915
GB2131160 A1	19840613	GB19830023707	19830905
GB2131160 B2	19860212	GB19830023707	19830905
GB8323707 A0	19831005	GB19830023707	19830905
JP59053141 A2	19840327	JP19820161018	19820917
JP61109644 A2	19860528	JP19850194832	19850905
US4563115 A	19860107	US19830533694	19830919

Priority:

JP19820161018 19820917 JP19850194832 19850905

Probable Assignee: KYORITSU SEIKI CORP

Assignee(s): (std)**:** KYORITSU SEIKI CORP

Assignee(s): KYORITSU SEIKI KK ; KIYOURITSU SEIKI KK

Inventor(s): (std)**:** ABE HITOSHI ; KOJIMA SADAO

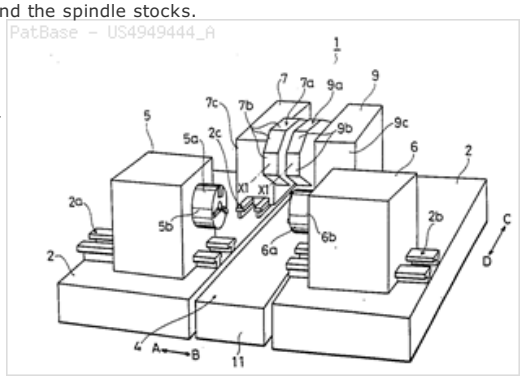
Inventor(s): SADAO KOJIMA ; HITOSHI ABE

132) Family number: 3164259 (US4949444A)

© PatBase

Title: MACHINE TOOL MACHINING METHOD

Abstract: A complex machine tool has a single frame having a chip collecting space at a center portion thereof, first and second spindle stocks on the frame, relatively free to move and drive in a Z axis direction and holding the chip collecting space therebetween, workpiece spindles on the spindle stocks free to rotate and drive and facing each other, and tool rests. The tool rests have turrets and can assume various kinds of movement. Complicated and varied types of machining can be performed combining the rotation control of the workpiece spindles and the spindle stocks.



Classifications:

International (IPC 8-9)**:** B23B1/00 B23B13/02 B23B15/00 B23B25/00 B23B29/24 B23B3/00 B23B3/06 B23B3/16 B23B3/30 B23B9/00 B23P23/02 B23P23/04 B23Q1/01 B23Q11/00 B23Q13/00 B23Q15/00 B23Q16/02 B23Q37/00 B23Q39/00 B23Q39/04 B23Q5/04 B23Q5/10 B23Q5/36 B23Q7/00 B23Q7/04 D04H1/74 D04H3/04 G05B19/18 G05B19/4061 G05B19/4093 G05B19/414 G05D3/12 H01L27/14 H01L27/146 H02P29/00 H04L12/26 H04L12/28 H04L12/46 H04L12/66 H04N1/028 H04N5/335 H04N5/357 H04N5/369 H04N5/376 (Advanced/Invention);
B23B13/02 (Advanced/Non-invention);
B23B1/00 B23B29/24 B23B3/00 B23B9/00 B23Q1/00 B23Q11/00 B23Q15/00 B23Q37/00 B23Q39/00 B23Q5/00 B23Q5/22 B23Q7/00 B23Q7/04 G05B19/18 G05B19/406 G05B19/4093 G05B19/414 H04L12/26 H04L12/28 H04L12/46 H04L12/66 (Core/Invention);
B23B13/00 (Core/Non-invention)

International (IPC 1-7)**:** B23B1/00 B23B13/00 B23B13/02 B23B15/00 B23B25/00 B23B29/24 B23B3/00 B23B3/06 B23B3/16 B23B3/30 B23B7/04

CPC: B23Q39/048 G05B2219/50183 Y10T29/5109 Y10T29/5114 Y10T82/2504 Y10T82/2524 Y10T82/2587 Y10T82/2508 Y10T82/2593 Y10T82/2502 Y10T82/2506 Y10T82/10 Y02P90/265 B23Q1/01 B23Q7/001 B23Q7/045 G05B19/414 B23Q7/043 B23B3/06 B23B3/167 B23B3/30 B23Q7/04 G05B19/182 G05B19/4061 G05B19/4093 G05B2219/31407 G05B2219/33263 G05B2219/36338 G05B2219/42104 G05B2219/45125 G05B2219/49143 G05B2219/50001 G05B2219/50003 G05B2219/50004 G05B2219/50219 G05B2219/50235 G05B2219/50382 G05B2219/50387

European: B23B3/06 B23B3/16D B23B3/30 B23Q1/01 B23Q39/04C B23Q7/00C B23Q7/04 B23Q7/04C B23Q7/04D G05B19/18B G05B19/4061 G05B19/4093 G05B19/414 S05B219/31407 S05B219/33263 S05B219/36338 S05B219/42104 S05B219/45125 S05B219/49143 S05B219/50001 S05B219/50003 S05B219/50004 S05B219/50183 S05B219/50219 S05B219/50235 S05B219/50382 S05B219/50387

US: 29/27.00C 29/27.00R 29/27C 29/27R 364/474.11 364/474.2 364/474.22 364/474.36 700/178 700/180 700/194 82/1.11 82/111 82/118 82/119 82/120 82/121 82/129 82/159 82/162

Family:

Publication number	Publication date	Application number	Application date
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AU601140 B3	19900716	AU19900057741	19900830
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JP1852353 C3	19940621	JP19880300341	19881128
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JP64087102 A2	19890331	JP19870241520	19870925
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Priority:

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Probable Assignee: YAMAZAKI MAZAK CORP

Assignee(s): (std)**:** HITACHI LTD ; RICOH KK ; YAMAZAKI MAZAK CORP ; YAMAZAKI MAZIK CORP ; RICOH GEN

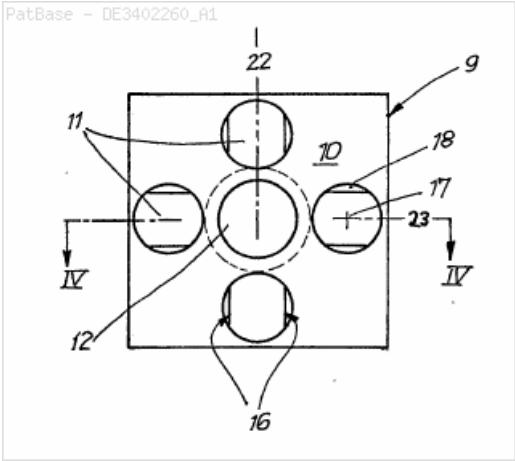
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Assignee(s):	RICOH RES INST OF GEN ELECTRON ; RICOH CO LTD ; HASHIMOTO SHUICHI ; YAMAZAKI MAZATSUKU KK ; YAMAZAKI MAZAK CORP OOGUCHI ; YAMAZAKI MAZAK CORP AICHI JP ; YAMAZAKI MAZAK CORP OOGUCHI AICHI JP ; WATANABE SEIGO ; TESHIGAWARA MIKIRO ; UEMURA KAZUKI ; OSHIMA KATSUSHI ; MOMOI SHOJI ; MITSUKUCHI YUKIO ; OHASHI HAJIME ; SAKATA KEIKICHI ; SANO YUJI ; INOUE TOSHIHIKO ; KATO CHOJI ; KOJIMA HIROSHI
Inventor(s): (std):	AKIYAMA ZENICHI ; CHOJI KATO ; FURUHASHI RYOICHI ; HAJIMI OOHASHI ; HIROSHI KOJIMA ; KATSUSHI OOSHIMA ; KATSUSHI OSHIMA ; KAZUKI UEMURA ; KEIKICHI SAKATA ; KOBATA MITSUHIRO ; KOJIMA HIROSHI ; KOJIMA HORISHI ; MIKIRO TESHIGAWARA ; MITSUKUCHI YUKIO ; INAGI SHUNICHI ; INOUE TOSHIHIKO ; ISHIDA MAMORU ; KATO CHOJI ; MOMOI SHOJI ; OHASHI HAJIME ; OOHASHI HAJIMI ; OOSHIMA KATSUSHI ; OSHIMA KATSUSHI ; OSHIMA KATSUSHI 960 ASANOHANE ; OSHIMA KATSUSHI ASANOHANE ; SAKATA KEIKICHI ; SANO YUJI ; SEIGO WATANABE ; SHOJI MOMOI ; SHUICHI HASHIMOTO ; TESHIGAHARA MIKIO ; TESHIGAHARA MIKIROU ; TESHIGAWARA MIKIRO ; TESHIGAWARA MIKIRO C O YAMAZAK ; TESHIGAWARA MIKIRO C O YAMAZAKI MAZAK CORP ; TOSHIHIKO INOUE ; UEMURA KAZUKI ; UEMURA KAZUKI 401 NO 23 OCEAN PLAZA ; UEMURA KAZUKI NO OCEAN PLAZA ; WATANABE MASATAKE ; WATANABE SEIGO ; MITSUGUCHI YUKIO ; HASHIMOTO SHUICHI ; YOKOYAMA FUJIO ; YUJI SANO ; YUKIO MITSUKUCHI
Inventor(s):	WATANABE SEIGO MINOKAMO GIFU JP ; UEMURA KAZUKI AICHI JP ; SANO YUJI HASHIMA GIFU JP ; SAKATA KEIKICHI KONAN AICHI JP ; OSHIMA KATSUSHI ICHINOMIYA AICHI JP ; RYOICHI FURUHASHI ; OHASHI HAJIME INUYAMA AICHI JP ; MOMOI SHOJI KAGAMIHARA GIFU JP ; KATO CHOJI NAGOYA AICHI JP ; INOUE TOSHIHIKO KOMAKI AICHI JP ; MITSUKUCHI YUKIO KONAN AICHI JP ; HORISHI KOJIMA ; HASHIMOTO SHUICHI KANI GIFU JP ; FURUHASHI RYOICHI AICHI JP ; FURAHASHI RYOICHI
Agent(s):	FREEHILLS PATENT AND TRADE MARK ATTORNEYS; FREEHILLS PATENT ATTORNEYS; FPA PATENT ATTORNEYS PTY LTD; GRIFFITH HACK; GRIFFITH HACK AND CO; MARKS AND CLERK
Designated states:	AT BE CH DE ES FR GB GR IT LI LU NL SE

133) Family number: 3692260 (DE3402260A1) © PatBase

Title: Device construction kit using the slot system

Abstract: A device construction kit contains basic elements (1) which possess a grid of equidistant T-slots (2) intersecting at right angles. Mounted elements (9) carrying position-determining marker pins (11) can be fixed to the basic elements (1). The marker pins (11) engage positively into the slots (2), for which purpose they can be flattened especially in order to form parallel guide faces (16). The mounted elements (9) positioned in this way are screwed into threaded bores (7) which are located in the slot intersection of the basic elements (1).

Classifications:
International (IPC 8-9): B23Q3/10 (Advanced/Invention); B23Q3/02 (Core/Invention)
International (IPC 1-7): B23Q3/02
CPC: B23Q3/103
European: B23Q3/10D



Family:

Publication number	Publication date	Application number	Application date
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Priority:
DE19843402260 19840124

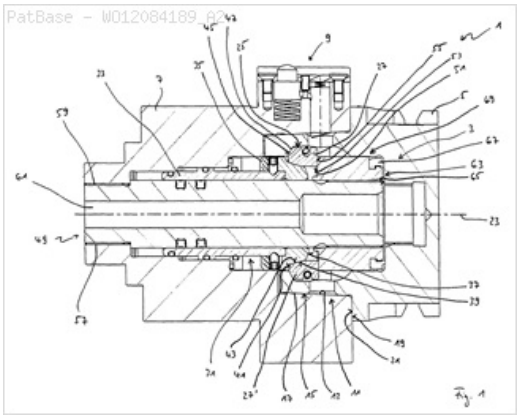
Probable Assignee:	BERENZ KLAUS
Assignee(s): (std):	BERENZ KLAUS
Inventor(s): (std):	BERENZ KLAUS

134) Family number: 51341260 (WO12084189A2) © PatBase

Title: CLAMPING APPARATUS AND TOOL RECEPTACLE

Abstract: The invention relates to a clamping apparatus for tools having a hollow taper shank, comprising a center axis (23), a clamping device (25), which in a first functional position is arranged radially toward the center axis (23) in such a way that the clamping device does not engage with a hollow taper shank (5) inserted into the clamping apparatus (3) and which in a second functional position is moved radially away from the center axis (23) at least in some sections in such a way that a hollow taper shank (5) inserted into the clamping apparatus (3) is clamped in by the clamping device, an actuating device (31), which can be moved in the direction of the center axis (23), wherein the actuating device interacts with the clamping device (25) in such a way that the clamping device can be moved from the first functional position thereof to the second functional position thereof, and a clamping mandrel (49), which guides the clamping device (25) during the movement thereof from the first functional position thereof to the second functional position thereof at least in some sections. The clamping apparatus (2) is characterized in that the clamping mandrel (49) is fixed in the direction of the center axis (23) so that the actuating device (31) can be moved axially relative to the clamping mandrel (49).

Classifications:
International (IPC 8-9): B23B31/103 B23B31/26 (Advanced/Invention)
CPC: B23B31/30
European: B23B31/30



Family:

Publication number	Publication date	Application number	Application date
DE102010056127 A1	20120628	DE201010056127	20101222
DE102010056127 B4	20150312	DE201010056127	20101222
DE502011006176 D1	20150416	DE201150006176T	20111220
EP2654996 A2	20131030	EP20110807864	20111220
EP2654996 B1	20150304	EP20110807864	20111220
WO12084189 A2	20120628	WO2011EP06422	20111220
WO12084189 A3	20121026	WO2011EP06422	20111220
WO12084189 A8	20120823	WO2011EP06422	20111220

Priority:

DE201010056127 20101222 EP20110807864 20111220 WO2011EP06422 20111220

Probable Assignee: MAPAL FAB PRAEZISION

Assignee(s): (std)**:** KRESS DIETER ; MAPAL FAB PRAEZISION ; MAPAL FABRIK F PRAEZISIONSWERKZEUGE DR KRESS KG

Assignee(s): MAPAL FABRIK FUER PRAEZISIONSWERKZEUGE DR KRESS KG

Inventor(s): (std)**:** KRESS DIETER

Inventor(s): ANTRAG AUF NICHTNENNUNG

Agent(s): GLEISS GROSSE SCHRELL U PARTNER MBB PATENTANWAELTE RECHTSANWAELTE; GLEISS ALF OLAV; GLEISS ALF OLAV ET AL

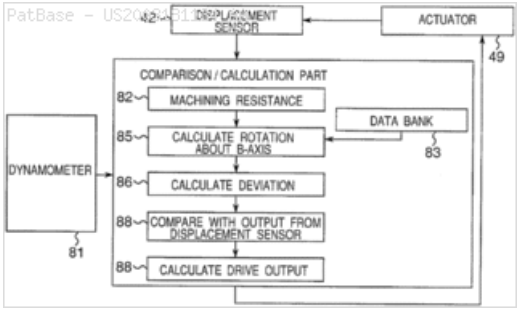
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

135) Family number: 28827261 (US2003181134A)

Title: HIGH-PRECISION MACHINING SYSTEM

Abstract: A rotation axis of a work spindle and a rotation axis of a spindle primary-axis portion are rotated relative to each other and feeding of a work-piece to a tool is accordingly adjusted, whereby warpage of the tool in accordance with a change in machining condition is corrected. A revolution volume of the relative rotation is compared and calculated in process based on data entered in advance, a result of measurement by a displacement sensor and information such as a machining position, and controlled in real time until the end of machining. The relative rotation is driven by an actuator such as a piezoelectric element, at a resolution even as fine as in seconds. The data entered in advance can be sequentially updated in accordance with monitoring of a processed product.

Classifications:
International (IPC 8-9): B23Q17/22 B24B19/14 B24B27/00 B24B49/00 B24B5/06 G05B19/18 G05B19/404 (Advanced/Invention); B23Q17/22 B24B19/00 B24B27/00 B24B49/00 B24B5/00 G05B19/18 G05B19/404 (Core/Invention)
International (IPC 1-7): B24B1/00 B24B49/00 B24B51/00
CPC: B23Q17/22 B24B5/06 B24B19/14 B24B27/0084 G05B19/184 G05B19/186 G05B19/404 G05B2219/41344 G05B2219/49172
European: B23Q17/22 B24B19/14 B24B27/00N B24B5/06 G05B19/18B4 G05B19/18B5 G05B19/404 S05B219/41344 S05B219/49172
US: 451/10 451/11 451/215 451/221 451/242 451/5 451/51 451/51S 451/5P 451/9



Family:

Publication number	Publication date	Application number	Application date
US2003181134 AA	20030925	US20030437967	20030515
US6592430 BA	20030715	US20000672974	20000929
US7052370 BB	20060530	US20030437967	20030515

Priority:

US20000672974 20000929 US20030437967 20030515

Probable Assignee: MITSUBISHI DENKI KK

Assignee(s): (std)**:** MITSUBISHI ELECTRIC CORP

Assignee(s): NAKASUJI TOMOAKI ; HASEGAWA MASAHIKO ; HIRAI YOSHINORI ; MITSUBISHI DENKI K USHIKI KAISHA AB ; MITSUBISHI DENKI KABUSHIKI KAISHA ; MITSUBISHI DENKI KK

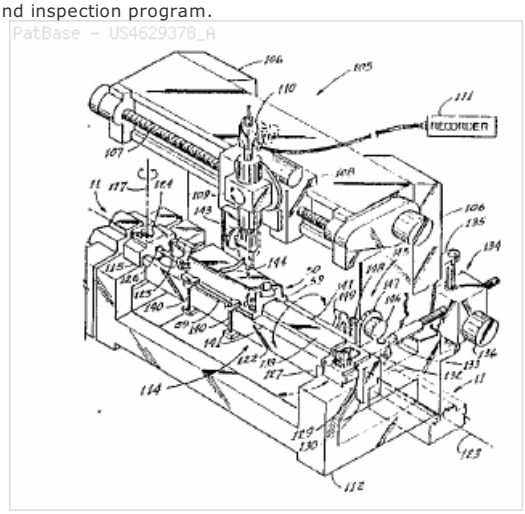
Inventor(s): (std): HASEGAWA MASAHIKO ; HIRAI YOSHINORI ; NAKASUJI TOMOAKI
Agent(s): BUCHANAN INGERSOLL PC

136) Family number: 5167261 (US4629378A)

Title: MELTABLE MATRIX CHUCKING MACHINING CENTER AND PROCESS USING

Abstract: An integrated factory system affords precision machining and inspection of aircraft turbine blades, as well as other metal parts having two generally opposite principal surfaces. It uses only two stages of chucking by the meltable matrix method. After embedding one of the surfaces in the first chuck, which positions the blank relative to a plane of reference, the other surface is machined and inspected according to programs relative to that plane. Without release from the first chuck, the part is transferred to a second chuck for embedding the machined principal surface relative to a second parallel plane of reference a precise distance from that of the first chuck. Machining and inspection is now completed relative to this second plane of reference. Improved matrix chucks are provided, as well as new chucking apparatus which establishes the planes of reference. A milling machine is provided whose machine table may tilt about a longitudinal axis, alternately raising the long edges of the chuck so that the leading and trailing edges of a blade blank may be completely machined without re-chucking. The machine table is mounted for swinging in reversing arcs about a vertical axis, from which the chucked blade blanks are positioned radially to coincide with their positions about the rotary axis of the engine. The tilt and swing movements of the machine table are programmed as part of the two-stage machining and inspection program.

Classifications:
International (IPC 8-9): B23Q1/48 B23Q1/52 B23Q1/54 B23Q3/08 B23Q7/16 (Advanced/Invention);
B23Q1/25 B23Q3/08 B23Q7/16 (Core/Invention)
International (IPC 1-7): B23C1/00 B23Q3/00
CPC: Y10T408/05 Y10T409/303752 Y10T409/303864 Y10T409/305824 Y10T409/30756 Y10T409/30896 B23Q7/165 B23Q1/4809 B23Q1/52 B23Q1/5443 B23Q3/08 Y10T29/5124 Y10T409/308792
European: B23Q1/16D2C B23Q1/48A1 B23Q1/52 B23Q1/54A11 B23Q3/08 B23Q7/16B
US: 269/7 29/563 33/505 408/2 409/131 409/133 409/168 409/199 409/221 409/224



Family:

Publication number	Publication date	Application number	Application date
US4629378 A	19861216	US19840644611	19840827
US4730382 A	19880315	US19860930906	19861117

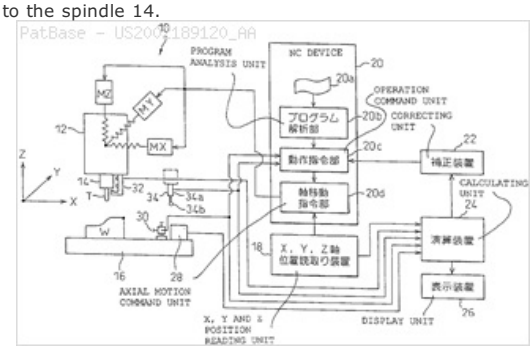
Priority:
US19840644611 19840827 US19860930906 19861117
Probable Assignee: PARSONS JOHN T
Assignee(s): (std): PARSONS JOHN T
Inventor(s): (std): PARSONS JOHN T

137) Family number: 28289264 (US2002189120A)

Title: MEASURING METHOD AND DEVICE, MACHINE TOOL HAVING SUCH DEVICE, AND WORK PROCESSING METHOD

Abstract: A method of measuring the position of the cutting edge of a tool T mounted to a spindle 14 of an NC machine tool includes steps of measuring the dimension of the center of an end surface of the spindle 14 relative a reference position in a machine coordinate system of the machine tool in the axial directions of the X-, Y- and Z-axes, measuring the dimensions of the position of the cutting edge of the tool T mounted to the spindle 14 relative to the center of the end surface of the spindle 14 in the axial directions of the X-, Y- and Z-axes, obtaining the dimensions of the position of the cutting edge of the tool T mounted to the spindle 14 relative to the reference position in the machine coordinate system through a calculation on the basis of the relative dimensions of the center of the end surface of the spindle 14 in the machine coordinate system and the dimensions of the position of the cutting edge of the tool T mounted to the spindle 14.

Classifications:
International (IPC 8-9): B23Q15/00 B23Q15/24 B23Q15/28 B23Q17/22 G05B19/042 G05B19/404 (Advanced/Invention);
B23Q15/00 B23Q15/20 B23Q17/22 G05B19/04 G05B19/404 (Core/Invention)
International (IPC 1-7): B23Q17/22 G01D21/00
CPC: B23Q17/22 G05B19/042 B23Q17/2485
European: B23Q17/22 G05B19/042
US: 33/628 33/636 33/639 336/360



Family:

Publication number	Publication date	Application number	Application date
DE60136555 D1	20081224	DE20016036555	20010718

EP1327495 A1	20030716	EP20010950028	20010718
EP1327495 A4	20061011	EP20010950028	20010718
EP1327495 B1	20081112	EP20010950028	20010718
JP2002032620 A1	20040226	JP20020535845T	20010718
JP2006289608 A2	20061026	JP20060214696	20060807
JP2007245342 A2	20070927	JP20070112338	20070420
JP4229698 B1	20090225	JP20020535845T	20010718
JP4229698 B2	20090225	JP20020535845T	20010718
JP4799472 B2	20111026	JP20070112338	20070420
JP5235284 B2	20130710	JP20060214696	20060807
US2002189120 AA	20021219	US20020168033	20020617
US6973738 BB	20051213	US20020168033	20020617
WO0232620 A1	20020425	WO2001JP06253	20010718

Priority:

JP20000315713 20001016 JP20020535845 20010718 JP20020535845T 20010718
WO2001JP06253 20010718 JP20060214696 20060807 JP20070112338 20070420

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std)**:** KANEDA KIYOSHI ; KURAHASHI YASUHIRO ; MAKINO MILLING MACHINE

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD ; MAKINO MILLING MACH CO LTD

Inventor(s): (std)**:** KANEDA KIYOSHI ; KURAHASHI YASUHIRO

Inventor(s): KANEDA K ; KURAHASHI Y

Agent(s): BIBBY WILLIAM MARK ET AL; TSURUTA JUNICHI; NISHIYAMA MASAYA; HIGUCHI SOTOJI; ISHIDA TAKASHI; SHIMADA TETSURO; PAUL AND PAUL

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT JP LU MC NL PT SE TR US

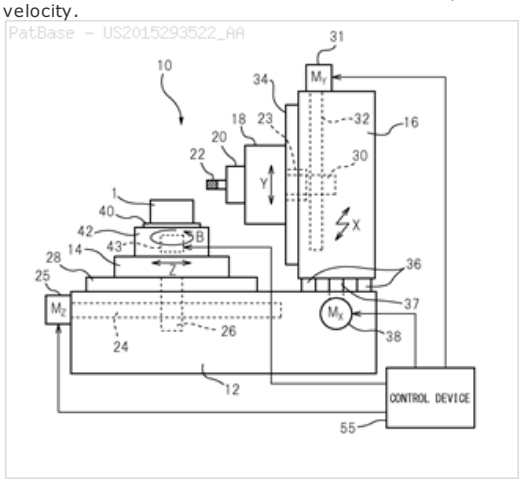
138) Family number: 56393265 (US2015293522A)

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Title: MACHINE TOOL CONTROL DEVICE AND MACHINE TOOL

Abstract: The machine tool control device is provided with a calculation unit for estimating, on the basis of the tool path for machining using a tool and information on the workpiece, the portion of the tool that will form the final machined surface. The control device is provided with a feed rate-setting unit for estimating the fastest moving point, among multiple moving points contained in the portion that will form the final machined surface, for which the relative velocity of the tool with respect to the workpiece will be maximal and setting the feed rates for the machine tool movement shafts so that the relative velocity of the fastest moving point is at or below a previously specified relative velocity.

Classifications:
International (IPC 8-9): B23Q15/00 B23Q15/013 G05B19/402 G05B19/4093 G05B19/4103 G05B19/416 G06F19/00 (Advanced/Invention)
CPC: G05B19/402 G05B19/416 G05B19/4163
US: 700/186



Family:

Publication number	Publication date	Application number	Application date
CN104768705 A	20150708	CN201280076755	20121030
CN104768705 B	20170609	CN201280076755	20121030
EP2915625 A1	20150909	EP20120887777	20121030
EP2915625 A4	20160720	EP20120887777	20121030
JP2014068675 A1	20160908	JP20140544102T	20121030
JP5881850 B1	20160309	JP20140544102T	20121030
US2015293522 AA	20151015	US20120439119	20121030
US10007251 BB	20180626	US20120439119	20121030
WO14068675 A1	20140508	WO2012JP78050	20121030

Priority:

WO2012JP78050 20121030

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std)**:** MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std)**:** SUZUKI KYOHEI ; MASUMIYA YASUNORI ; SUZUKI KEITARO

Agent(s): THUM BERNHARD; AOKI ATSUSHI; SHIMADA TETSURO; MORRISON AND FOERSTER LLP; AOKI ATSUSHI ET AL

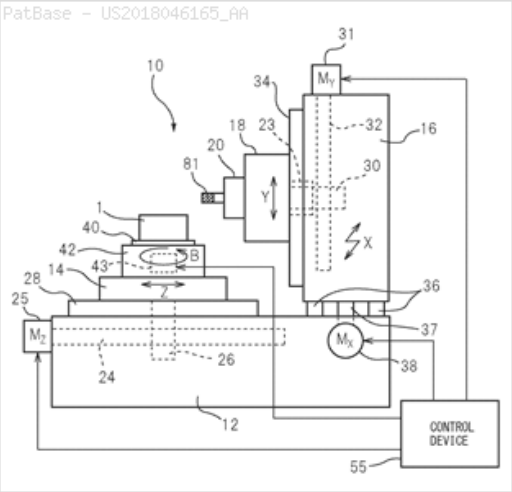
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK

139) Family number: 63617265 (US2018046165A)

Title: TOOL PATH GENERATING METHOD AND TOOL PATH GENERATING APPARATUS

Abstract: This tool path generating method, which generates a tool path for machining a corner section at which a recess section machined in a workpiece intersects with the outer circumferential surface of the workpiece, includes: a step for calculating a virtual traveling direction, which is a movement direction of a point on the rotational axis line of a rotating tool when the recess section is machined; a step for calculating the position of the corner section from the virtual traveling direction and shape data of the workpiece; and a step for generating a tool path for machining along the calculated position of the corner section.

Classifications:
International (IPC 8-9): B23C3/08 B23C3/12 G05B19/19 G05B19/4093 (Advanced/Invention)
CPC: G05B19/4093 G05B19/19 B23C2220/16 G05B2219/34088 B23C3/08 B23C3/12



Family:

Publication number	Publication date	Application number	Application date
CN107407926 A	20171128	CN201580077090	20150313
EP3270244 A1	20180117	EP20150885372	20150313
EP3270244 A4	20181107	EP20150885372	20150313
JP2016147274 A1	20171019	JP20170505888T	20150313
JP6469209 B1	20190213	JP20170505888T	20150313
US2018046165 AA	20180215	US20150555136	20150313
WO16147274 A1	20160922	WO2015JP57590	20150313

Priority:
WO2015JP57590 20150313

Probable Assignee: MAKINO MILLING MACHINE

Assignee(s): (std): MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std): KATO HIROKI ; MASUMIYA YASUNORI ; SUZUKI KYOHEI

Agent(s): MCWILLIAMS DAVID JOHN; SHIMADA TETSURO; AOKI ATSUSHI; AOKI ATSUSHI ET AL

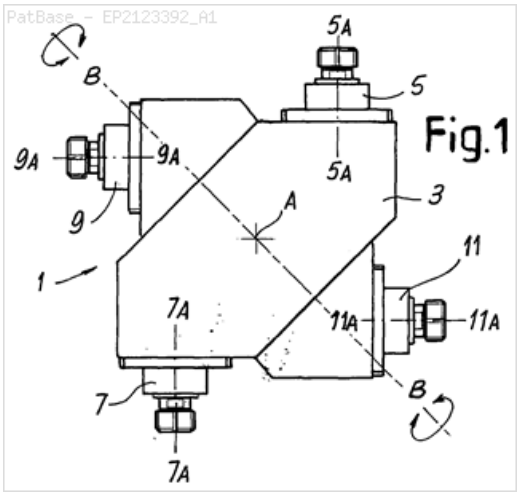
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140) Family number: 42928267 (EP2123392A1)

Title: ROTARY MULTI-SPINDLE OPERATING HEAD AND MACHINE TOOL COMPRISING SAID HEAD

Abstract: The multi-spindle operating head (1) comprises a body (3) and at least two tool spindles (5, 7, 9, 11) carried by said body. At least one of said spindles can be oriented relative to the body so as to assume at least two different orientations, respectively substantially orthogonal and substantially parallel to the axis of the other spindle.

Classifications:
International (IPC 8-9): B23Q1/54 B23Q39/02 (Advanced/Invention); B23Q1/25 B23Q39/00 (Core/Invention)
CPC: B23Q2039/006 B23Q1/54 B23Q39/027
European: B23Q1/54 B23Q39/02B4D



Family:

Publication number	Publication date	Application number	Application date
AT532603 E	20111115	AT20090425197T	20090521
DE602009003604 D1	20120112	DE200960003604T	20090521
EP2123392 A1	20091125	EP20090425197	20090521
EP2123392 B1	20111109	EP20090425197	20090521
ITFI20080105 A1	20091124	IT2008FI00105	20080523
ITFI20080106 A1	20091124	IT2008FI00106	20080523

Priority:

IT2008FI00105 20080523 IT2008FI00106 20080523 EP20090425197 20090521

Probable Assignee: PAOLINO BACCI SRL

Assignee(s): (std)**:** PAOLINO BACCI S R L ; PAOLINO BACCI SRL

Assignee(s): PAOLINO BACCI SRL CASCINA

Inventor(s): (std)**:** RUGGIERI ALBERTO

Inventor(s): RUGGIERI ALBERTO 56025 PONTEDERA

Agent(s): GLAWE DELFS MOLL PARTNERSCHAFT MBB VON PATENT U RECHTSANWAELTEN; MANNUCCI MICHELE

Designated states: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR

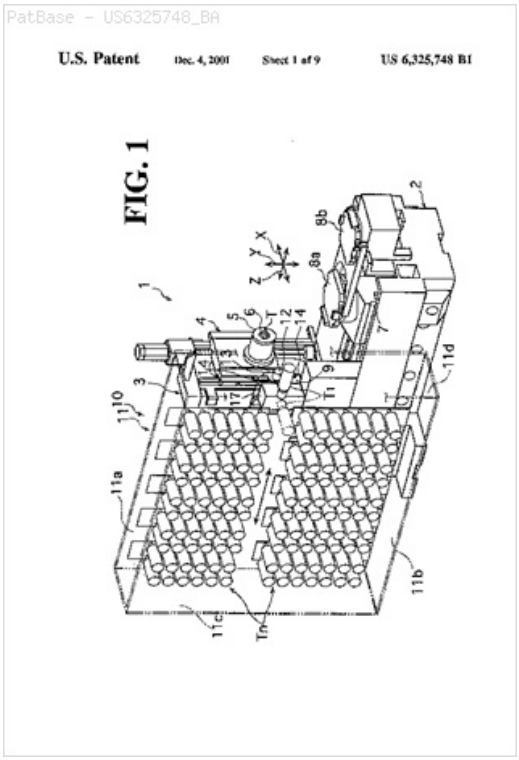
141) Family number: 30013268 (US6325748B)

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Title: TOOL TRANSFER DEVICE FOR MACHINE TOOLS

Abstract: A tool transfer device for machine tools that can reduce the tool transfer time and also reduce the cost of the device by eliminating the need for a driving source. The tool transfer device for machine tools has a tool magazine set beside a spindle on which a tool is mounted. The tool magazine serves for accommodating and holding therein a multiplicity of tools so that the tools are directed perpendicular to an axis of the spindle. A transfer pot is set on a spindle side of the tool magazine and is driven and moved by a horizontal moving unit and a vertical moving unit. This allows a next-process tool accommodated in the tool magazine to be taken out and transferred horizontally to a stroke end position by the transfer pot, and the next-process tool is then tilted at the stroke end position to a tool changing position in which the next-process tool is parallel to the axis of the spindle. The tool transfer device comprises a tool tilting mechanism including a tilted cam member and a tilting cam member for tilting the next-process tool to the tool changing position by horizontal movement of the horizontal moving unit to the stroke end position. The method of operating the tool transfer device is also presented.

Classifications:
International (IPC 8-9): B23Q3/157 (Advanced/Invention);
B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/156 B23Q3/157
CPC: Y10T483/10 Y10T483/176 Y10T483/1783 Y10T483/1788 Y10T483/1836 B23Q3/15773
European: B23Q3/157D
US: 483/1 483/41 483/51 483/53 483/62



Family:

Publication number	Publication date	Application number	Application date
DE60007248 D1	20040129	DE20006007248T	20000825
DE60007248 D1	20040129	DE20006007248	20000825
DE60007248 T2	20040909	DE20006007248T	20000825
EP1086781 A2	20010328	EP20000118515	20000825
EP1086781 A3	20011107	EP20000118515	20000825
EP1086781 B1	20031217	EP20000118515	20000825
JP2001062660 A2	20010313	JP19990240840	19990827
US6325748 BA	20011204	US20000644704	20000824

Priority:

JP19990240840 19990827

Probable Assignee: MORI SEIKI CO LTD

Assignee(s): (std)**:** MORI SEIKI SEISAKUSHO KK

Assignee(s): MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std)**:** YAMAMOTO TATSUYA ; WATANABE MICHIO ; NAKAI MASATERU

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

142) Family number: 45101271 (US2010247262A)

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Title: TILT DEVICE

Abstract: In the course of a machining of a workpiece with a tool, a drive spindle with a tilt table secured thereto of a tilt device provided on a work table of a machining center is rotated by a direct drive motor to control the relative angular position between the tool and the workpiece, and within a predetermined period of time in the course of a machining, the direct drive motor is rotated at a high speed with a spindle head and the work table of the machining center kept away to rotate the drive spindle and hence, the tilt table at a high speed, so that chips and cutting lubricant can be shaken from the workpiece and the tilt table.

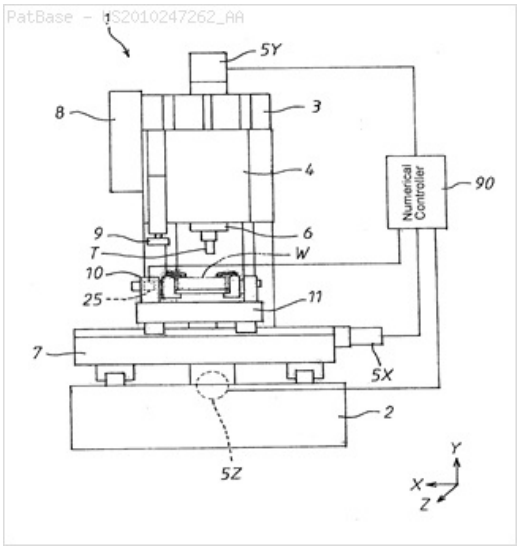
Classifications:

International (IPC 8-9): B23C1/14 B23Q1/00 B23Q1/25 B23Q1/28 B23Q1/44 B23Q1/52 B23Q1/64 B23Q11/00 B23Q3/02 B23Q3/06 B23Q3/155 B23Q3/157 B23Q5/22 (Advanced/Invention); B23Q1/25 B23Q3/02 B23Q3/155 B23Q5/22 (Advanced/Non-invention); B23Q1/00 B23Q1/25 B23Q1/26 B23Q11/00 B23Q3/02 B23Q3/155 B23Q5/22 (Core/Invention)

CPC: Y10T409/304088 Y10T409/305768 Y10T409/305824 Y10T409/308792 Y10T409/30896 Y10T483/10 Y10T483/1733 Y10T483/1736 B23Q1/52 B23Q1/64 B23Q11/0042

European: B23Q1/52 B23Q1/64 B23Q11/00F

US: 269/55 409/137 409/137P 409/167 409/168 409/168S 409/221 409/224 409/224S 483/1 483/30 483/31 483/31S



Family:

Publication number	Publication date	Application number	Application date
BRPI0906479 A2	20150714	BR2009PI06479	20091116
CN101918173 A	20101215	CN200980101691	20091116
CN101918173 B	20120620	CN200980101691	20091116
DE602009013104 D1	20130321	DE200960013104T	20091116
EP2353776 A1	20110810	EP20090828997	20091116
EP2353776 A4	20120509	EP20090828997	20091116
EP2353776 B1	20130123	EP20090828997	20091116
ES2403455 T3	20130520	ES20090828997T	20091116
JP2010125552 A2	20100610	JP20080302421	20081127
JP5371394 B2	20131218	JP20080302421	20081127
KR101114705 B1	20120229	KR20107014688	20091116
KR20100090801 A	20100817	KR20107014688	20091116
US2010247262 AA	20100930	US20090745792	20091116
US8672819 BB	20140318	US20090745792	20091116
WO10061749 A1	20100603	WO2009JP69445	20091116

Priority:

JP20080302421 20081127 EP20090828997 20091116 WO2009JP69445 20091116

Probable Assignee: SANKEI C AND C CORP

Assignee(s): (std): SANKEI C AND C CORP ; SANKEI C AND C KK ; SHOHO IRONWORKS CO LTD ; TOKAI KYOHAN CO LTD ; KAMATA YUKO ; SAKANE KAZUHIRO ; TOYOTA MOTOR CO LTD ; TOYOTA MOTOR CORP

Assignee(s): SHOHO IRONWORKS CO ; TOYOTA JIDOSHA KK ; TOYOTA MOTOR CO ; SHOHO IRONWORKS CO LTD NAGOYA SHI ; TOYOTA JIDOSHA TOYOTA SHI KK ; TOKAI KYOHAN CO LTD NAGOYA ; SANKEI C AND C OBU SHI CORP ; TOKAI KYOHAN CO

Inventor(s): (std): KAZUHIRO SAKANE ; YUKO KAMATA ; KAMATA YUKO ; SAKANE KAZUHIRO

Agent(s): TBK; ISERN JAIME; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP; KOBAYASHI OSAMU

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

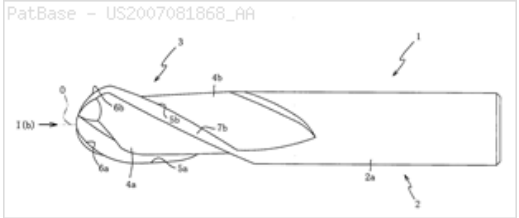
143) Family number: 35413274 (US2007081868A)

© PatBase

Title: BALL ENDMILL

Abstract: A ball endmill having (a) a cylindrical tool body and (b) ball-nosed end cutting edges each of which includes (b-1) a first portion provided by a radially inner portion of each ball-nosed end cutting edge, and (b-2) a second portion provided by a radially outer portion of each ball-nosed end cutting edge. The first portion is defined by a circular arc which is convex in a direction of rotation of the tool body and which has a first radius of curvature as measured in a distal end view perpendicular to the axis. A ratio of the first radius of curvature to an outside diameter of the cylindrical body is not smaller than 0.025 and not larger than 0.10. The second portion is defined by a circular arc which is convex in the direction of the rotation of the tool body and which has a second radius of curvature as measured in the distal end view. The second radius of curvature is larger than the first radius of curvature.

Classifications:
International (IPC 8-9): B23C5/02 B23C5/10 B23C5/14 (Advanced/Invention); B23C5/10 B23C5/14 (Advanced/Non-invention); B23C5/02 B23C5/10 (Core/Invention)
CPC: Y10T407/1924 Y10T407/1948 B23C5/1009 B23C2210/084 B23C2210/202 B23C2210/0457 B23C2250/16
European: B23C5/10B L23C210/08D L23C210/20D
US: 407/42 407/54 407/54P



Family:

Publication number	Publication date	Application number	Application date

CN100448579 C	20090107	CN200580007398	20051018
CN1929944 A	20070314	CN200580007398	20051018
DE602005014506 D1	20090625	DE200560014506T	20051018
EP1820589 A1	20070822	EP20050795502	20051018
EP1820589 A4	20071107	EP20050795502	20051018
EP1820589 B1	20090513	EP20050795502	20051018
JP2007046131 A1	20090423	JP20070514945T	20051018
JP4407974 B1	20100203	JP20070514945T	20051018
JP4407974 B2	20100203	JP20070514945T	20051018
KR100807225 B1	20080228	KR20067017356	20051018
KR20070069088 A	20070702	KR20067017356	20051018
US2007081868 AA	20070412	US20050586002	20051018
US7478977 BB	20090120	US20050586002	20051018
WO07046131 A1	20070426	WO2005JP19085	20051018

Priority:

WO2005JP19085 20051018 KR20067017356 20060828 WO2005JP19085 20060828

Probable Assignee: OSG CORP

Assignee(s): (std): AOKI WATARU ; HAMATAKE YASUO ; OSAWA JIRO ; OSG CORP ; OSG INC

Inventor(s): (std): AOKI WATARU ; HAMATAKE YASUO ; JIRO OSAWA ; OSAWA JIRO ; WATARU AOKI ; YASUO HAMATAKE ; WATARU OSAWA JIRO HAMATAKE YAS

Inventor(s): OSAWA JIRO HAMATAKE YASUO AOKI WATARU

Agent(s): FELDMEIER JUERGEN ET AL; MURAMATSU AND ASSOCIATES

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

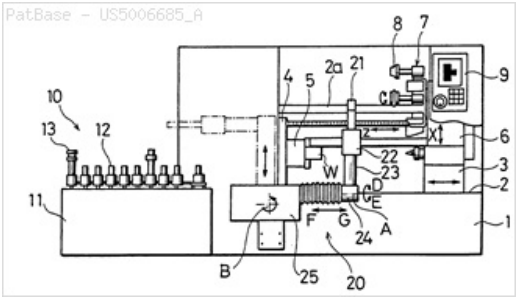
144) Family number: 17645275 (US5006685A)

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Title: MACHINE TOOL WITH GRINDING FUNCTION AND TRUING/DRESSING METHOD OF GRINDING STONE USING IT

Abstract: A machining tool with an electric discharge truing and dressing apparatus comprising a spindle stock for containing and supporting a workpiece spindle which is driven for rotation while holding a workpiece or an electrode. A tool rest moves parallel and perpendicular to the spindle of the spindle stock and holds an electrode machining tool and a grinding wheel. An electricity feed element is disposed between a workpiece supportng portion of the spindle and the tool rest. A magazine is disposed at an outside area of a machining area of the tool rest and is adapted to store the workpiece and the electrode. A loading device is disposed between the magazine and the spindle. The grinding wheel on the tool rest is subjected to truing and dressing by feeding the electrode from the magazine to the spindle stock.

Classifications:
International (IPC 8-9): B23H1/00 B23H5/04 B23P23/02 B23Q11/00 B23Q3/155 B24B45/00 B24B53/00 B24B55/12 (Advanced/Invention); B23H1/00 B23H5/00 B23P23/00 B23Q11/00 B23Q3/155 B24B45/00 B24B53/00 B24B55/00 (Core/Invention)
International (IPC 1-7): B08B15/04 B23H1/00 B23H5/04 B23H9/00 B23H9/02 B23P23/02 B23Q11/00 B24B3/00 B24B5/00 B24B53/00 B65G47/46 B65G47/64
CPC: Y10S29/053 B24B53/001 Y10T409/304088 B23H1/00 B23H5/04 B23Q3/15513 B23Q11/0042 B24B45/003 B24B55/12 B24B53/00
European: B23H1/00 B23H5/04 B23Q11/00F B23Q3/155C B24B45/00B B24B53/00 B24B53/00B B24B55/12
US: 125/11.01 198/360 219/69.15 219/69.17 219/69.2 219/692 29/DIG.53 409/137 451/453 451/72 51/270 51/5D



Family:

Publication number	Publication date	Application number	Application date
DE3826277 A1	19890216	DE19883826277	19880802
DE3826277 C2	19921210	DE19883826277	19880802
DE3844553 C2	19920220	DE19883844553	19880802
JP1026145 U1	19890214	JP19870119484U	19870804
JP1026151 U1	19890214	JP19870119485U	19870804
JP1026152 U1	19890214	JP19870119486U	19870804
JP1040254 A2	19890210	JP19870194766	19870804
JP1081235 U1	19890531	JP19870175713U	19871117
JP1997064 Y	19940722	JP19870119485U	19870804
JP5011955 Y2	19930325	JP19870119484U	19870804
JP5011956 Y2	19930325	JP19870119485U	19870804
JP64026145 U1	19890214	JP19870119484U	19870804
JP64026151 U1	19890214	JP19870119485U	19870804
JP64026152 U1	19890214	JP19870119486U	19870804
JP64040254 A2	19890210	JP19870194766	19870804
US5006685 A	19910409	US19880227881	19880803
US5078256 A	19920107	US19900461550	19900105

Priority:

JP19870119484U 19870804 JP19870119486U 19870804 JP19870119485U 19870804
JP19870194766 19870804 JP19870175713U 19871117 DE19883826277 19880802

Probable Assignee: TAKEO NAKAGAWA

Assignee(s): (std): YAMAZAKI MAZAK CORP

Assignee(s): YAMAZAKI MAZAK CORP OOGUCHI AICHI JP ; YAMAZAKI MAZAK JAPAN CORP ; TAKEO NAKAGAWA

Inventor(s): (std): ASANO KAZUO NAGOYA AICHI JP ; HATANO SAKAE AICHI JP ; KANEMATSU ISAO INUYAMA AICHI JP ; MORI YOSHINORI KAGAMIHARA GIFU JP ; TAKADA YOSHIHARU NAGAREYAMA CHIBA JP ; YOSHIDA

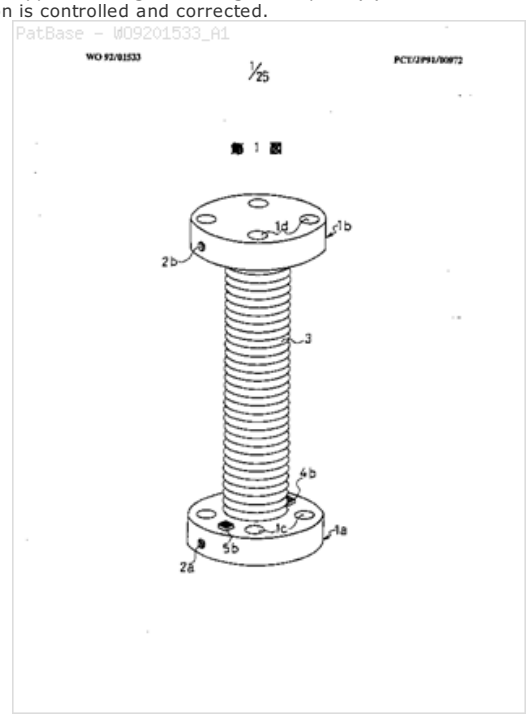
HISASHI KONAN AICHI JP ; YOSHIDA HISASHI ; TAKADA YOSHIHARU ; MORI YOSHINORI ; KANEMATSU ISAO ; KAINUMA KIYOKAZU NAGOYA AICHI JP ; KAINUMA KIYOKAZU ; HATANO SAKAE ; ASANO KAZUO

145) Family number: 3449276 (WO9201533A1)

Title: SYSTEM FOR CONTROLLING POSTURES OF STRUCTURES AND MACHINE TOOLS

Abstract: A system for controlling postures of structures and workpieces, which is used for correcting and controlling the positions of various industrial machines. An object of the present invention is to correct very small displacements of the structures due to thermal expansion and elastic deformation or to control the positions thereof. The amount of displacement of a structure (1) in the axial direction is detected by laser length measuring machines (4, 5), and in accordance with the amount of displacement, a heater (3) is operated or cooling water is supplied through a cooling water path (2). With this operation, the structure (1) is expanded or shrunk, so that its position is controlled and corrected.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/01 B23Q1/34 B23Q15/18 G05B19/404 G05D3/00 G05D3/12 G12B5/00 (Advanced/Invention); B23Q1/26 B23Q15/007 G05B19/404 (Core/Invention)
International (IPC 1-7): B23Q1/02 B23Q15/18 G05D3/00 G05D3/12 G12B5/00
CPC: B23Q1/34 B23Q15/18 G05B19/404 B23Q11/0007
European: B23Q1/34 B23Q11/00B2 B23Q15/18 G05B19/404



Family:

Publication number	Publication date	Application number	Application date
EP0493616 A1	19920708	EP19910913086	19910722
EP0493616 A4	19921209	EP19910913086	19910722
JP2022457 C3	19960226	JP19900198479	19900724
JP4081906 A2	19920316	JP19900198480	19900724
JP4082649 A2	19920316	JP19900198479	19900724
JP7049181 B4	19950531	JP19900198479	19900724
WO9201533 A1	19920206	WO1991JP00972	19910722

Priority:
JP19900198479 19900724 JP19900198480 19900724 WO1991JP00972 19910722

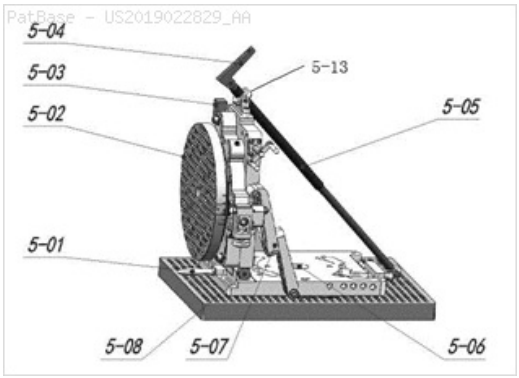
Probable Assignee: HAMAI SANGYO
Assignee(s): (std): HAMAI SANGYO ; HATAMURA YOTARO
Assignee(s): HAMAI CO ; HAMAI CO LTD ; HAMAI SANGIYOU KK
Inventor(s): (std): HATAMURA YOTARO
Designated states: AT BE CH DE DK ES FR GB GR IT LU NL SE US

146) Family number: 67084276 (US2019022829A)

Title: UNIVERSAL FIXTURE BASED MACHINE TOOL

Abstract: Disclosed is a universal fixture based machine tool used in the machining industry. The tool includes a numerically controlled machine tool body, a multifunctional machine tool countertop, a first fixture pallet, a second fixture pallet, a fixture integration platform, a split bench vise, and a flexible fixture element. The multifunctional machine tool countertop, the first fixture pallet and the second fixture pallet are all made of perforated foundation plates. The numerically controlled machine tool body can achieve a three-axis linkage machining function of X-, Y-, and Z-coordinate moving axes. The fixture integration platform can achieve a rotary machining function of three rotation axes A, B, and C of the universal fixture based machine tool. The flexible fixture element can have various combinations and changes, so that the universal fixture based machine tool has a machining function of three increment axes U, V, and W.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/54 B23Q3/06 B23Q37/00 B25B1/06 (Advanced/Invention)
CPC: B23Q3/06 B23Q37/00 B23Q1/0063 B23Q1/5412 B23Q3/066 B25B1/06 B23Q1/54



Family:

Publication number	Publication date	Application number	Application date
CN107214565 A	20170929	CN201610157924	20160322
DE112017001444 T5	20190110	DE201711001444T	20170321
JP2019509184 T2	20190404	JP20180550417T	20170321
US2019022829 AA	20190124	US20180137526	20180920
WO17162135 A1	20170928	WO2017CN077475	20170321

Priority:

CN201610157924 20160322 WO2017CN077475 20170321 US20180137526 20180920

Probable Assignee: BEIJING LANXINTE TECH CO LTD

Assignee(s): (std): BEIJING LANXINTE TECHNOLOGY CO LTD ; BEIJING LXT TECH CO LTD ; BEIJING LANXINTE TECH CO LTD

Assignee(s): BEIJING LANXINTE TECHNOLOGY CO ; BEIJING LXT TECHNOLOGY CO LTD ; BEIJING LXT TECHNOLOGY CO

Inventor(s): (std): ZHANG YONGYI ; ZHAO YUMIN

Agent(s): BEIJING GAOWO LAW FIRM

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

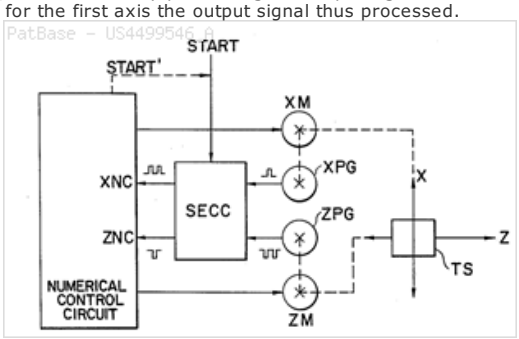
147) Family number: 1917277 (US4499546A)

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Title: Numerical control machine tool with sliding error compensation function

Abstract: In a numerical control machine tool, the sliding errors are compensated by control means comprising: a position detector for detecting a current position on a first axis at all times in association with a first-axis position detector; a compensation data memory in which compensation data for a second axis corresponding to positions on the first axis have been stored, the memory outputting a compensation data corresponding to a position which coincides with a current position specified by the position register; a pulse generator means for calculating the difference between the current compensation data and the preceding compensation data and generating a pulse train proportional to the difference; an adder for subjecting to addition or subtraction the pulse train generated and a pulse train obtained by converting the output signal of a second-axis position detector; a pulse restoring means for converting the output pulse train of the adder into a signal similar in form to the output of the position detector; and a compensation control means for outputting as a position feedback signal for the second axis the signal outputted by the pulse restoring means, and for similarly processing the output signal of the second axis position detector to provide as a position feedback signal for the first axis the output signal thus processed.

Classifications:
International (IPC 8-9): B23Q15/01 B23Q15/013 B23Q15/22 G05B19/19 G05B19/21 (Advanced/Invention); B23Q15/00 B23Q15/007 B23Q15/20 G05B19/19 (Core/Invention)
International (IPC 1-7): B23B3/00 B23Q15/013 B23Q15/22 B23Q37/00 G05B19/18 G05B19/19 G06F15/46
CPC: G05B19/19 G05B19/21 G05B2219/49194
European: G05B19/19 G05B19/21 S05B219/49194
US: 318/569 318/632 364/474 700/193



Family:

Publication number	Publication date	Application number	Application date
DE3218612 A1	19821216	DE19823218612	19820518
DE3218612 C2	19931007	DE19823218612	19820518
FR2506198 A1	19821126	FR19820008658	19820518
FR2506198 B1	19890106	FR19820008658	19820518
GB2100885 A1	19830106	GB19820014264	19820517
GB2100885 B2	19850227	GB19820014264	19820517
JP1420588 C3	19880114	JP19810074234	19810519
JP57189750 A2	19821122	JP19810074234	19810519
JP62024226 B4	19870527	JP19810074234	19810519
US4499546 A	19850212	US19820376983	19820510

Priority:

JP19810074234 19810519

Probable Assignee: YASKAWA ELECTRIC CORP

Assignee(s): (std)**:** MIYANO TEKKOSHO KK ; YASKAWA DENKI SEISAKUSHO KK ; MIYANO TEKKOSHO UEDA KK ; MYANO TEKKOSHO KK ; MIYANO UEDA KK ; YASKAWA ELECTRIC CORP

Assignee(s): YASUKAWA DENKI SEISAKUSHO KK ; MYANO KK ; YASAKAWA DENKI SEISAKUSHO KK ; KABUSHIKI KAISHA MIYANO UEDA NAGANO JP ; KABUSHIKI KAISHA YASKAWA DENKI SEISAKUSHO ; KABUSHIKI KAISHA YASKAWA DENKI SEISAKUSHO KITAKYUSHU FUKUOKA JP

Inventor(s): (std)**:** KUGA HIROO ; KUGA AKIHIKO

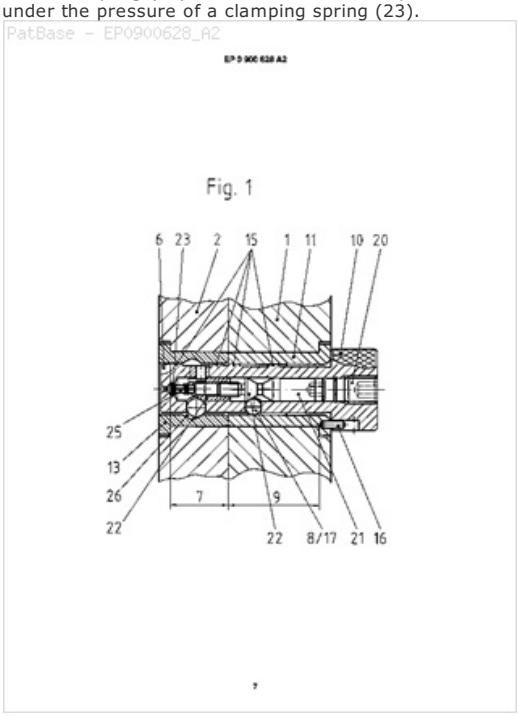
Inventor(s): AKIHIKO KUGA ET HIROO KUGA ; AKIHIKO KUGA ; HIROO KUGA ; KUGA HIROO MITAKA TOKYO JP ; KUGA HIROO MITAKA TOKIO TOKYO JP ; KUGA AKIHIKO IRUMA SAITAMA JP

148) Family number: 22902278 (EP0900628A2)

Title: Quick fitting system

Abstract: The coupling has cross bolts (3,4) in a front section (6) with a frusto-conical surface and two positioning supports (7,9) having at least one change guide stay (15) and ahead (10) which is of larger diameter than a rotational fixing (16). The bolts have a linear guide from a screw or hydraulic actuator (20). There is a coupling (21) and a ball or cone-shaped connector (22) which drives a locking ring (8) into a retaining groove under the pressure of a clamping spring (23).

Classifications:
International (IPC 8-9): B23Q1/00 B23Q16/00 B23Q3/18 B23Q7/14 F16B21/10 F16B21/16 (Advanced/Invention);
B23Q1/00 B23Q16/00 B23Q3/18 B23Q7/14 F16B21/00 (Core/Invention)
International (IPC 1-7): B23Q16/00 B23Q3/08 B23Q3/18 B23Q7/00 B23Q7/14 B25B11/00 F15B11/02 F15B7/00 F16B21/10 F16B21/16
CPC: B23Q3/18 B23Q16/00 B23Q1/0063
European: B23Q1/00D B23Q16/00 B23Q3/18



Family:

Publication number	Publication date	Application number	Application date
AT233637 E	20030315	AT19980116563T	19980902
DE19739460 C1	19990211	DE19971039460	19970903
DE19756215 A1	19990701	DE19971056215	19971217
DE19756215 C2	20000525	DE19971056215	19971217
DE19826328 C1	19991125	DE19981026328	19980612
DE59807363 D1	20030410	DE19985007363	19980902
EP0900628 A2	19990310	EP19980116563	19980902
EP0900628 A3	20001220	EP19980116563	19980902
EP0900628 B1	20030305	EP19980116563	19980902

Priority:

DE19971039460 19970903 DE19971056215 19971217 DE19981026328 19980612
DE19985007363 19980902

Probable Assignee: HOHENSTEIN VORRICHTUNGSBAU

Assignee(s): (std)**:** HOHENSTEIN VORRICHTUNGSBAU ; HOHENSTEIN VORRICHTUNGSBAU U

Assignee(s): HOHENSTEIN VORRICHTUNGSBAU UND SPANNSYSTEME GMBH ; HOHENSTEIN VORRICHTUNGSBAU UND SPANNSYSTEME GMBH 0 ; HOHENSTEIN VORRICHTUNGSBAU UND SPANNSYSTEME GMBH 09337 HOHENSTEIN ERNSTTHAL DE

Inventor(s): (std)**:** BODENSCHATZ HORST ; FRANZKI MICHAEL

Inventor(s): FRANZKI MICHAEL 78166 DONAUESCHINGEN DE ; BODENSCHATZ HORST 09337 HOHENSTEIN ERNSTTHAL DE

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

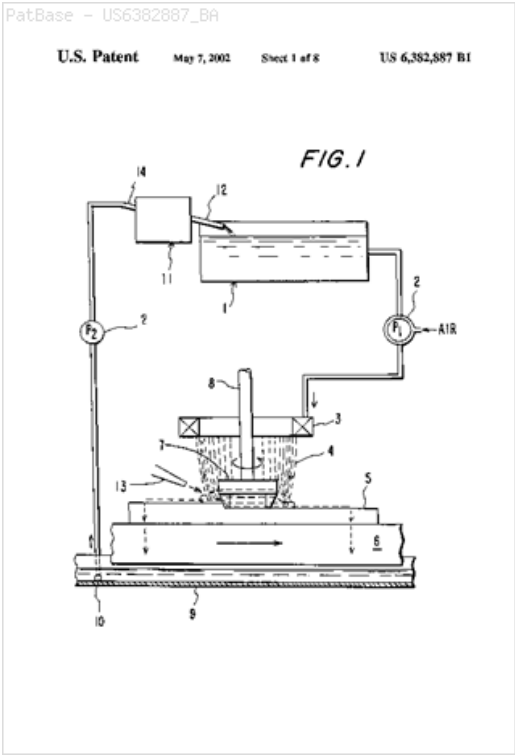
149) Family number: 15789284 (US6382887B)

Title: NOZZLE FOR LIQUID COOLANT IN A MACHINE TOOL

Abstract: A frame-like nozzle for liquid coolant disposed above a machining tool is connected to a vertical main shaft. The

nozzle is coaxial with the main shaft and directed downward. The nozzle has an inner peripheral wall, an inner flange formed in or close to the inner peripheral wall, an upper framework having a ceiling serving as a guide surface, and a lower framework. The liquid coolant flows upwardly out from the inside channel in a planar radial manner. The upper framework has an outer peripheral wall serving as an outside guide surface for downwardly bending the liquid and cooperating with the flange to define an outside channel. A flow agitating recess is formed in the wall surface. The lower framework includes a level difference, and forms a floor by which the coolant reaching the lower end of the outer peripheral wall is guided radially inward through the difference. Coolant is allowed to flow downward. The inner edge of the floor defines a circulatory waterfall opening.

Classifications:
International (IPC 8-9): B23Q11/00 B23Q11/08 B23Q11/10 (Advanced/Invention); B23Q11/10 (Advanced/Non-invention); B23Q11/00 B23Q11/08 B23Q11/10 (Core/Invention)
International (IPC 1-7): B23Q11/00 B23Q11/08 B23Q11/10
CPC: Y10S29/05 Y10T407/14 Y10T408/44 Y10T408/46 B23Q11/1076 B23Q11/0858 Y10T409/304032
European: B23Q11/10
US: 210/167.02 210/168 210/171 29/DIG.5 29/DIG.50 407/11 408/56 408/61 409/136



Family:

Publication number	Publication date	Application number	Application date
AU199916919 A1	20000724	AU19990016919	19981228
AU199916919 A5	20000724	AU19990016919	19981228
CA2356423 AA	20010626	CA19982356423	19981228
CN1104305 C	20030402	CN19988014378	19981228
CN1327404 A	20011219	CN19988014378	19981228
EP1195224 A1	20020410	EP19980961637	19981228
EP1195224 A4	20050413	EP19980961637	19981228
JP2000040366 A1	20020423	JP20000592103T	19981228
JP4310048 B1	20090805	JP20000592103T	19981228
JP4310048 B2	20090805	JP20000592103T	19981228
KR100572205 B1	20060418	KR20017008194	19981228
KR20020005569 A	20020117	KR20017008194	19981228
US6382887 BA	20020507	US20000623077	20000825
WO0040366 A1	20000713	WO1998JP05997	19981228

Priority:
WO1998JP05997 19981228 KR20017008194 20010627

Probable Assignee: ZETA HEIWA LTD
Assignee(s): (std): HOEI KOGYO CO LTD ; K K SAWATOO HEIKAZU ; NAKAI YOSHIKAZU ; SAWATOO HEIKAZU KK ; ZETA HEIWA LTD
Assignee(s): HOEI KOGYO CO
Inventor(s): (std): YOSHIKAZU NAKAI ; NAKAI YOSHIKAZU
Agent(s): GRIFFITH HACK; G RONALD BELL AND ASSOCIATES; MINORI PATENT PROFESSION CORP
Designated states: AT AU BE CA CH CN CY DE DK ES FI FR GB GR IE IT JP KR LI LU MC NL PT SE SG US VN

150) Family number: 54618286 (DE202013005616U1)

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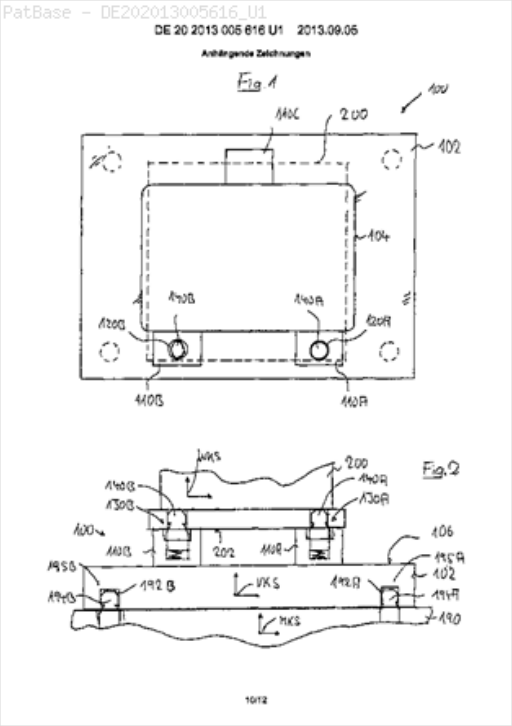
Title: POSITIONIEREINRICHTUNG FUER WERKSTUECKHALTEVORRICHTUNG POSITIONING FOR A workholding (Machine translation)

Abstract: Source: DE202013005616U1 [DE] Positioniereinrichtung zur Positionierung eines Werkstuecks (200) an einem Vorrichtungselement (100) einer Werkstueckhaltevorrichtung einer Bearbeitungsmaschine, insbesondere einer Honmaschine, wobei das Werkstueck an mindestens zwei definierten Positionen Indexbohrungen (120A, 120B) aufweist und die Positioniereinrichtung einen Indexierbolzen (320) aufweist, der einen dem Innendurchmesser einer Indexbohrung angepassten Einfuehrabschnitt (324) zum Einfuehren in eine der Indexbohrungen aufweist, dadurch gekennzeichnet, dass der Indexierbolzen (320) anschliessend an den Einfuehrabschnitt einen konischen Zentrierabschnitt (322) aufweist, der an seinem dem Einfuehrabschnitt zugewandten Ende einen ersten Durchmesser (D1) hat, der kleiner als oder gleich einem maximalen Durchmesser des Einfuehrabschnitts ist und am gegenueberliegenden Ende einen zweiten Durchmesser (D2) hat, der groesser als der Durchmesser des Einfuehrabschnitts ist.

Machine translation: Having positioning device for positioning a Werkstuecks (200) on an apparatus member (100) of a

workholding device of a processing machine, in particular a honing machine, wherein the workpiece comprises at least two defined positions index holes (120A, 120B) and the positioning an indexing bolt (320), one to the inner diameter of an index hole adapted insertion section (324) for insertion into one of the index holes, characterized in that the indexing bolt (320) subsequent to the introduction portion has a conical centering portion (322) having a first of its said insertion end facing diameter (D1) which is smaller than or equal to a maximum diameter of the insert and at the opposite end, a second diameter (D2) which is greater than the diameter of the insert.

Classifications:
International (IPC 8-9): B23Q17/00 B23Q3/06 B24B33/10 (Advanced/Invention)
CPC: B23Q3/06 B23Q3/183 B23Q3/186



Family:

Publication number	Publication date	Application number	Application date
DE202013005616 U1	20130905	DE201320005616U	20130617

Priority:
DE201320005616U 20130617

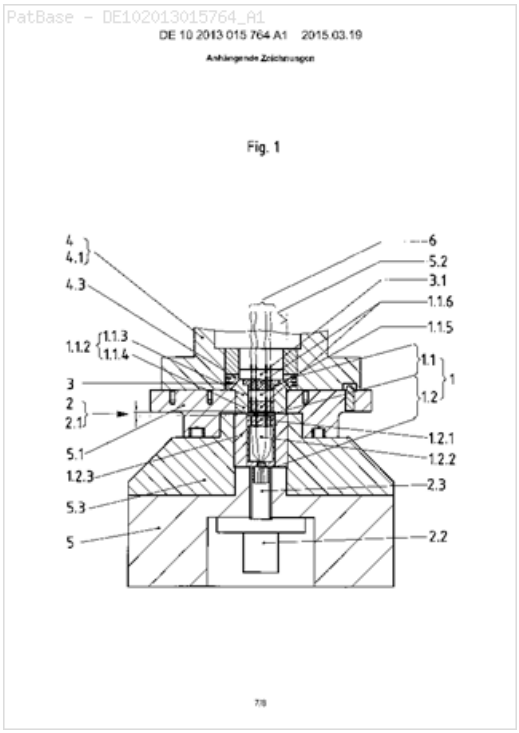
Probable Assignee: NAGEL MASCH WERKZEUG
Assignee(s): (std)**:** NAGEL MASCH WERKZEUG
Assignee(s): NAGEL MASCH U WERKZEUGFABRIK GMBH

151) Family number: 58731286 (DE102013015764B4)

Title: NETZANSCHLUSSMODUL FUER INTELLIGENTE WERKSTUECKSPANNVORRICHTUNGEN

Abstract: Source: DE102013015764B4 [DE] Das Netzanschlussmodul (1) fuer Intelligente Werkstueckspannvorrichtungen (4), die mittels einer Maschinenpalette oder einer Schwenkplatte (5.1) in Teilschritten auf einem spanenden Bearbeitungszentrum winkelverstell- und positionierbar sind, besteht aus zwei achsgleich stirnseitig kontaktierbaren Buchsen. Es ist raumsparend koerperintegriert angeordnet und erfuellt neben seiner Kontakt-Verbindungsfunktion und Kontakt-Loesefunktion fuer stromfuehrende Leitungen (6) auch eine Schwenkachslager- und eine Mittenpositionierungs-Funktion. Besonderes Anwendungsgebiet sind autarke elektrohydraulische Werkstueckspannvorrichtungen (4), die fuer eine Mehrstueck- und Mehrseitenbearbeitung von Werkstuecken auf spanenden Bearbeitungszentren verschwenkbar sein muessen.

Classifications:
International (IPC 8-9): B23Q11/00 B23Q3/00 H01R24/00 (Advanced/Invention)
CPC: B25B5/16 B23Q1/0009 B23Q3/06



Family:

Publication number	Publication date	Application number	Application date
DE102013015764 A1	20150319	DE201310015764	20130913
DE102013015764 B4	20170817	DE201310015764	20130913

Priority:

DE201310015764 20130913

Probable Assignee: HOHENSTEIN VORRICHTUNGSBAU

Assignee(s): (std)**:** HOHENSTEIN VORRICHTUNGSBAU ; WVL WERKZEUG U VORRICHTUNGSBAU LICHTENSTEIN GMBH

Assignee(s): HOHENSTEIN VORRICHTUNGSBAU U SPANNSYSTEME GMBH

Inventor(s): (std)**:** FRANZKI MICHAEL

152) Family number: 8824287 (DE4113629A1)

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Title: Automatic drilling and milling machine for long workpieces - has long bed with up to twelve independently positionable machining units and indexing work support

Abstract: The automatic drilling and milling machine has a long bed (10) with cylindrical guideways (14) on which can be traversed from five to twelve identical machining units (20). Between the guideways and supported at each end of the bed is a fixed leadscrew. Each machining unit has a recirculating ball nut supporting the leadscrew and rotatably driven to allow independent positioning of the unit along the bed. At each end of the bed are fixed work rests (28) with rotatably driven clamps shaped to accept workpieces such as door psots with variously profiled sections. Fixed to each machining unit is a travelling work rest (76) to provide support close to the point of machining. USE/ADVANTAGE - Fully automatic machining of all features required on small batches of window and door section etc.

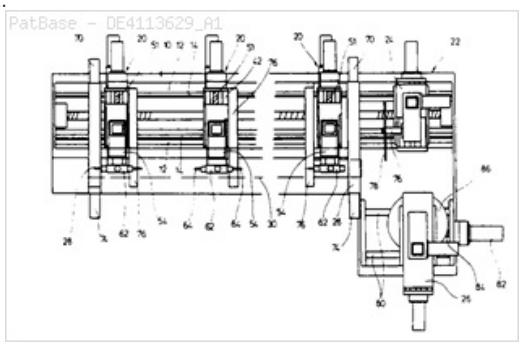
Classifications:

International (IPC 8-9): B23B41/00 B23C3/00 B23D45/10 B23Q1/52 B23Q1/76 B23Q37/00 B23Q39/02 B23Q5/40 (Advanced/Invention); B23B41/00 B23C3/00 B23D45/00 B23Q1/00 B23Q1/25 B23Q37/00 B23Q39/00 B23Q5/22 (Core/Invention)

International (IPC 1-7): B23B39/16 B23B39/28 B23C1/12 B23Q39/00 E06B3/00

CPC: B23B41/003 B23C3/002 B23D45/102 B23Q1/527 B23Q1/763 B23Q5/40 B23Q37/00 B23Q39/023

European: B23B41/00C B23C3/00B B23D45/10B B23Q1/16C4 B23Q1/52C B23Q1/76B B23Q37/00 B23Q39/02 B23Q39/02B2B B23Q5/40



Family:

Publication number	Publication date	Application number	Application date
DE4113629 A1	19921029	DE19914113629	19910426
DE4113629 C2	19950223	DE19914113629	19910426

Priority:

DE19914113629 19910426

Probable Assignee: GOETZ METALL ANLAGEN

Assignee(s): (std)**:** GOETZ GMBH METALL U ANLAGENB ; GOETZ METALL ANLAGEN

Assignee(s): GOETZ GMBH METALL U ANLAGENBAU ; GOETZ GMBH METALL UND ANLAGENBAU 7012 FELLBACH DE ; GOETZ GMBH METALL UND ANLAGENBAU 70736 FELLBACH DE

Inventor(s): (std)**:** ABRAHAM PETER ; KOCH PETER

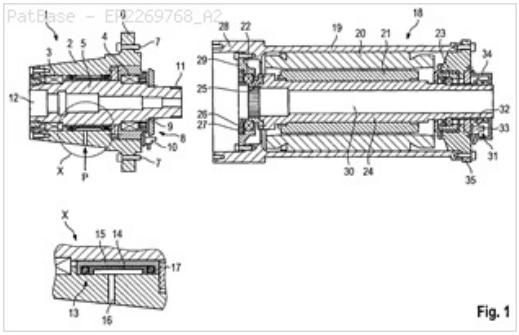
Inventor(s): KOCH PETER 7120 BIETIGHEIM BISSINGEN DE ; ABRAHAM PETER 7129 ILSFELD DE

153) Family number: 47945290 (EP2269768B1)

Title: Tool spindle for a combined milling/turning machine with fixed or rotating tool

Abstract: Source: EP2269768A3 [DE] Die Erfindung betrifft eine geteilte Werkzeugspindel fuer insbesondere eine kombinierte Fraes-/Drehmaschine, mit einem stehenden und sich drehenden Werkzeug, wobei das Werkzeug in einer in einem Spindelgehaeuse gelagerten Spindelwelle aufgenommen ist. Um eine Werkzeugspindel fuer stehende und drehende Werkzeuge zu schaffen, bei der das stehende Werkzeug sicher und stufenlos winkelgenau fixiert werden kann, ohne dass dabei durch die Feststelleinrichtung zum Fixieren der Werkzeugspindel zusaetzliche axiale Kraefte auf die Spindellagerung direkt oder indirekt wirken, ist erfindungsgemaess vorgesehen,
- dass die Spindelwelle (5) von einer in radialer Richtung auf die Spindelwelle (5) wirkenden Klemmbuchse (13) beaufschlagbar ist, und
- dass auf der Spindelwelle (5) ein Drehgeber (8) angeordnet ist.

Classifications:
International (IPC 8-9): B23B19/02 B23Q1/28 B23Q1/70 B23Q11/04 B23Q17/00 B23Q5/04 B23Q5/58 (Advanced/Invention)
CPC: B23Q1/287 B23Q1/70 B23Q5/04
European: B23Q1/28D B23Q1/70 B23Q5/04



Family:

Publication number	Publication date	Application number	Application date
DE102009031027 A1	20110105	DE200910031027	20090629
DE502010001933 D1	20130228	DE201050001933T	20100505
EP2269768 A2	20110105	EP20100004756	20100505
EP2269768 A3	20110413	EP20100004756	20100505
EP2269768 B1	20121226	EP20100004756	20100505

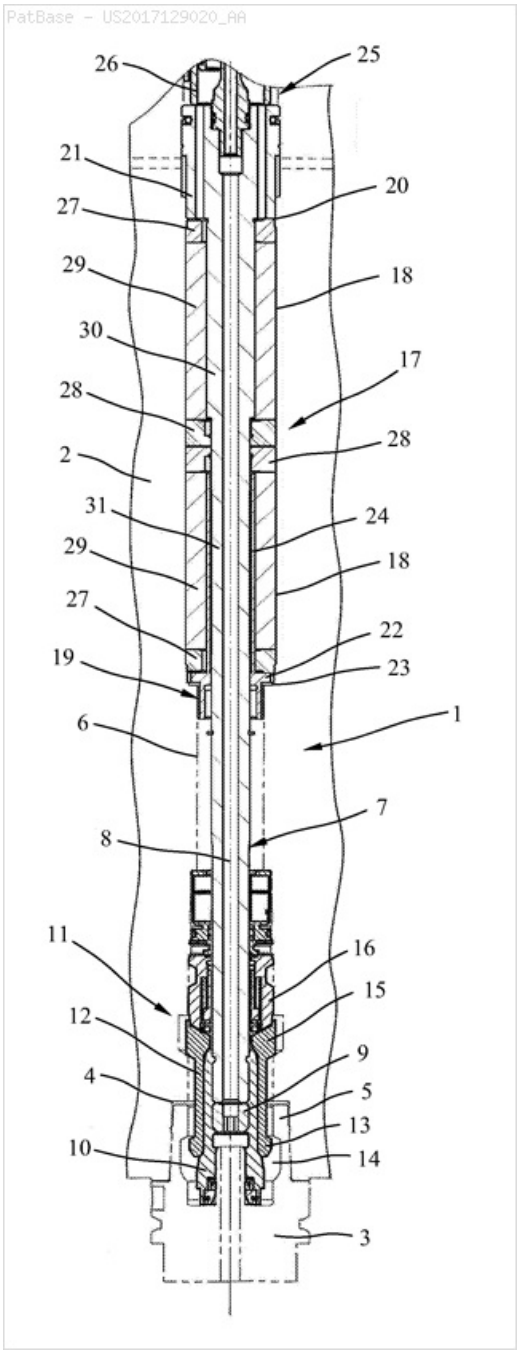
Priority:
DE200910031027 20090629 EP20100004756 20100505

Probable Assignee: HERMLE BERTHOLD MASCHF AG
Assignee(s): (std): HERMLE BERTHOLD MASCHF AG
Assignee(s): MASCHF BERTHOLD HERMLE AG ; MASCHINENFABRIK BERTHOLD HERMLE AG
Inventor(s): (std): BERNHARD FRANZ XAVER ; SCHWOERER TOBIAS ; SCHWOERER TOBIAS DIPL ING
Inventor(s): SCHWOERER TOBIAS DIPL ING FH
Agent(s): HOEFER AND PARTNER; HAGER THOMAS JOHANNES
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

154) Family number: 64371291 (US2017129020A)

Title: CLAMPING DEVICE

Abstract: A clamping device for clamping a workpiece or a tool or a tool holder to a machine component of a machine tool, having an axially movable tension rod, a clamping assembly which can be moved by the tension rod between a clamped position and a released position, a spring assembly dedicated to the tension rod with a plurality of series-connected spring units for generating the clamping and draw-in force of the clamping assembly, and a releasing unit by which the clamping assembly can be moved by the tension rod against the force of the spring assembly into the released position. To ensure the most uniform load possible, the axial spring deflection of the spring units is limited by a stop when the spring assembly is compressed.
Classifications:
International (IPC 8-9): B23B31/117 B23B31/26 B23Q3/12 (Advanced/Invention)
CPC: B23B2260/12 B23B2260/136 B23B2231/24 B23B2250/12 B23B2260/034 B23B31/265 B23B31/26



Family:

Publication number	Publication date	Application number	Application date
DE102015119060 B3	20161215	DE201510119060	20151106
DE502016001341 D1	20180726	DE201650001341T	20161027
EP3165310 A1	20170510	EP20160195885	20161027
EP3165310 B1	20180627	EP20160195885	20161027
ES2688052 T3	20181030	ES20160195885T	20161027
JP2017136680 A2	20170810	JP20160211310	20161028
JP6382910 B2	20180829	JP20160211310	20161028
US2017129020 AA	20170511	US20160335825	20161027
US9962772 BB	20180508	US20160335825	20161027

Priority:

DE201510119060 20151106 EP20160195885 20161027 JP20160211310 20161028

Probable Assignee: OTT JAKOB SPANNTECHNIK GMBH

Assignee(s): (std)**:** OTT JAKOB SPANNTECHNIK GMBH

Inventor(s): (std)**:** GREIF JOSEF ; REISACHER JUN BARTHOLOMAEUS ; MOHR PETER ; REISACHER BARTHOLOMAEUS JUN ; REISACHER JR BARTHOLOMAEUS ; JOSEF GREIF ; PETER MOHR ; BARTHOLOMAEUS REISACHER JUN ; REISACHER BARTHOLOMAEUS

Inventor(s): REISACHER JR ; REISACHER JUN

Agent(s): CHARRIER RAPP AND LIEBAU PATENTANWAELTE PARTG MBB; CHARRIER RAPP AND LIEBAU; VALLEJO JUAN PEDRO; HIROE AND ASSOCIATES PATENT PROFESSIONAL CORP; FLEIT GIBBONS GUTMAN BONGINI AND BIANCO PL; GARY S; PAUL D

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

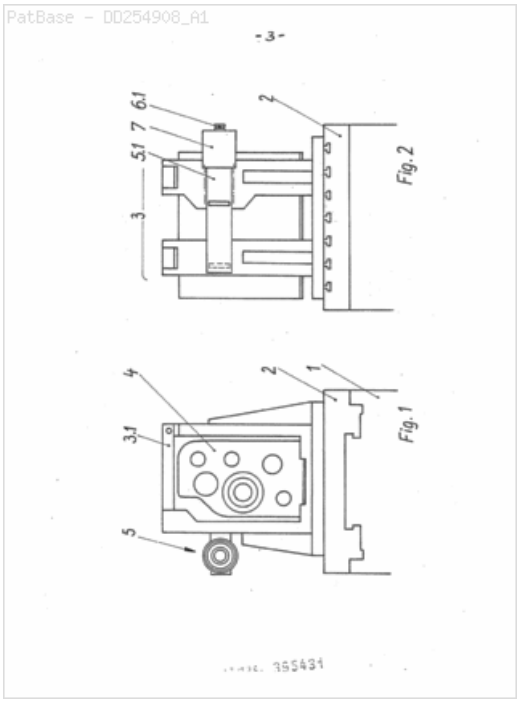
155) Family number: 5937291 (DD254908A)

Title: MASCHINENPALETTE, DIE EINE VORRICHTUNG ZUM SPANNEN VON WENIGSTENS EINEM WERKSTUECK AUFWEIST
RANGE OF MACHINES THAT HAS A DEVICE FOR CLAMPING OF AT LEAST A WORKPIECE (Machine translation)

Abstract: Source: DD254908A [DE] [Source: Claim 1] 1. Maschinenpalette, die eine Vorrichtung zum Spannen von wenigstens einem Werkstueck aufweist, mit dem sie auf den Tisch einer Bearbeitungsstation transportiert und dort gespannt wird, gekennzeichnet durch wenigstens eine Werkzeugkassette (5) zum Mitfuehren eines Werkzeuges (6) samt Werkzeughalter (6.1).

Machine translation: [Source: claim 1] 1 machine range that has a device for clamping of at least a piece of work, with which she transported and there is stretched, characterized by at least a tool cassette (5) to carry a tool (6) together with the tool holder (6.1) on the table of a processing station.

Classifications:
International (IPC 8-9): B23Q3/157 (Advanced/Invention); B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157



Family:

Publication number	Publication date	Application number	Application date
DD254908 A1	19880316	DD19860297741	19861217

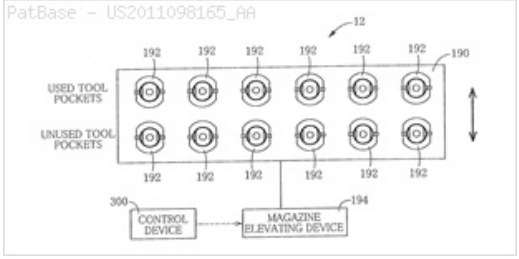
Priority:
DD19860297741 19861217

Probable Assignee:	WERKZEUGMASCHINENBAU FZ
Assignee(s): (std):	WERKZEUGMASCHINENBAU FZ
Assignee(s):	FZ D WERKZEUGMASCHINENBAUES KARL MARX STADT DD
Inventor(s): (std):	HAEHLE FRANK ; HEINZ MANFRED
Inventor(s):	HEINZ MANFRED DD ; HAEHLE FRANK DD

156) Family number: 48791295 (US2011098165A)

Title: TOOL TRANSFER SYSTEM

Abstract: A tool transfer system configured to transfer a tool between first and second tool holding devices by causing the first and second tool holding devices to be moved relative to each other. The first tool holding device includes a clamp sleeve forced in a direction toward the second tool holding device so as to be positioned in a clamping position. The second tool holding device includes: a hole defining member defining a receiving hole that is to receive the tool; and a movable engaging member that is movable between a working position and a non-working position depending on movement of the hole defining member. The movable engaging member is engageable with the clamp sleeve, while being positioned in the working position, such that the clamp sleeve can be moved, by engagement of the movable engaging member with the clamp sleeve, so as to be positioned in an unclamping position, during relative axial movement of the first and second tool holding devices toward each other.
Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention)
CPC: B23B31/06 B23B31/1071 B23Q3/1552
European: B23B31/06 B23B31/107B B23Q3/155D
US: 483/55 483/57 483/58 483/58P 483/61 483/69 483/69S



Family:

Publication number	Publication date	Application number	Application date

US2011098165 AA	20110428	US20090588684	20091023
US8591389 BB	20131126	US20090588684	20091023

Priority:

US20090588684 20091023

Probable Assignee: FUJI SEIKO LTD

Assignee(s): (std): FUJII AKIHIRO ; NISHI TOSHIYUKI ; TOYOTA MOTOR CO LTD ; TSUJINO AKINORI ; TOMIOKA MITSUHIKO ; OTA TOMOYASU ; FUJI BELLOWS CO LTD

Assignee(s): FUJI SEIKO LIMITED ; FUJI SEIKO LTD ; TOYOTA JIDOSHA KK ; TOYOTA JIDOSHA KABUSHIKI KAISHA

Inventor(s): (std): FUJII AKIHIRO ; TOMIOKA MITSUHIKO ; OTA TOMOYASU ; TSUJINO AKINORI ; NISHI TOSHIYUKI

Agent(s): OLIFF AND BERRIDGE PLC

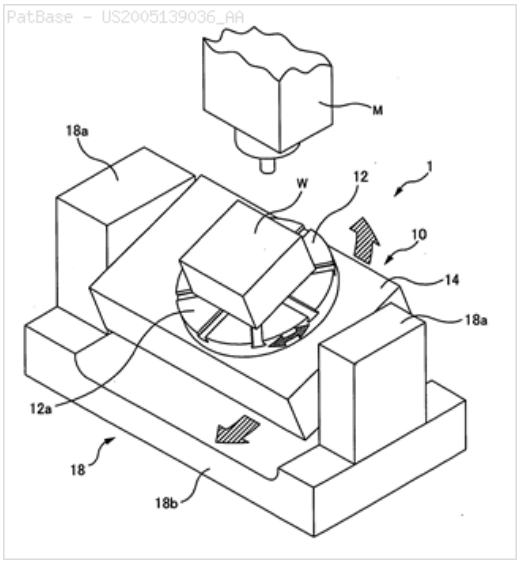
157) Family number: 31829296 (US2005139036A)

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Title: INCLINING AND ROTATING TABLE APPARATUS

Abstract: An inclining and rotating table apparatus is provided with: a rotary table device having a driven rotating shaft driven to rotate by a first drive source, and a rotary table driven to rotate by the driven rotating shaft; a driven turning shaft for causing inclination of a table surface of the rotary table device by causing the rotary table device to turn, the driven turning shaft being driven to turn by a second drive source; and a clamping device for clamping at least one of the driven rotating shaft and the driven turning shaft.

Classifications:
International (IPC 8-9): B23Q1/25 B23Q1/28 B23Q1/52 B23Q1/54 B23Q16/02 B23Q16/10 B23Q3/04 B23Q5/34 F16D49/14 (Advanced/Invention);
B23Q1/25 B23Q1/26 B23Q16/00 B23Q3/02 B23Q5/22 F16D49/00 (Core/Invention)
International (IPC 1-7): B23C1/14 B23Q1/25 B23Q1/28 B23Q1/52 B23Q1/54 B23Q16/02 B23Q16/10 B23Q5/34 B24B49/00 F16D49/14
CPC: Y10T74/1494 Y10T408/5614 Y10T409/30896 F16D49/14 B23Q1/287 B23Q1/52 B23Q1/5437 B23Q5/341 B23Q16/025 Y10T409/305656 Y10T409/308792
European: B23Q1/28D B23Q1/52 B23Q1/54A B23Q1/54A9 B23Q16/02C3 B23Q5/34B F16D49/14
US: 269/71 408/89 409/165 409/165S 409/221 409/221S 409/224 74/813.00L 74/813.00LP 74/813L



Family:

Publication number	Publication date	Application number	Application date
CN100574979 C	20091230	CN200410084182	20041015
CN1647889 A	20050803	CN200410084182	20041015
DE602004003448 D1	20070111	DE200460003448T	20041014
DE602004003448 T2	20071004	DE200460003448T	20041014
DE602004003448 T8	20080124	DE200460003448T	20041014
EP1524067 A1	20050420	EP20040256328	20041014
EP1524067 B1	20061129	EP20040256328	20041014
JP2005138275 A2	20050602	JP20040293295	20041006
JP4538292 B2	20100908	JP20040293295	20041006
US2005139036 AA	20050630	US20040966026	20041018
US7491022 BB	20090217	US20040966026	20041018

Priority:

JP20030357307 20031017 JP20040293295 20041006

Probable Assignee: SANKYO SEISAKUSHO CO

Assignee(s): (std): SANKO SEISAKUSHO CO ; SANKYO MFG ; SANKYO MFG CO LTD ; SANKYO SEISAKUSHO CO LTD ; SANKYO SEISAKUSHO KK ; YAMAZAKI MAZAK CO LTD ; YAMAZAKI MAZAK CORP

Assignee(s): SANKYO SEISAKUSHO CO

Inventor(s): (std): HEIZABURO KATO ; KATO HEIZABURO ; KOKI TORIMARU ; TORIMARU KOKI ; TOSHIHIKO YOKOE ; YOKOE TOSHIHIKO

Agent(s): ISSHIKI AND CO; MORRISON AND FOERSTER LLP

Designated states: DE FR GB IT

158) Family number: 64825297 (WO17017988A1)

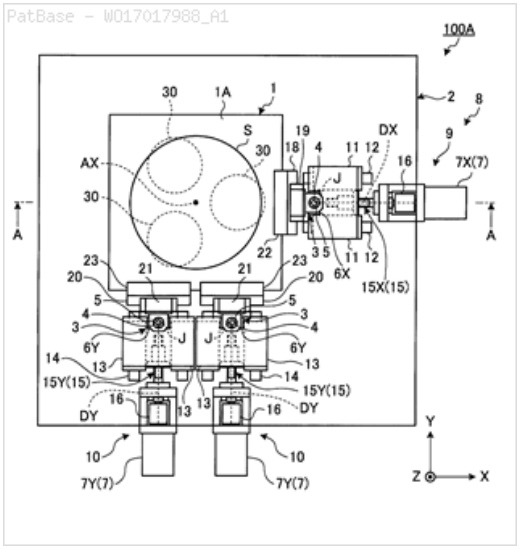
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Title: TABLE DEVICE, POSITIONING DEVICE, FLAT-PANEL DISPLAY MANUFACTURING DEVICE, AND PRECISION MACHINE

Abstract: This table device is provided with a first drive device which applies a first axis direction force to a table, and a second drive device which applies a second axis direction force to the table. The first drive device includes a first actuator which produces motive power for moving the table in a first axis direction, and a first movable member which is moved along a first drive shaft parallel with the first axis, by means of the operation of the first actuator. The first movable member includes: a first linear bearing which moves along the first drive shaft; a first rotating bearing which is disposed around a first

rod member fixed to the first linear bearing and which is rotatable relative to the first rod member; and a second linear bearing which is connected to the first rotating bearing and which is guided in a second axis direction by a second guide member fixed to an end, in the first axis direction, of the table.

Classifications:
International (IPC 8-9): B23Q1/40 B23Q1/48 B23Q1/62 F16C29/00 G03F7/20 G12B5/00 G12B9/10 H01L21/68 H01L21/683 (Advanced/Invention)
CPC: G03F7/70775 B23Q1/40 B23Q1/48 B23Q1/62 F16C2322/39 B23Q1/623 F16C29/00 G03F7/20 G12B5/00 G12B9/10 H01L21/68 H01L21/683



Family:

Publication number	Publication date	Application number	Application date
CN107851599 A	20180327	CN201680044541	20160315
DE112016003448 T5	20180419	DE201611003448T	20160315
JP2017030136 A2	20170209	JP20160003425	20160112
KR20180035812 A	20180406	KR20187002634	20160315
TW201709216 A	20170301	TW20160112279	20160420
TWI592944 B	20170721	TW20160112279	20160420
WO17017988 A1	20170202	WO2016JP58196	20160315

Priority:
JP20150150568 20150730 JP20160003425 20160112 WO2016JP58196 20160315

Probable Assignee: NSK LTD

Assignee(s): (std): NSK LTD

Inventor(s): (std): KURAMOCHI TAKASHI ; NAKAMURA TSUYOSHI ; KURAMOCHI HISAFUMI ; NAKAMURA TAKESHI

Agent(s): SAKAI INT PATENT OFFICE

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

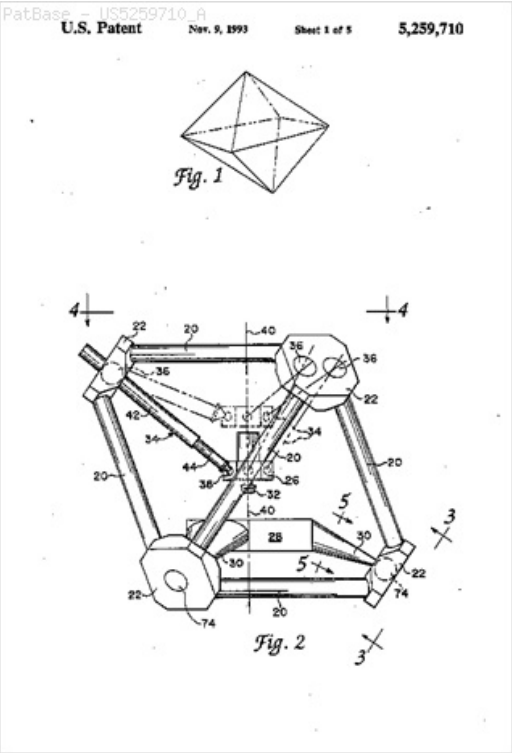
159) Family number: 9582298 (US5259710A)

Title: OCTAHEDRAL MACHINE TOOL FRAME

Abstract: A machine tool frame is disclosed which is comprised of twelve struts connected together at their ends in six nodes to define the eight triangular panels of an octahedron. Forces generated by the operation of the machine tool are received by the frame at its nodes, being the nodes of opposed parallel triangular panels, upper and lower, in the specific examples illustrated. The octahedral frame displays superior rigidity due to its inherently closed kinematic loop, and to the virtual absence of bending stress in its constituent members accomplished by nodal loading. Movable machine elements are mounted upon six extensible and retractable servo-struts emanating in pairs from the nodes of a given triangular panel of the octahedral frame while opposing fixed elements located within the octahedral frame are supported tripodally from the frame nodes associated with a single triangular panel of the frame.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/01 B23Q1/44 B23Q1/54 B23Q5/22 B23Q5/36 (Advanced/Invention); B23Q1/00 B23Q1/25 B23Q5/22 (Core/Invention)
International (IPC 1-7): B23C1/12 B23Q1/01 B23Q1/02 B23Q1/10 B23Q1/14 B23Q1/25 B23Q1/48 B23Q5/22 B23R35/00 F16H27/02
CPC: Y10T408/03 Y10T408/93 Y10T409/303808 Y10T409/307672 Y10T409/309576 Y10T74/18688 Y10T74/20317 Y10T74/2151 Y10T408/91 Y10T409/308512 Y10T409/309744 B23Q1/5462 B23Q1/015
European: B23Q1/01B B23Q1/54B3
US: 408/1R 408/234 408/236 409/132 409/201 409/216 409/235 409/238 74/424.8R 74/490.03 74/586 74/83.15 74/831.5 74/89.37

PatBase - US5259710_A



Family:

Publication number	Publication date	Application number	Application date
DE69203065 D1	19950727	DE19926003065	19920403
DE69203065 T2	19951019	DE19926003065T	19920403
DE69308708 D1	19970417	DE19936008708	19930819
DE69308708 T2	19970619	DE19936008708T	19930819
EP0534585 A2	19930331	EP19920302963	19920403
EP0534585 A3	19930707	EP19920302963	19920403
EP0534585 B1	19950621	EP19920302963	19920403
EP0589565 A2	19940330	EP19930306550	19930819
EP0589565 A3	19940601	EP19930306550	19930819
EP0589565 B1	19970312	EP19930306550	19930819
JP5237732 A2	19930917	JP19920140730	19920601
JP6190667 A2	19940712	JP19930233661	19930920
US5259710 A	19931109	US19910749582	19910826
US5392663 A	19950228	US19930150685	19931109
US5401128 A	19950328	US19920947819	19920918

Priority:

US19910749582 19910826 US19920947819 19920918 US19930150685 19931109

Probable Assignee: CAMOZZI PNEUMATICS INC

Assignee(s): (std)**:** INGERSOLL MILLING MACHINE CO

Assignee(s): INGERSOLL MILLING MACHINE COMPANY ; THE INGERSOLL MILLING MACHINE COMPANY ; INGERSOLL MIRINGU MACH CO ; THE INGERSOLL MILLING MACHINE CO ; THE INGERSOLL MILLING MACHINE CO ROCKFORD ILL US ; BANK ONE NA ; CAMOZZI PNEUMATICS INC ; INGERSOLL MACHINE TOOLS INC

Inventor(s): (std)**:** POORU EI ESU CHIYAARUZU ; TOOMASU JIYURISU RINDEMU ; LINDEM THOMAS J ; CHARLES PAUL A S ; LINDEM THOMAS JULES

Inventor(s): CHARLES PAUL A S COUNTY ANTRIM NORTHERN IRELAND BT ; LINDEM THOMAS JULES ROCKFORD ILLINOIS 61107 US

Designated states: DE GB IT

160) Family number: 64629298 (JP2017019022A)

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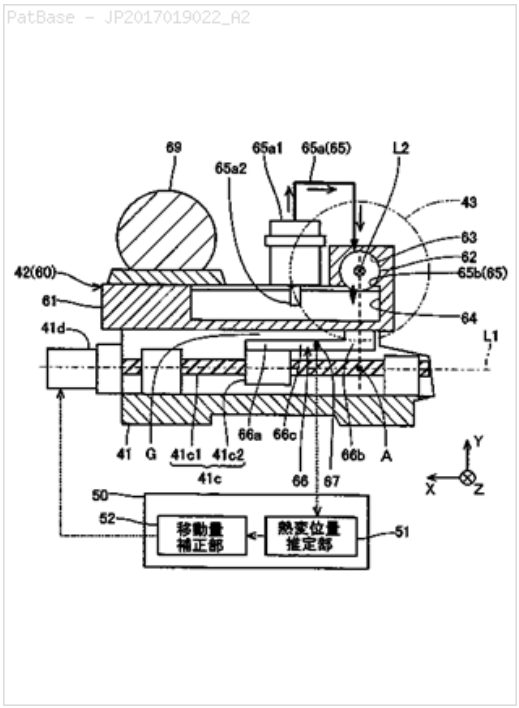
Title: MACHINE TOOL HAVING BALL SCREW

Abstract: PROBLEM TO BE SOLVED: To provide a machine tool capable of comparatively easily estimating the thermal displacement of a support base for supporting a bearing even when the temperature distribution of the support base is complicated.SOLUTION: A grinding machine 1 comprises: a grinding head body 61 which supports a rotary shaft member 62 connected to a grinding wheel 43; an X-axis screw shaft 41c1 and an X-axis nut member 41c2; and a connecting member 66 which connects the grinding head body 61 and the X-axis nut member 41c2 to each other. A grinding head connecting portion 66b connected to the grinding head body 61 of the connecting member 66 and a nut connecting portion 66a connected to the X-axis nut member 41c2 of the connecting member 66 are located at different positions in the direction of the axis L1 of the X-axis screw shaft 41c1. The grinding head connecting portion 66b is disposed so as to overlap with a position of the axis L2 of the rotary shaft member 62 on the axis L1 in the direction perpendicular to the direction of the axis L1. The connecting member 66 is formed so that the direction of thermal displacement is along the direction of the axis L1.SELECTED DRAWING: Figure 2

Classifications:

International (IPC 8-9): B23Q1/70 B23Q1/72 B23Q11/12 B23Q15/18 B24B41/00 B24B41/02 B24B41/04 B24B49/14 (Advanced/Invention)

CPC: B23Q5/40 B23Q11/141 B24B5/04 B24B41/007 B24B47/12 B24B49/14 B24B41/02 B24B41/00



Family:

Publication number	Publication date	Application number	Application date
CN106334998 A	20170118	CN201610523357	20160705
DE102016112255 A1	20170112	DE201610112255	20160705
JP2017019022 A2	20170126	JP20150136055	20150707

Priority:

JP20150136055 20150707

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

Assignee(s): N A

Inventor(s): (std)**:** IWAI HIDEKI ; HIROTA IKUKO ; SAKURAI YASUMASA ; SASAKI YUJI ; WAKASUGI NAOYA ; SAKURAI YASUTADA ; IKUKO HIROTA ; YASUMASA SAKURAI ; HIDEKI IWAI ; NAOYA WAKASUGI ; YUJI SASAKI

161) Family number: 31829299 (US2004132595A)

© PatBase

Title: MACHINING STATION

Abstract: The invention refers to a machining station, at least one machining unit, in particular a tool spindle, being provided for the machining of workpieces. The workpiece is approached to a discharge point and picked up there by a workpiece carriage. The workpiece carriage moves the workpiece for a machining to the machining unit or moves the workpiece during its machining through the machining unit.

Classifications:

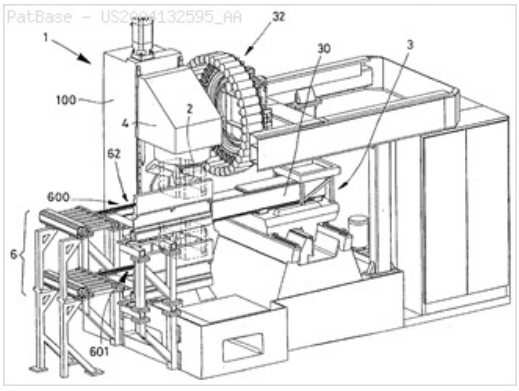
International (IPC 8-9)**:** B23P23/06 B23Q1/48 B23Q1/52 B23Q1/62 B23Q11/00 B23Q3/157 B23Q39/02 B23Q39/04 B23Q41/02 B23Q41/04 B23Q7/00 B23Q7/14 B23Q7/16 (Advanced/Invention); B23P23/00 B23Q1/00 B23Q1/25 B23Q11/00 B23Q3/157 B23Q39/00 B23Q41/00 B23Q41/02 B23Q7/00 B23Q7/14 B23Q7/16 (Core/Invention)

International (IPC 1-7)**:** B21D43/22 B23P21/00 B23P23/00 B23Q1/60 B23Q1/62 B23Q11/00 B23Q11/10 B23Q3/157 B23Q39/02 B23Q39/04 B23Q41/00 B23Q41/00 B23Q41/02 B23Q41/08 B23Q7/00 B23Q7/14 B23Q7/16 B30B15/30 B65G25/04

CPC: B23Q2039/006 B23Q39/026 B23Q1/4857 B23Q1/4876 B23Q1/52 B23Q1/621 B23Q7/1426 B23Q39/02 Y10T29/5124 Y10T29/5196 Y10T483/1733 Y10T483/179 B23Q41/04 B23Q41/02 Y10T409/304088 Y10T409/306048 B23Q39/04 B23Q1/62 B23Q5/22 B23Q7/14

European: B23Q1/48E1 B23Q1/48G B23Q1/52 B23Q1/62A B23Q39/02 B23Q39/02B4B B23Q39/04 B23Q41/02 B23Q41/04 B23Q7/14 B23Q7/14K

US: 29/33 29/33P 29/563 29/DIG.05 29/DIG.094 29/DIG.50 29/DIG.94 409/137 409/172 483/30 483/54



Family:

Publication number	Publication date	Application number	Application date
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CN1607064 A	20050420	CN200410098154	20041010
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DE10347956 A1	20041028	DE20031047956	20031010
DE20304653 U1	20040422	DE20032004653U	20030321
DE50301393 D1	20051124	DE20035001393	20030707
EP1380382 A1	20040114	EP20030015295	20030707
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EP1459843 A2	20040922	EP20040006668	20040319
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EP1466697 A3	20041110	EP20040006667	20040319
EP1524070 A1	20050420	EP20040023785	20041006
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IN00718MN2004 A	20050218	IN2004MN00718	20041213
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KR101031289 B1	20110427	KR20057000326	20050107
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MXPA05000362 A1	20050819	MX2005PA00362	20030707
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US2004132595 AA	20040708	US20030614222	20030708
US2005039321 AA	20050224	US20040804076	20040319
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US7150706 BB	20061219	US20030614222	20030708
WO04004969 A1	20040115	WO2003EP07276	20030707

Priority:

DE20021031043	20020709	DE20021032777	20020718	DE20021038386	20020816
DE20022017937U	20021119	DE20022018805U	20021205	DE20032004653U	20030321
DE20031019122	20030428	DE20031019120	20030428	DE20031025879	20030606
DE20031030630	20030707	WO2003EP07276	20030707	EP20030015295	20030707
DE20035001393	20030707	DE20031047956	20031010	DE20031047913	20031010

Probable Assignee: GROB WERKE GMBH AND CO KG

Assignee(s): (std)**:** GROB WERKE BURKHART GROB E K ; GROB WERKE BURKHART GROB EK ; KRUPP WORKE BUCKHART KRUPP E K ; STAVE HINRICH ; LUTZ HEINRICH ; KIENLE ANTON ; MARTENS KNUT ; KRUPP WORKE BUCKHART KRUPP EK ; GROB BURKHART

Assignee(s): E K ; GROB WERKE GMBH ; GROB WERKE GMBH AND CO KG

Inventor(s): (std)**:** HEINRICH LUTZ ; HINRICH STAVE ; KIENLE ANTON ; KNUT MARTENS ; MARTENS KNUT ; STAVE HINRICH DR ; STAVE HINRICH ; LUTZ HEINRICH ; B GRUB ; BURKHART GROB ; GROB BURKHART DR ; GROB BURKHART DR H C ; GRUB B ; GROB DR H C MULT DIPL ING ; GROB BURKHART DR H C MULT DIPL ; GROB BURKHART

Inventor(s): GROB BURKHART DRHC ; GROB BURKHART DR HC ; GROB DR HCMULT DIPL ING ; GROB BURKHART DR H C MULT DIPL ING ; GROB BURKHART DR HCMULT DIPL ING

Agent(s): GRIFFITH HACK; MARKS AND CLERK; JACOBSON PRICE HOLMAN AND STERN PROFESSIONAL LIABILITY CO LTD; JACOBSON PRICE HOLMAN AND STERN, PROFESSIONAL LIMITED LIABILITY COMPANY; JACOBSON HOLMAN PLLC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

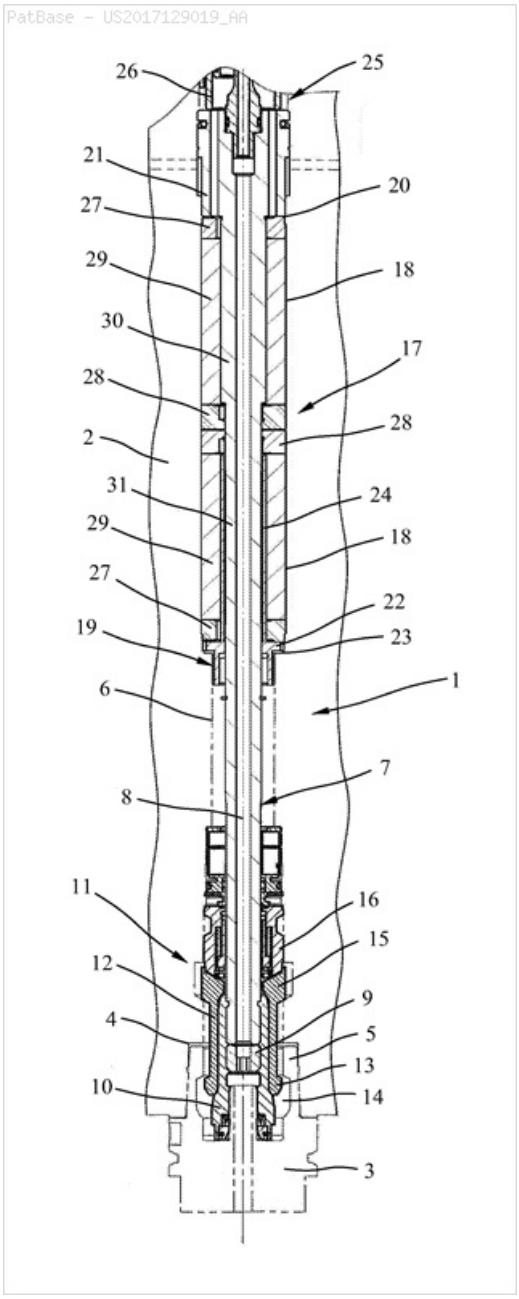
162) Family number: 64371301 (US2017129019A)

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Title: CLAMPING DEVICE

Abstract: A clamping device for clamping a workpiece or a tool or a tool holder to a machine component of a machine tool, including an axially movable tension rod, a clamping assembly which can be moved by the tension rod between a clamped position and a released position, a spring assembly dedicated to the tension rod for generating the clamping and draw-in force of the clamping assembly, and a releasing unit by which the clamping assembly can be moved by the tension rod against the force of the spring assembly into the released position. The spring assembly has a minimum of one spring unit with a plurality of flexible spring members disposed between a first and a second spring holder, with the first and second spring holders being secured against torsion relative to the tension rod.

Classifications:
International (IPC 8-9): B23B31/26 B23Q3/12 (Advanced/Invention)
CPC: B23B2260/034 B23B31/265 B23B31/26 B23B2260/12
B23B2260/136



Family:

Publication number	Publication date	Application number	Application date
DE102015119061 B3	20161215	DE201510119061	20151106
DE502016001287 D1	20180712	DE201650001287T	20161027
EP3165309 A1	20170510	EP20160195882	20161027
EP3165309 B1	20180620	EP20160195882	20161027
ES2687615 T3	20181026	ES20160195882T	20161027
JP2017136679 A2	20170810	JP20160211309	20161028
JP6382909 B2	20180829	JP20160211309	20161028
US2017129019 AA	20170511	US20160335673	20161027
US9931700 BB	20180403	US20160335673	20161027

Priority:

DE201510119061 20151106 EP20160195882 20161027 JP20160211309 20161028

Probable Assignee: OTT JAKOB SPANNTECHNIK GMBH

Assignee(s): (std)**:** OTT JAKOB SPANNTECHNIK GMBH

Inventor(s): (std)**:** GREIF JOSEF ; REISACHER JUN BARTHOLOMAEUS ; MOHR PETER ; REISACHER BARTHOLOMAEUS JUN ; REISACHER JR BARTHOLOMAEUS ; JOSEF GREIF ; PETER MOHR ; BARTHOLOMAEUS REISACHER JUN ; REISACHER BARTHOLOMAEUS

Inventor(s): REISACHER JUN

Agent(s): PATENTANWAELTE CHARRIER RAPP AND LIEBAU; CHARRIER RAPP AND LIEBAU; VALLEJO JUAN PEDRO; HIROE AND ASSOCIATES PATENT PROFESSIONAL CORP; FLEIT GIBBONS GUTMAN BONGINI AND BIANCO PL; PAUL D; GARY

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

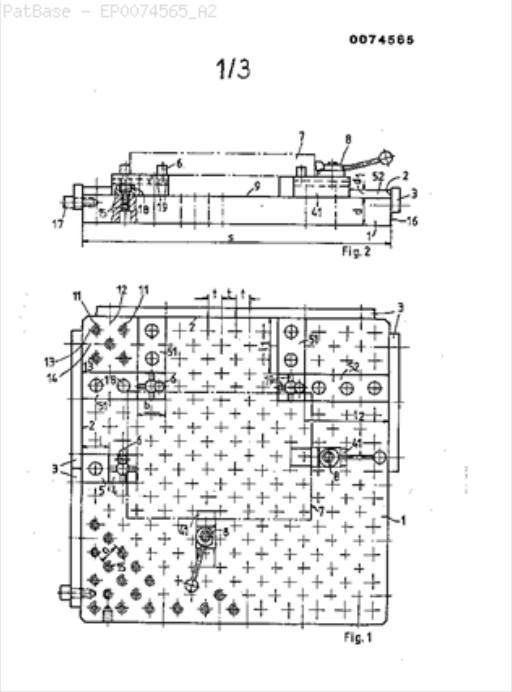
163) Family number: 2979305 (EP0074565A2)

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Title: PALET FOR POSITIONING AND CLAMPING WORKPIECES.

Abstract: Mounted on stopping strips (3) at the edge of the parallelepipedal base plate (1) of a workpiece pallet are stop surfaces (2) at right angles to one another. The base plate is divided by a grid system of mutually alternating columns (11, 12) and rows (13, 14), threaded bores (15) being provided only in the intersections of the columns (11) with the rows (13) and the columns (12) with the rows (14). With a grid division (t) between the columns and rows, the distance (a) between adjacent threaded bores (15) is 2ROOT 2 t. Structural elements (4), which form a support for the workpiece (7), have the same parallelepipedal form as thinner spacers (5) and have a minimum width of b = 2t. However, the spacers are present in lengths of 2t to 6t incremented. The structural elements (4), which are provided on their upper side with T-grooves (19), may support various structures such as a stop bolt (6). Their distance from the stop surfaces (2) is set in two directions by the spacers (5, 51, 52). The spacers themselves are merely fastened on the base plate in a threaded bore (15) by means of an Allen screw (18) fitted in their centre. Clamping devices (8), which are mounted on further structural elements (41), permit the workpiece (7) to be clamped against the stop bolts (6) and thus, via the structural elements (4) and the spacers (5, 51), against the stop surfaces (2). The production costs for the base plate are low, and the grid can be very finely divided.

Classifications:
International (IPC 8-9): B23Q3/00 B23Q3/06 B23Q3/10 (Advanced/Invention); B23Q3/00 B23Q3/02 B23Q3/06 (Core/Invention)
International (IPC 1-7): B23Q3/00 B23Q3/06 B23Q3/10
CPC: B23Q3/103
European: B23Q3/10D



Family:

Publication number	Publication date	Application number	Application date
DE3136356 A1	19830324	DE19813136356	19810914
EP0074565 A2	19830323	EP19820108034	19820901
EP0074565 A3	19841003	EP19820108034	19820901
JP58056743 A2	19830404	JP19820154055	19820906

Priority:
DE19813136356 19810914

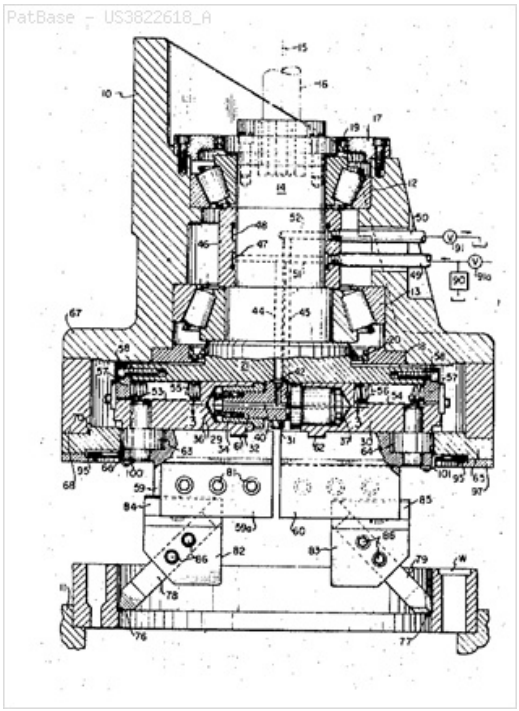
Probable Assignee: HALDER ERWIN FA
Assignee(s): (std): BUERUNERU HARUDERU ; ERWIN HALDER FA ; HALDER ERWIN FA
Assignee(s): FA ERWIN HALDER ; FIRMA ERWIN HALDER
Inventor(s): (std): HALDER WERNER ; BUERUNERU HARUDERU
Designated states: AT CH DE FR GB IT LI SE

164) Family number: 1083306 (US3822618A)

Title: CONTOUR MACHINING

Abstract: The disclosure relates to techniques in equipment for the machining with single point tooling of non-circular shapes and contours. The procedure according to the invention involves the use of a rotary cutting head, carrying one or more cutting tools, arranged to be advanced axially to accomplish internal boring or external turning of non-circular shapes. The cutting head, which may be considered either a boring head or a turning head, depending on whether the cut is taken internally or externally, is mounted for controlled advancing and retracting movements along its rotational axis. The cutting tools themselves, which are carried by the cutting head, are mounted for controlled radial extending and retracting movements as a function of the rotational position of the spindle. The extending and retracting movements of the cutting tool or tools is controlled by means of a pre-shaped contour cam mounted in fixed relation to the workpiece. During each rotation of the spindle, the cutting tools are extended and retracted according to the pattern of the contour cam, resulting in a contoured, non-circular, cutting or boring of the workpiece. Because the tool-carrying spindle rotates, while the work remains stationary, the centrifugal force created by the spindle rotation is used to great advantage to assist in controlling movement of the tool slide in accordance with the path determined by the contour cam.

Classifications:
International (IPC 8-9): B23B3/28 B23Q27/00 B23Q35/10 B23Q35/28 B24B19/09 (Advanced/Invention); B23B3/00 B23Q27/00 B23Q35/00 B24B19/00 (Core/Invention)
International (IPC 1-7): B23B27/10 B23B3/00 B23B3/28 B23B41/04 B23B5/00 B23B5/36 B23D B23Q27/00 B23Q35/04 B23Q35/28 B24B19/08
CPC: Y10T82/10 Y10T82/122 Y10T82/13 Y10T408/39 Y10T409/304368 B23Q35/103 B24B19/09 Y10T82/125 Y10T408/455
European: B23Q35/10B2B B24B19/09
US: 408/54 408/59 409/142 82/1.11 82/1.3 82/1.4 82/1.8 82/18



Family:

Publication number	Publication date	Application number	Application date
DE2356290 A1	19740522	DE19732356290	19731110
DE2356290 C2	19831103	DE19732356290	19731110
FR2206148 A1	19740607	FR19730040173	19731112
FR2206148 B1	19761001	FR19730040173	19731112
GB1449655 A	19760915	GB19730052249	19731109
IT996946 A	19751210	IT19730070315	19731112
JP49086983 A2	19740820	JP19730126356	19731112
JP53033790 B4	19780916	JP19730126356	19731112
JP53134286 A2	19781122	JP19780028364	19780314
JP954257 C3	19790531	JP19730126356	19731112
US3822618 A	19740709	US19720305653	19721113
US3888146 A	19750610	US19740467374	19740506

Priority:

US19720305653 19721113 US19740467374 19740506

Probable Assignee: BULLARD SUNDSTRAND INC

Assignee(s): (std)**:** WHITE CONSOLIDATED IND INC ; BULLARD CO

Assignee(s): BULLARD CO BRIDGEPORT CONN V ST A ; BULLARD CO US ; BULLARD CY ; BULLARD CY US ; BULLARD IND ; BANCBOSTON FINANCIAL CO ; BANCBOSTON FINANCIAL CO 100 FEDERAL STREET BOSTON MA 02110 A MA BUSINESS TRUST ; BANCBOSTON FINANCIAL CO A MA BUSINESS TRUST ; WHITE CONSOLIDATED IND ; BULLARD SUNDSTRAND INC ; DEVLIEG BULLARD INC ; DEVLIEG INC ; DEVLIEG MACHINE CO LTD ; THE BULLARD COMPANY ; WHITE CONSOLIDATED INDUSTRIES INC 44111 CLEVELAND ; THE BULLARD CO ; THE BULLARD CO BRIDGEPORT CONN V ST A ; WHITE CONSOLIDATED INDUSTRIES INC 44111 CLEVELAND OHIO US ; BULLARD IND INC ; DEVLIEG INC A CORP OF MI ; DEVLIEG MACHINE CO LTD A CO OF ENGLAND

Inventor(s): (std)**:** AASAA EI TOMENSHIIKU ; TOMENCEAK A ; TOMENCEAK ARTHUR A

Inventor(s): TOMENCEAK ARTHUR A FAIRFIELD CONN US ; TOMENCEAK ARTHUR A FAIRFIELD CONN V ST A ; TOMENCEAK A US

165) Family number: 53506310 (EP2644315A3)

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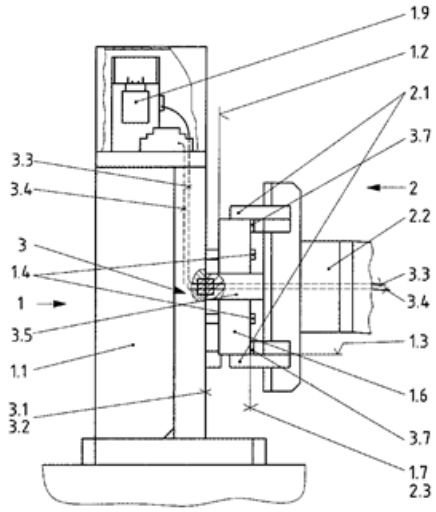
Title: AUTONOMOUS ELECTROHYDRAULIC CLAMPING DEVICE FOR WORK PIECES DISPOSITIF HYDROELECTRIQUE DE SERRAGE DE PIECES AUTONOM

Abstract: Source: EP2644315A3 [DE] P ID PA01 NUM 0001 21 F EINE BEDIENARME U ANWENDUNGSSICHERE WERKSTUECKSPANNUNG SIND SPANNVORRICHTUNGEN 1 MIT HYDRAULISCHEN SPANNKOMPONENTEN 110 U MIT SPEZIFISCHEN KOMPONENTEN ZUR ZU U ANFUEHRUNG DER WERKSTUECKE 16 IN U AUS DEREN SPANNPOSITION AUSGESTATTET ZB MIT GREIFERN 2 P P ID PA02 NUM 0002 22 IN GREIFERN 2 AUFGENOMMENE ODER GEKLEMMTE WERKSTUECKE 16 SIND MITTELS EINER HANDLINGS ODER SCHIEBE EINRICHTUNG 22 ZU EINER SPANNVORRICHTUNG 1 HIN U VON DIESER ZURUECK BEWEGBAR PLANE AUF U ANLAGEFLAECHEN GEWOELBTE ZYLINDRISCHE FLAECHEN ODER FLAECHEN U KOENTAKTELEMENTE KOMBINATIONEN IN DER ART VON STECKVERBINDUNGEN BILDEN JEWEILS EINE POSITIONS U WIEDERHOLGENAUE KONTAKTSTELLE 3 VON GREIFER 2 U SPANNVORRICHTUNG 1 DIESE SONDERKUPPLUNGEN F ELEKTRISCHE LEITUNGEN ZUR ELEKTROENERGIEVERSORGUNG U INFORMATIONSUEBERTRAGUNG 33 U 34 SICHERN EINE AUTARKE ELEKTROHYDRAULISCHE FUNKTION DER SPANNVORRICHTUNG 1 IMG ID IAF01 FILE IMGAF001TIF WI 78 HE 98 IMG CONTENT DRAWING IMG FORMAT TIF

Classifications:
International (IPC 8-9): B23Q1/00 B23Q11/00 B23Q3/06 B23Q3/08 B23Q7/04 (Advanced/Invention)
CPC: B23Q3/082 B23Q1/0009

PatBase - EP2644315_A1

Fig. 5



Family:

Publication number	Publication date	Application number	Application date
DE102012006354 B3	20130418	DE201210006354	20120328
EP2644315 A1	20131002	EP20130075026	20130314
EP2644315 A3	20131211	EP20130075026	20130314

Priority:

DE201210006354 20120328

Probable Assignee: HOHENSTEIN VORRICHTUNGSBAU

Assignee(s): (std)**:** HOHENSTEIN VORRICHTUNGSBAU

Assignee(s): HOHENSTEIN VORRICHTUNGSBAU U SPANNSYSTEME GMBH ; HOHENSTEIN VORRICHTUNGSBAU UND SPANNSYSTEME GMBH

Inventor(s): (std)**:** FRANZKI MICHAEL

Agent(s): GROSSE ULRICH

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

166) Family number: 17133313 (US5026221A)

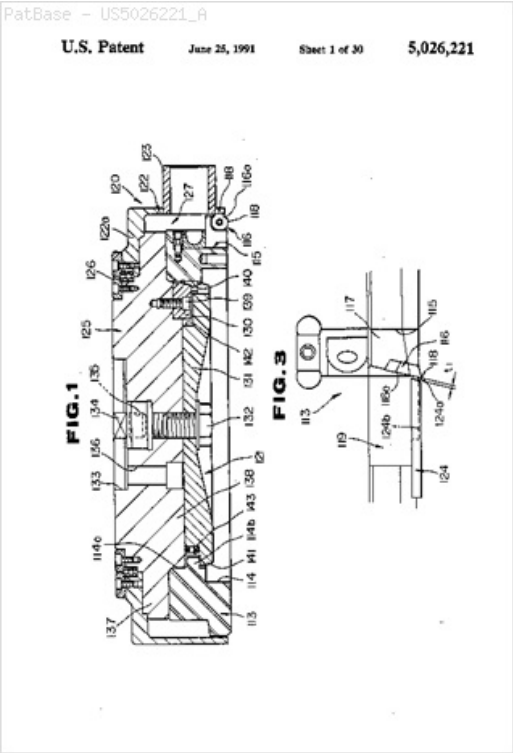
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Title: ROTARY CUTTING TOOL

Abstract: In a rotary cutting tool for use with at least one cutting tip, a cutter body has its forward end whose outer periphery has mounted thereto the cutting tip. A chip suction device is arranged outwardly of an outer peripheral surface of the cutter body for drawing chips generated by the cutting tip. The chip suction device includes a generally cylindrical cover unit having a wall for covering the cutter body. The cover unit is supported by the cutter body for rotation relative thereto. A chip accommodating chamber is defined between an inner peripheral surface of the cover unit and the outer peripheral surface of the cutter body. A suction port unit is provided in the wall of the cover unit and communicates with the chip accommodating chamber. A chip guide unit is arranged at the forward end of the cutter body in facing relation to the face of the cutting tip for guiding the chips generated by the cutting tip to the chip accommodating chamber.

Classifications:

International (IPC 8-9): B23C5/06 B23C5/16 B23C9/00 B23Q11/00 B23Q11/02 B23Q11/08 B23Q3/06 (Advanced/Invention);
B23C5/02 B23C5/16 B23C9/00 B23Q11/00 B23Q11/02 B23Q11/08 B23Q3/06 (Core/Invention)
International (IPC 1-7): B23C5/06 B23C5/16 B23C7/00 B23C9/00 B23Q11/00 B23Q11/02
CPC: B23Q2220/008 B23Q11/0046 B23Q3/069 B23Q11/08 Y10T407/1942 Y10T407/24 Y10T409/30392 Y10T409/304088
European: B23Q11/00F1 B23Q11/08 B23Q3/06L
US: 407/115 407/51 409/134 409/137



Family:

Publication number	Publication date	Application number	Application date
DE69025978 D1	19960425	DE19906025978	19900511
DE69025978 T2	19961017	DE19906025978T	19900511
EP0397193 A2	19901114	EP19900108911	19900511
EP0397193 A3	19910320	EP19900108911	19900511
EP0397193 B1	19960320	EP19900108911	19900511
JP2119506 Y	19970624	JP19900032011U	19900328
JP2119507 Y	19970624	JP19900032012U	19900328
JP2119508 Y	19970624	JP19900032013U	19900328
JP2145944 U1	19901211	JP19890054052U	19890511
JP2720537 B2	19980304	JP19890210360	19890815
JP3079214 A2	19910404	JP19890210360	19890815
JP3123650 U1	19911216	JP19900032011U	19900328
JP3123651 U1	19911216	JP19900032012U	19900328
JP3123652 U1	19911216	JP19900032013U	19900328
JP7044430 Y2	19951011	JP19900032011U	19900328
JP7044431 Y2	19951011	JP19900032012U	19900328
JP7044432 Y2	19951011	JP19900032013U	19900328
KR19910004281 A	19910328	KR19900006718	19900511
KR960003486 Y1	19960424	KR19900003123U	19900317
KR960003487 Y1	19960424	KR19900011842U	19900804
KR960003488 Y1	19960424	KR19900011788U	19900803
KR960005656 B1	19960430	KR19900006718	19900511
KR970000270 Y1	19970113	KR19900011935U	19900807
US5026221 A	19910625	US19900521973	19900511

Priority:

JP19890054052 19890511 JP19890054052U 19890511 JP19890210360 19890815
JP19900032011U 19900328 JP19900032012U 19900328 JP19900032013U 19900328

Probable Assignee: MITSUBISHI MATERIALS CORP

Assignee(s): (std)**:** MITSUBISHI MATERIAL KK ; MITSUBISHI MATERIALS CORP ; MITSUBISHI MATERIAL K K ; MITSUBISHI METAL CORP

Assignee(s): MITSUBISHI MATERIALS CORP TOKIO TOKYO JP ; MITSUBISHI MATERIARU KK

Inventor(s): (std)**:** IITSUKA KATSUO ; ARAI TASUO ; SHIRATORI HIDEHISA ; IIZUKA KAZUO ; HASEGAWA RYOEI ; ARAI TATSUO ; SHIRATORI HIDEHISA TOKYO SEISA ; IIZUKA KAZUO TOKYO SEISAKUSHO ; HASEGAWA RYOEI TOKYO SEISAKUSH ; ARAI TATSUO C O TOKYO SEISAKUS

Inventor(s): IIZUKA KAZUO TOKYO SEISAKUSHO MITSUBISHI SHINAGAWA KU TOKYO JP ; ARAI TATSUO C O TOKYO SEISAKUSHO MITSUBISHI SHINAGAWA KU TOKYO JP ; HASEGAWA RYOEI TOKYO SEISAKUSHO MITSUBISHI SHINAGAWA KU TOKYO JP ; SHIRATORI HIDEHISA TOKYO SEISAKUSHO MITSUBISHI SHINAGAWA KU TOKYO JP ; HASEGAWA RYOEI TOKYO SEISAKUSHO MITSUBISHI... ; HASEGAWA RYOEI TOKYO SEISAKUSHO MITSUBISHI SHINAGA ; ARAI TATSUO C O TOKYO SEISAKUSHO MITSUBISHI... ; ARAI TATSUO C O TOKYO SEISAKUSHO MITSUBISHI SHINAG ; IIZUKA KAZUO TOKYO SEISAKUSHO MITSUBISHI ; SHIRATORI HIDEHISA TOKYO SEISAKUSHO MITSUBISHI ; SHIRATORI HIDEHISA TOKYO SEISAKUSHO MITSUBISHI SHI ; IIZUKA KAZUO TOKYO SEISAKUSHO MITSUBISHI SHINAGAWA

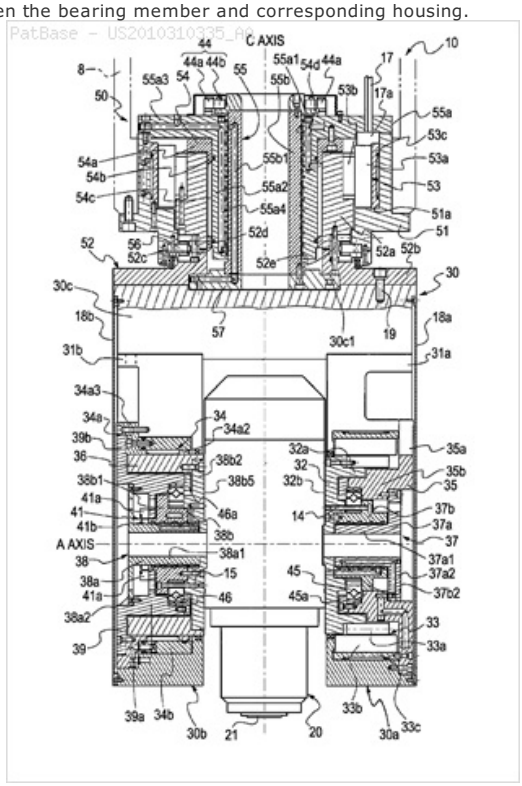
Designated states: DE FR GB IT SE

167) Family number: 41622314 (US2010310335A)

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Title: WORKING HEAD FOR MACHINE TOOL

Abstract: A machining head for a machine tool includes a spindle unit having a spindle to which a tool is attachable and a support head component. The support head component includes an index mechanism that rotates the spindle unit in order to index an angular position of the spindle unit. The support head component further includes first and second support segments containing respective support shafts disposed opposite to each other across the spindle unit such that shaft centers of the support shafts are aligned with the axis line. Each of the first and second support segments has a housing having a bearing member fixed thereto, the bearing member rotatably supporting the corresponding support shaft through a bearing. The support shaft in each support segment is supported by the corresponding bearing member in a manner such that the support shaft becomes movable together with the bearing member in an axial direction of the support shaft by releasing a fixed state between the support shaft and spindle unit and the fixed state between the bearing member and corresponding housing.



Classifications:
International (IPC 8-9): B23B19/02 B23C1/12 B23Q1/25 B23Q1/52 B23Q1/54 B23Q1/70 B23Q16/06 B23Q5/10 B23Q5/20 (Advanced/Invention);
B23B19/00 B23Q1/00 B23Q1/25 (Core/Invention)
CPC: Y10T409/30784 Y10T409/308512 Y10T409/309352 B23Q1/5406 B23Q5/043 B23Q16/08 B23Q1/70
European: B23Q1/54A B23Q1/70 B23Q16/08 B23Q5/04D
US: 409/204 409/204P 409/216 409/216S 409/231 409/231S

Family:

Publication number	Publication date	Application number	Application date
AT539844 E	20120115	AT20070828232T	20070912
CN101511527 A	20090819	CN200780033229	20070912
CN101511527 B	20100714	CN200780033229	20070912
DE602007019862 D1	20120308	DE200760019862T	20070912
EP2080581 A1	20090722	EP20070828232	20070912
EP2080581 A4	20101103	EP20070828232	20070912
EP2080581 B1	20120104	EP20070828232	20070912
JP2008093820 A2	20080424	JP20070224957	20070831
JP4996393 B2	20120808	JP20070224957	20070831
KR20090054444 A	20090529	KR20097005332	20090313
TW200833460 A	20080816	TW20070132707	20070903
US2010310335 AA	20101209	US20070441426	20070912
WO08032731 A1	20080320	WO2007JP67715	20070912

Priority:

JP20060249005 20060914 JP20070224957 20070831 EP20070828232 20070912 WO2007JP67715 20070912

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std): ENAMI HARUYUKI ; TATSUDA YOSHINORI ; TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH

Assignee(s): TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KANAZAWA KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA CORP

Inventor(s): (std): TATSUDA YOSHINORI ; ENAMI HARUYUKI ; TATSUTA YOSHINORI ; YOSHINORI TATSUDA ; HARUYUKI ENAMI

Inventor(s): ENAMI HARUYUKI KANAZAWA SHI ; TATSUDA YOSHINORI KANAZAWA SHI

Agent(s): SAMSON AND PARTNER PATENTANWAELTE MBB; SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

168) Family number: 65386317 (EP3153264A1)

Title: BREAK SEPARATOR DISPOSITIF DE SEPARATIO

Abstract: Source: EP3153264A1 [DE] Die Erfindung betrifft eine Bruchtrennvorrichtung zum Bruchtrennen eines Werkstuecks (80), insbesondere eines Pleuels (81), mit einer Spreizelementanordnung (45) mit einem ersten Spreizelement (41) und mindestens einem zweiten Spreizelement (42), sowie einem Betaetigungskoerper zum Betaetigen der Spreizelementanordnung (45) aus einer Positionierstellung in eine Spreizstellung zum Abtrennen einer ersten Komponente (91) des Werkstuecks (80), insbesondere eines Pleueldeckels (86), von einer zweiten Komponente (92) des Werkstuecks (80), insbesondere einem Pleuelfuss (85), wobei die Spreizelemente (41, 42) in der Positionierstellung entlang einer Laengsachse (35) in eine Lageroeffnung (89) des Werkstuecks (80) einfuehrbar sind und in der Spreizstellung mit Anlageflaechen an ihrem Aussenumfang (46) gegen einen Innenumfang (94) der Lageroeffnung (89) druecken, so dass die erste Komponente (91) von der zweiten Komponente (92) des Werkstuecks (80) unter Bildung von Bruchtrennflaechen (90) wegbricht, wobei sich die Bruchtrennflaechen (90) ausgehend von Sollbruchzonen von der Lageroeffnung (89) radial weg erstrecken. Es ist vorgesehen, dass die Anlageflaechen der Spreizelementanordnung (45) mindestens eine Stuetzflaechenanordnung (57) zur Abstuetzung der ersten Komponente (91) und der zweiten Komponente (92) unmittelbar an einer der Sollbruchzonen der Lageroeffnung (89) und mindestens eine Druckbeaufschlagungsflaeche (52, 54) zur Druckbeaufschlagung der Lageroeffnung (89) fuer das Abtrennen der ersten Komponente (91) von der zweiten Komponente (92) des Werkstuecks (80) umfassen, wobei die mindestens eine Druckbeaufschlagungsflaeche (52, 54) und die mindestens eine Stuetzflaechenanordnung (57) vor eine Aufnahmezone (56) der Spreizelementanordnung (45) vorstehen, in die hinein sich ein Abschnitt der Lageroeffnung (89) beim Abtrennen der ersten Komponente (91) von der zweiten Komponente (92) verformen kann.

Machine translation: The invention relates to a breach of isolator to breaking cutting a workpiece (80), in particular a connecting rod (81), with an expanding element arrangement (45) with a first expansion (41) and at least a second expansion elements (42), as well as a control body to operate the expansion element arrangement (45) from a positioning position in a spread position for cutting off a first component (91) of the workpiece (80), in particular a connecting rod cover (86) by a second component (92) of the workpiece (80), in particular a connecting rod foot (85), where the expansion elements (41, 42) are insertable in the positioning position along a longitudinal axis (35) in a bearing hole (89) of the workpiece (80) and press in the spread position with abutments at their periphery (46) against a circumference (94) the bearing hole (89), so that erodes the first component (91) of the second component (92) of the workpiece (80) with the formation of fracture surfaces (90), where the fracture surfaces (90) based set fracture zones of the camp opening (89) radial extends away. It is envisaged that the contact surfaces between the expanding element arrangement (45) at least one support surface Assembly (57) to support the first component (91) and the second component (92) directly to one of the target zone of the camp opening (89) and at least one pressure differential across surfaces (52, 54) include to the pressure differential across of the camp opening (89) for the removal of the first component (91) of the second component (92) of the workpiece (80), based on the at least one pressure differential across surfaces (52, 54) and chairing the at least a support surface Assembly (57) before a recording zone (56) the expanding element arrangement (45), in which it can deform a section of camp opening (89) when disconnecting the first component (91) of the second component (92).

Classifications:
International (IPC 8-9): B23D31/00 B23P13/00 B26F3/00 (Advanced/Invention)
CPC: B23D31/003

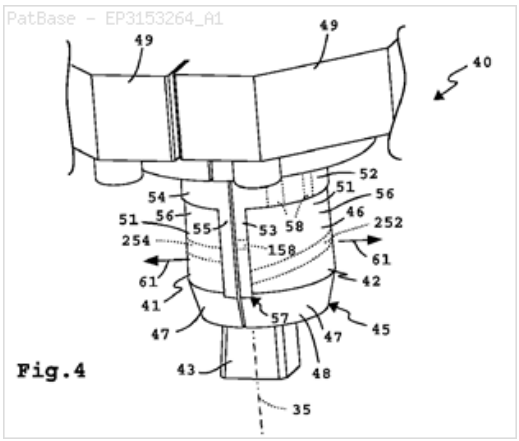


Fig.4

Family:

Publication number	Publication date	Application number	Application date
DE102015117263 A1	20170413	DE201510117263	20151009
EP3153264 A1	20170412	EP20160190887	20160927

Priority:

DE201510117263 20151009

Probable Assignee: ALFING KESSLER SONDERMASCHINEN GMBH

Assignee(s): (std): ALFING KESSLER SONDERMASCHINEN GMBH

Inventor(s): (std): RETZLER PETER

Agent(s): PATENTANWAELTE BREGENZER U REULE PARTNERSCHAFTSGESELLSCHAFT MBB

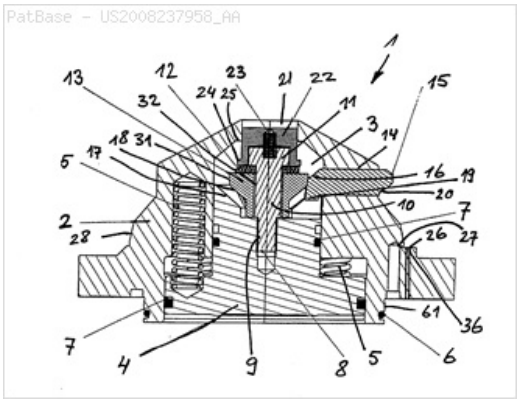
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

169) Family number: 34286319 (US2008237958A)

Title: POSITIONING AND CLAMPING DEVICE FOR TOOLS AND/OR WORKPIECES

Abstract: A positioning and clamping device or tools and/or workpieces, comprising a base body, a piston arranged such as to be displaceable in the base body, a pin which may be connected to the piston and at least one locking mechanism, for locking the positioning and clamping device relative to a tool or workpiece holder which has a complementary form to the base body. The base body has a cylinder housing for housing the piston with a clamping cone between the piston and the pin with control surfaces formed on the clamping cone and the piston, with further control surfaces on the locking mechanism, cooperating with the control surfaces of the clamping cone and the piston and the locking mechanism is arranged to be radially displaceable in the base body.

Classifications:
International (IPC 8-9): B23B31/103 B23Q1/00 B23Q3/06 (Advanced/Invention); B23Q1/00 B23Q3/06 (Core/Invention)
CPC: Y10T279/1045 Y10T279/1973 Y10T279/3493 B23Q1/0063
European: B23Q1/00D
US: 269/309 269/310 269/58 269/58P 279/121 279/157 279/2.12



Family:

Publication number	Publication date	Application number	Application date
AT401990 E	20080815	AT20050019647T	20050909
CN101253020 A	20080827	CN200680032141	20060610
CN101253020 B	20130109	CN200680032141	20060610
DE502005004823 D1	20080904	DE200550004823T	20050909
EP1762330 A1	20070314	EP20050019647	20050909
EP1762330 B1	20080723	EP20050019647	20050909
JP2009506902 T2	20090219	JP20080529480T	20060610
JP5027133 B2	20120919	JP20080529480T	20060610
US2008237958 AA	20081002	US20060065907	20060610
US8061717 BB	20111122	US20060065907	20060610
WO07031123 A1	20070322	WO2006EP05586	20060610

Priority:

EP20050019647 20050909 WO2006EP05586 20060610

Probable Assignee: SYSTEM 3R SCHWEIZ AG

Assignee(s): (std)**:** ROTH WALTER ; SYSTEM 3R SCHWEIZ AG

Assignee(s): SYSTEM

Inventor(s): (std)**:** ROTH WALTER ; WALTER ROTH

Agent(s): WEISS WOLFGANG; SUGIMURA KOSAKU; BACHMAN AND LAPOINTE PC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

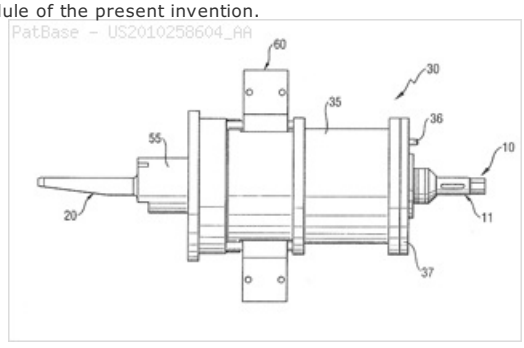
170) Family number: 42517321 (US2010258604A)

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Title: FRACTURE SEPARATION MODULE FOR A MACHINE TOOL, MACHINE TOOL WITH A FRACTURE SEPARATION MODULE, AND FRACTURE SEPARATION METHOD

Abstract: Fracture separation module for insertion into a machine tool, comprising: A drive spindle (10) with a receiving section for clamping the module into a spindle of a machine tool, a fracturing part (20) for the fracture separation of a workpiece, a conversion unit (30) which is connected both to the drive spindle (10) and to the fracturing part (20) and converts a rotational movement of the drive spindle (10) into a linear movement of the fracturing part (20), which movement is suitable for fracturing the workpiece, and a method for the fracture separation of a workpiece, wherein the fracture separation step takes place by means of the fracture separation module of the present invention.

Classifications:
International (IPC 8-9): B23D31/00 B23P19/00 B26F3/00 (Advanced/Invention);
B23D31/00 B23P19/00 B26F3/00 (Core/Invention)
CPC: Y10T225/12 Y10T225/371 B23D31/003 B23D15/12
European: B23D31/00C2 L23D15/12
US: 173/47 173/47S 225/103 225/103S 225/2 225/2P



Family:

Publication number	Publication date	Application number	Application date
CN101842182 A	20100922	CN200880022166	20080624
DE102007029663 B3	20081120	DE200710029663	20070627
DE502008007903 D1	20120927	DE200850007903T	20080624
EP2167265 A1	20100331	EP20080774257	20080624
EP2167265 B1	20120808	EP20080774257	20080624
ES2391799 T3	20121130	ES20080774257T	20080624
US2010258604 AA	20101014	US20080666479	20080624
WO09000835 A1	20081231	WO2008EP58023	20080624

Priority:

DE200710029663 20070627 EP20080774257 20080624 WO2008EP58023 20080624

Probable Assignee: ALFING KESSLER SONDERMASCHINEN GMBH

Assignee(s): (std): BRENDLE WERNER ; KESSLER KG MASCHF ; KESSLER MASCHF KG ; MUELLNER RALF

Assignee(s): ALFING KESSLER SONDERMASCHINEN GMBH

Inventor(s): (std): MUELLNER RALF ; BRENDLE WERNER ; WERNER BRENDLE ; RALF MUELLNER

Agent(s): PATENTANWAELTE BREGENZER U REULE PARTNERSCHAFTSGESELLSCHAFT MBB; HOFFMANN EITLE; CARPINTERO MARIO; WOLF GREENFIELD AND SACKS PC

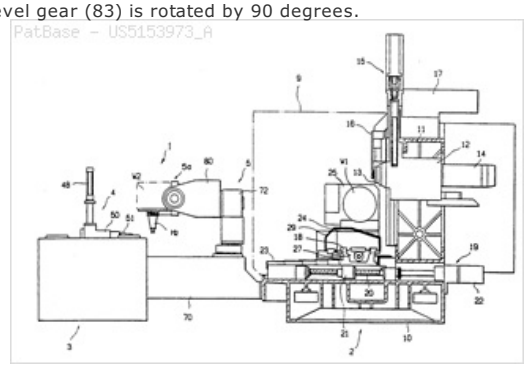
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

171) Family number: 5168323 (US5153973A)

Title: WORK CHANGER

Abstract: A machine tool includes a table (24) movable in a first direction and a second direction for supporting a work holder (H), a work storage magazine (3) for storing a plurality of work holders (H), and a work changer for transferring work holders (H) between the work storage magazine (3) and the table (24). The axis of the work holder (H) supported in the table (24) is directed in a horizontal direction. Each axis of the work holders (H) stored in the work magazine (3) is directed in a vertical direction. The work changer (5) comprises: a frame (70); a vertical shaft (71) fixedly mounted on the frame (70), the vertical shaft (71) having a first bevel gear (74) fixed thereto; a casing (72) rotatably supported on the vertical shaft (71); a drive device (76-78) for rotating the casing (72) about the vertical shaft (71); a horizontal shaft rotatably mounted on the casing (72), the horizontal shaft having a second bevel gear (83) engaging with the first bevel gear (74); a finger frame (80) connected to the horizontal shaft (8); a finger unit (5a) mounted on the finger frame (80) and rotatable about its rotation axis, the finger unit (5a) having two pairs of fingers (86b, 86a) each of which grips a work holder (H), the two pairs of fingers (86b, 86a) being arranged symmetrically about the rotation axis of the finger unit (5a); and a drive device for rotating the finger unit (5a). The gear ratio of the second bevel gear (83) to the first bevel gear (74) is 2/1 so that when the casing (72) is rotated about the vertical shaft (71) by 180 degrees the second bevel gear (83) is rotated by 90 degrees.

Classifications:
International (IPC 8-9): B23Q1/54 B23Q7/14 (Advanced/Invention); B23Q1/25 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q3/157 B23Q7/04 B23Q7/10
CPC: Y10T29/5124 Y10T29/5196 Y10T82/2516 B23Q1/5412 B23Q7/1494
European: B23Q1/54A1 B23Q7/14K8
US: 29/330P 29/33P 29/563 414/736 414/744.5 414/744.7 82/125



Family:

Publication number	Publication date	Application number	Application date
DE69010499 D1	19940811	DE19906010499	19901101
DE69010499 T2	19941027	DE19906010499T	19901101
EP0483407 A1	19920506	EP19900120965	19901101
EP0483407 B1	19940706	EP19900120965	19901101
US5153973 A	19921013	US19900604011	19901025

Priority:

US19900604011 19901025 EP19900120965 19901101

Probable Assignee: KITAMURA MACHINERY CO LTD

Assignee(s): (std): KITAMURA MACHINERY CO LTD

Assignee(s): KITAMURA MACHINERY CO LTD TAKAOKA TOYAMA JP ; KITAMURA MACHINERY CO

Inventor(s): (std): KITAMURA KOICHIRO

Inventor(s): KITAMURA KOICHIRO TAKAOKA SHI TOYAMA KEN JP

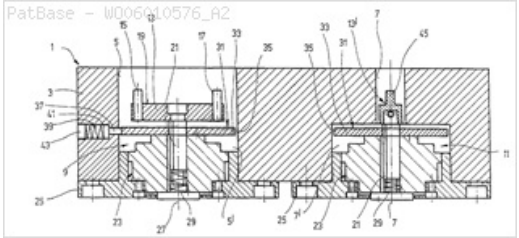
Designated states: DE FR GB IT

172) Family number: 32583324 (WO06010576A2)

Title: TOOL CHANGING DEVICE

Abstract: The invention relates to a tool changing device for at least one tool having a coupling location. The inventive device is characterized by a changing device (1), which enables an automatic tool change and which can be used instead of a workpiece (97).

Classifications:
International (IPC 8-9): B23B27/00 B23B31/11 B23C5/00 B23C5/10 B23D77/00 B23D77/02 B23Q3/155 B23Q3/157 B23Q7/04 B23Q7/14 (Advanced/Invention); B23Q3/157 B23Q7/04 (Core/Invention)
CPC: B23B27/00 B23B31/1107 B23B31/1122 B23C5/00 B23D77/006 B23D77/02 B23Q3/1552 B23Q7/1426
European: B23B27/00 B23B31/11B B23B31/11B4 B23C5/00 B23D77/00C B23D77/02 B23Q3/155D B23Q7/14K



Family:

Publication number	Publication date	Application number	Application date
DE102004036052 A1	20060216	DE200410036052	20040724
DE502005012514 D1	20120503	DE200550012514T	20050723
EP1773538 A2	20070418	EP20050764383	20050723
EP1773538 B1	20120307	EP20050764383	20050723
ES2382088 T3	20120605	ES20050764383T	20050723
WO06010576 A2	20060202	WO2005EP08060	20050723
WO06010576 A3	20060622	WO2005EP08060	20050723

Priority:

DE200410036052 20040724 EP20050764383 20050723 WO2005EP08060 20050723

Probable Assignee: MAPAL FAB PRAEZISION

Assignee(s): (std): HAEBERLE FRIEDRICH ; KRESS DIETER ; MAPAL FAB PRAEZISION

Assignee(s): MAPAL FABRIK F PRAEZISIONSWERKZEUGE DR KRESS KG ; MAPAL FABRIK FUER PRAEZISIONSWERKZEUGE DR KRESS KG

Inventor(s): (std): HAEBERLE FRIEDRICH ; KRESS DIETER

Agent(s): GLEISS GROSSE SCHRELL U PARTNER MBB PATENTANWAELTE RECHTSANWAELTE; GLEISS ALF OLAV; ISERN JORGE

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

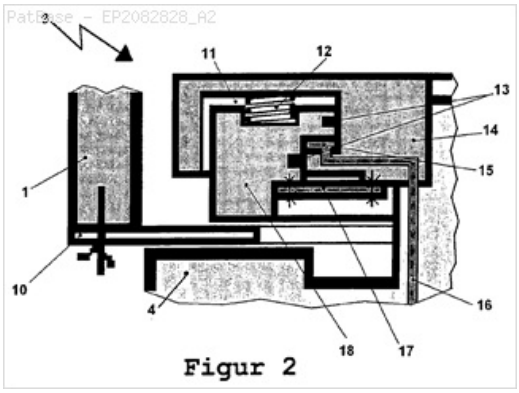
173) Family number: 43548324 (EP2082828B1)

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Title: MACHINING CENTRE WITH CLAMP DEVICE FOR THE ROTARY WORKPIECE TABLE

Abstract: Source: EP2082828A3 [DE] Die Erfindung betrifft ein Bearbeitungszentrum, insbes. zur Bohr-, Fraes- und Drehbearbeitung eines Werkstuecks, mit einem formsteifen Gehaeuse (4), einem auf dem Gehaeuse (4) ueber ein Waelzlager (5) gelagerten drehbaren Werkstuecktisch (1), und einer horizontalen und am Werkstuecktisch (1) befestigten Klemmscheibe (10) zum Klemmen bzw. Abbremsen des Werkstuecktisches (1), wobei die Klemmscheibe (10) zwischen einem Auflager und einem Klemmstueck (18) einklemmbar ist. Um das bekannte Bearbeitungszentrum unter Beibehaltung seiner Vorteile dahingehend weiter zu verbessern, dass die Klemmung auch bei Verlust der Energieversorgung sicher funktioniert (Fail-Safe-Klemmung), dass sie einfach und ohne viele Bauteile aufgebaut ist und dass sie mindestens zwei Reibflaechen fuer die Klemmung aufweist, ist erfindungsgemaess vorgesehen, dass das Klemmstueck (18) in Richtung auf die Klemmscheibe (10) vorgespannt ist und fluidbetaetigt in seine Freigabestellung bringbar ist.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/28 B23Q1/54 B23Q16/10 (Advanced/Invention);
B23Q1/00 B23Q1/26 B23Q16/00 (Core/Invention)
CPC: B23Q2220/004 B23Q1/28 B23Q1/0027 B23Q16/102 B23Q16/105
European: B23Q1/00B2B B23Q1/28 B23Q16/10C B23Q16/10E



Figur 2

Family:

Publication number	Publication date	Application number	Application date
AT504390 E	20110415	AT20080019865T	20081113
DE102008006346 A1	20090730	DE200810006346	20080128
DE502008003086 D1	20110519	DE200850003086T	20081113
EP2082828 A2	20090729	EP20080019865	20081113
EP2082828 A3	20100324	EP20080019865	20081113
EP2082828 B1	20110406	EP20080019865	20081113

Priority:

DE200810006346 20080128

Probable Assignee: HERMLE BERTHOLD MASCHF AG

Assignee(s): (std): HERMLE BERTHOLD MASCHF AG

Assignee(s): MASCHF BERTHOLD HERMLE AG ; MASCHINENFABRIK BERTHOLD HERMLE AG

Inventor(s): (std): BERNHARD FRANZ XAVER ; SCHWOERER TOBIAS ; SCHWOERER TOBIAS DIPL ING

Inventor(s): SCHWOERER TOBIAS DIPL ING FH

Agent(s): HAGER THOMAS JOHANNES

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK TR

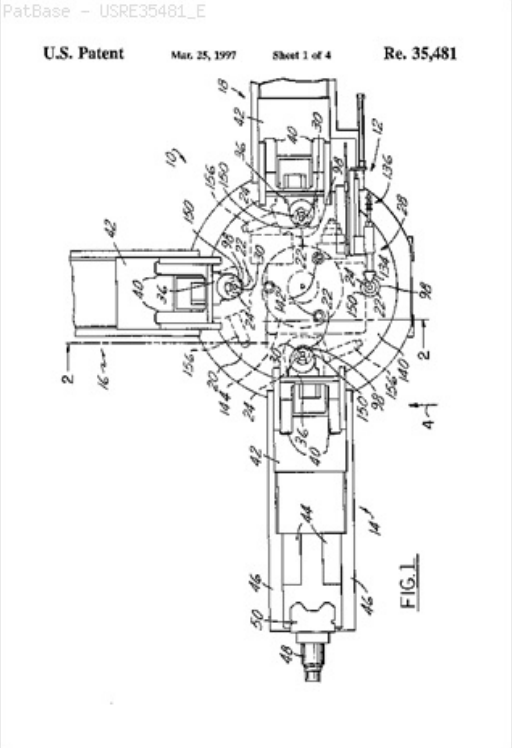
174) Family number: 24045325 (USRE35481E)

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Title: MULTIPLE STATION FLEXIBLE BORING MACHINE

Abstract: A method and multiple station flexible boring machine for transferring and locating a pallet carrying a workpiece to be machined. The machine has at least two machining stations and a part loading and unloading station adjacent a transfer table carried by a base for carrying, generally locating and transferring a pallet and a workpiece to each station. The pallet has a curvic coupling locator ring with a plurality of circumferentially spaced and generally radially extending teeth for complementary mating engagement with a locator ring on an independent base of each station to accurately radially, axially and circumferentially locate the pallet on the station base. At the load station, the locator ring on the pallet is received in complementary mating engagement with the locator ring on the load base accurately locating the pallet with respect to the base and a workpiece is loaded, accurately located with respect to the load base and clamped to the pallet. The transfer table generally locates and transfers the pallet from the load station onto the base of a first machining station accurately locating the workpiece for machining. After at least one machining operation is performed at that station, the table transfers the pallet and workpiece onto the base of the next machining station. Upon completing all machining operations, the pallet and workpiece are returned to the part load station where the finished workpiece is released and removed and thereafter another workpiece to be machined is loaded, accurately located and clamped to the pallet.

Classifications:
International (IPC 8-9): B23B41/00 B23Q39/04 B23Q7/14 (Advanced/Invention)
International (IPC 1-7): B23B41/00 B23B43/00 B23Q39/04 B23Q7/02 B23Q7/14
CPC: Y10T29/5124 Y10T29/5196 Y10T408/54 B23Q39/046 B23Q7/1463
European: B23Q39/04B3 B23Q7/14K6
US: 198/345.3 29/33P 29/563 408/70



Family:

Publication number	Publication date	Application number	Application date
CA2084861 AA	19940129	CA19922084861	19921208
DE69222935 D1	19971204	DE19926022935	19921224
EP0580898 A1	19940202	EP19920122014	19921224
EP0580898 B1	19971029	EP19920122014	19921224
ES2108077 T3	19971216	ES19920122014T	19921224
MX9300193 A1	19940131	MX19930000193	19930114
US5199158 A	19930406	US19920920764	19920728
USRE35481 E	19970325	US19950408646	19950322

Priority:
US19920920764 19920728 CA19922084861 19921208 US19950408646 19950322

Probable Assignee: MAGUS GMBH

Assignee(s): (std): LITTON AUTOMATION SYSTEMS ; LITTON INDUSTRIAL AUTOMATION SYSTEMS INC ; WESTERN ATLAS INT INC

Assignee(s): MAGUS GMBH ; WESTERN ATLAS INC ; UNOVA IP CORP ; MAGUS INTELLECTUAL PROPERTY GMBH ; LITTON INDUSTRIAL AUTOMATION SYSTEMS INC A CORP OF ; WESTERN ATLAS INC FLORENCE KY US ; WIOSKOWSKI RICHARD ; SCHAFER HOWARD H ; LITTON INDUSTRIAL AUTOMATION SYSTEMS INC A CORP OF DE ; BADER GEORGE P ; IRVINE EDWARD J

Inventor(s): (std): BADER GEORGE P ; EDWARD J IRVINE ; GEORGE P BADER ; HOWARD H SCHAFER ; IRVINE EDWARD J ; RICHARD WIOSKOWSKI ; SCHAFER HOWARD H ; WIOSKOWSKI RICHARD ; SCHAEFER HOWARD H

Inventor(s): WIOSKOWSKI RICHARD FRASER MICHIGAN 48026 US

Agent(s): MARKS AND CLERK

Designated states: DE ES FR GB

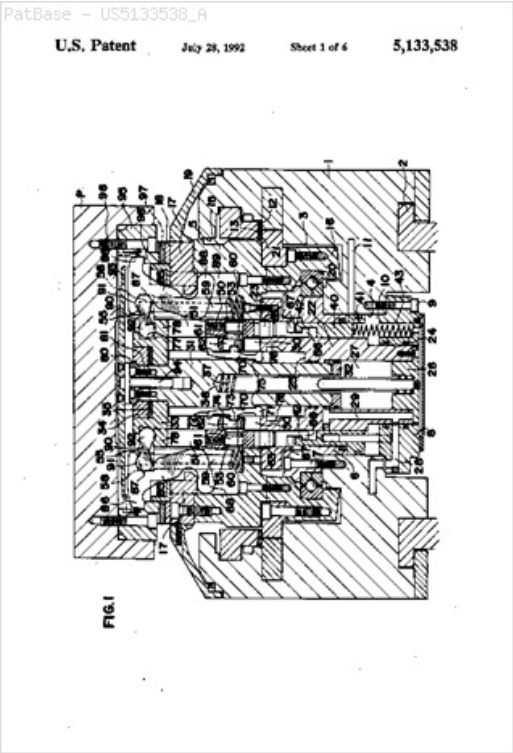
175) Family number: 3367325 (US5133538A)

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Title: TABLE FOR SECURING A PALLET SUPPORTING A WORKPIECE TO MACHINE TOOLS

Abstract: A table for securing a pallet supporting a workpiece to a machine tool, the table having a spindle movable in a vertical direction. When the spindle ascends, the clamp arms move outward thereby to enable the clamp pawl to clamp the pallet at a clamping position, and when the spindle descends, the clamp arms are withdrawn to release the pallet from clamp.
Classifications:
International (IPC 8-9): B23B31/18 B23Q1/00 B23Q16/10 B23Q3/00 B23Q3/06 (Advanced/Invention);
B23B31/12 B23Q1/00 B23Q16/00 B23Q3/00

B23Q3/06 (Core/Invention)
International (IPC 1-7): B23Q16/10 B23Q3/06 B23Q7/10
CPC: Y10T29/5196 Y10T74/1476 Y10T409/30868 B23B31/18 B23Q1/0063
European: B23B31/18 B23Q1/00D
US: 269/309 29/33P 409/219 74/826



Family:

Publication number	Publication date	Application number	Application date
DE68916336 D1	19940728	DE19896016336	19890823
DE68916336 T2	19941013	DE19896016336T	19890823
EP0356217 A2	19900228	EP19890308539	19890823
EP0356217 A3	19920520	EP19890308539	19890823
EP0356217 B1	19940622	EP19890308539	19890823
JP2059242 A2	19900228	JP19880209170	19880823
JP2906058 B2	19990614	JP19880209170	19880823
US5133538 A	19920728	US19890397129	19890822

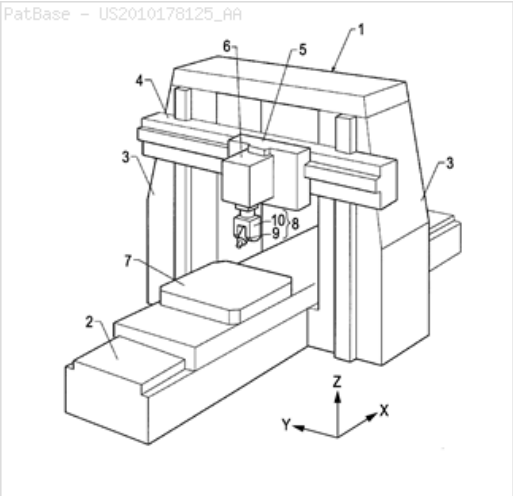
Priority:
JP19880209170 19880823

Probable Assignee: MORI SEIKI SEISAKUSHO KK
Assignee(s): (std)**:** MORI SEIKI SEISAKUSHO KK
Assignee(s): MORI SEIKI SEISAKUSHO NARA JP KK ; KABUSHIKI KAISHA MORI SEIKI SEISAKUSHO ; KABUSHIKI KAISHA MORI SEIKI SEISAKUSHO NARA JP
Inventor(s): (std)**:** MAEDA NORIHIDE ; OKABASHI HIDEKI ; OKAHASHI HIDEKI
Inventor(s): OKAHASHI HIDEKI IKOMAGUN NARA JP ; MAEDA NORIHIDE KASHIHARASHI NARA JP
Designated states: CH DE FR GB IT LI

176) Family number: 42779325 (US2010178125A)

Title: INDEX DEVICE FOR MACHINE TOOL

Abstract: An index device for a machine tool includes a rotary shaft (40) to which a drive object is attached, a housing (30) surrounding the rotary shaft (40), a bearing (B1, B2) secured between the housing (30) and the rotary shaft (40) by a securing member (30b), and drive means (M) provided around the rotary shaft (40) and including a rotor (M1a, M2a) and a stator (M1b, M2b). The stator (M1b, M2b) is attached to the housing (30) and the rotor (M1a, M2a) is attached to the rotary shaft (40). The rotary shaft (40), the bearing (B1, B2), the rotor (M1a, M2a), and the securing member (30b) are connected together to form a built-in unit (22). A casing member (30a, 31a) of the housing (30) and the stator (M1b, M2b) are connected together and a cable (c11, c11) for the stator is led out from the side opposite the securing member (30b) to form an enclosure unit (21). The built-in unit (22) is connected to the enclosure unit (21) such that the built-in unit (22) can be inserted into and extracted from the enclosure unit (21), thus facilitating connection and disconnection of wiring between the stator of a DD motor mounted in a spindle head of a machine tool and a main body of the machine tool.
Classifications:
International (IPC 8-9): B23C1/14 B23C3/00 B23Q1/26 B23Q1/52 B23Q1/70 B23Q16/02 B23Q16/06 B23Q3/00 B23Q5/10 H02K11/00 (Advanced/Invention);
B23C3/00 B23Q1/00 B23Q1/25 B23Q1/26 B23Q16/00 H02K11/00 (Core/Invention)
CPC: B23Q2210/004 B23Q1/5406 B23Q16/065 B23Q1/70
European: B23Q1/54A B23Q1/70 B23Q16/06C
US: 310/71 409/183 409/201 409/216 409/230 409/231 74/813L



Family:

Publication number	Publication date	Application number	Application date
AT553878 E	20120515	AT20080777739T	20080701
CN101687291 A	20100331	CN200880012850	20080701
CN101687291 B	20130522	CN200880012850	20080701
DE602008014970 D1	20120614	DE200860014970T	20080701
EP2168713 A1	20100331	EP20080777739	20080701
EP2168713 A4	20110406	EP20080777739	20080701
EP2168713 B1	20120418	EP20080777739	20080701
JP2009012102 A2	20090122	JP20070175080	20070703
JP5081513 B2	20121128	JP20070175080	20070703
KR101362830 B1	20140221	KR20097025424	20080701
KR20100029085 A	20100315	KR20097025424	20080701
TW200902221 A	20090116	TW20080120732	20080604
US2010178125 AA	20100715	US20080602849	20080701
US8579560 BB	20131112	US20080602849	20080701
WO09005051 A1	20090108	WO2008JP61888	20080701

Priority:

JP20070175080 20070703 EP20080777739 20080701 WO2008JP61888 20080701

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std)**:** TATSUDA YOSHINORI ; TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH

Assignee(s): TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KANAZAWA KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TSUDAKOMA CORP ; TSUDAKOMA IND CO

Inventor(s): (std)**:** TATSUDA YOSHINORI ; TATSUTA YOSHINORI ; YOSHINORI TATSUDA

Agent(s): SAMSON AND PARTNER PATENTANWAELTE MBB; SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

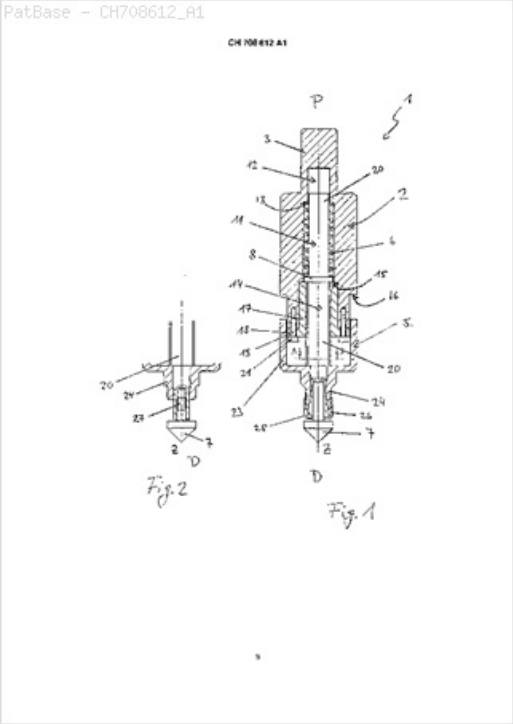
177) Family number: 58912325 (CH708612B)

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Title: ENTGRATUNGSWERKZEUG UND VERFAHREN ZUM BETREIBEN EINES SOLCHEN.

Abstract: Source: CH708612B [DE] Die vorliegende Erfindung betrifft ein Entgratungswerkzeug (1) zum Entgraten von Werkstuecken in einer Werkzeugmaschine. Das Entgratungswerkzeug (1) umfasst ein erstes Teil (2) mit einem Einspannelement (3), welches an einem ersten Ende des Entgratungswerkzeugs (1) ausgebildet ist, um das Entgratungswerkzeug (1) in eine angetriebene Spannvorrichtung einer Werkzeugmaschine einzuspannen. Es umfasst weiter ein zweites Teil (5), welches am ersten Teil (2) ausschliesslich in Richtung der Laengsachse (Z) verschiebbar und rotationsgekoppelt gelagert ist. Ein Federelement (6) ist so ausgelegt, dass es eine Rueckstellkraft zwischen dem ersten Teil (2) und dem zweiten Teil (5) ausuebt. Das Entgratungswerkzeug (1) umfasst weiter einen konischen Entgratungsfraeskopf (7), welcher vom ersten Teil (2) gehalten wird. Das Federelement (6) ist so ausgestaltet, dass es in Richtung der Laengsachse (Z) eine Rueckstellkraft im Bereich von zwischen 4 und 20 N aufrechterhaelt und das Entgratungswerkzeug (1) weist eine Rotationssymmetrie auf, die so ausgestaltet ist, dass es mit einer Geschwindigkeit im Bereich von 10 000–15 000 U/min ohne Unwuchteffekte betreibbar ist. Die vorliegende Erfindung betrifft weiter ein Verfahren zum Betreiben eines solchen Entgratungswerkzeugs (1) und eine Werkzeugmaschine.

Classifications:
International (IPC 8-9): B23B31/08 B23B51/10 B23C3/12 (Advanced/Invention)
CPC: B23C2220/20 B23C3/12 B23B31/083 B23B51/10 B23C2200/20



Family:

Publication number	Publication date	Application number	Application date
CH708612 A1	20150331	CH20130001653	20130927
CH708612 B1	20180131	CH20130001653	20130927

Priority:

CH20130001653 20130927

Probable Assignee: AMTRU BUSINESS AG

Assignee(s): (std)**:** AMTRU BUSINESS AG

Inventor(s): (std)**:** AMMANN BRUNO ; AMMANN FRITZ ; BAERTSCH RONNY ; BRUNO AMMANN ; FRITZ AMMANN ; RONNY BAERTSCH

178) Family number: 60453330 (US2015276393A)

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Title: METHOD FOR ADJUSTING VOLUME OF COMBUSTION CHAMBER OF ENGINE

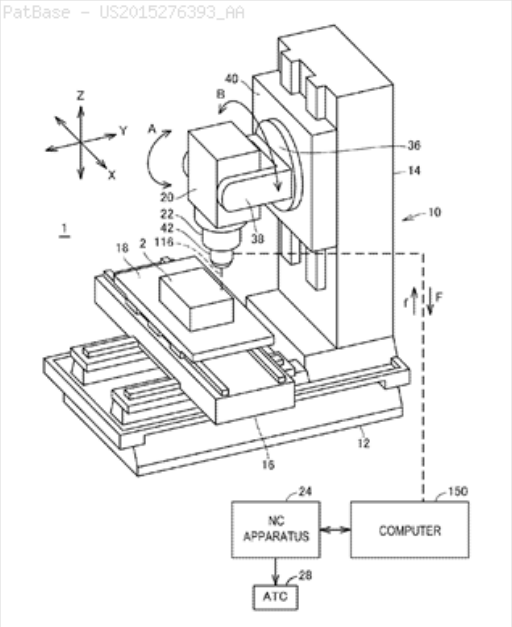
Abstract: In order to adjust the volume of the combustion chamber with high accuracy, a cylinder head 200 includes a recess 204 constituting part of the combustion chamber of the engine and a mating surface for a cylinder block. The recess 204 includes a plurality of openings to which a plurality of specific members are attached respectively. The mating surface 202 is formed to have a cutting stock with respect to three-dimensional shape data of the cylinder head 200 designed to have a target combustion chamber volume. The adjusting method further comprises measuring the surface shape of the recess and the shape of the mating surface around the recess by successively changing the irradiation position of a laser beam using a line laser displacement meter. The adjusting method further comprises removing data of regions equivalent to the plurality of openings from measurement data by comparing the measurement data obtained by the line laser displacement meter with the three-dimensional shape data. The adjusting method still further comprises: calculating the volume of the recess 204 based on the measurement data from which the regions equivalent to the plurality of openings are removed; and deciding the cutting amount of the mating surface 202 by comparing the calculated volume of the recess 204 with a volume of the recess 204 based on the three-dimensional shape data.

Classifications:

International (IPC 8-9): B23C3/00 B23D79/00 B23P13/00 B23Q17/00 B23Q17/20 B23Q17/24 F02F1/24 G01B11/28 G05B19/4097 (Advanced/Invention);
F02F1/24 (Advanced/Non-invention)

CPC: G01B11/285 B23C3/00 B23C2215/242 F02F1/24 G05B19/4097 G05B2219/37275 Y02P90/265 Y10T29/4927

US: 29/888.06



Family:

Publication number	Publication date	Application number	Application date
CN104942374 A	20150930	CN201510111612	20150313
CN104942374 B	20181106	CN201510111612	20150313
DE102015103466 A1	20151001	DE201510103466	20150310
JP2015183641 A2	20151022	JP20140062491	20140325
JP5897630 B2	20160330	JP20140062491	20140325
US2015276393 AA	20151001	US20150645691	20150312
US9863763 BB	20180109	US20150645691	20150312

Priority:

JP20140062491 20140325

Probable Assignee: DMG MORI SEIKI CO LTD

Assignee(s): (std)**:** DMG MORI SEIKI CO ; DMG MORI SEIKI CO LTD

Inventor(s): (std)**:** NISHIKAWA SHIZUO ; NAKAO HIROKI

Agent(s): FISH AND RICHARDSON PC

179) Family number: 44446330 (DE202008012197U1)

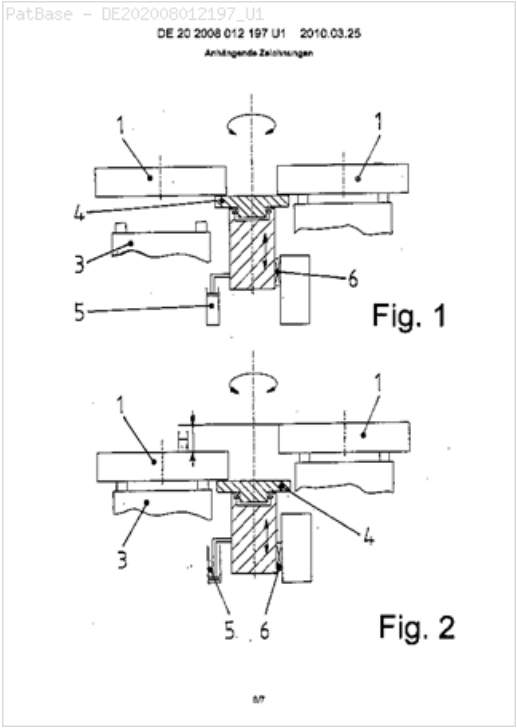
© PatBase

Title: Vorrichtung zum Wechseln von Paletten an einer Werkzeugmaschine

Abstract: Source: DE202008012197U1 [DE] (Claim 1) 1. Vorrichtung zum Wechseln von Paletten an einer Werkzeugmaschine, insbesondere an einem Bearbeitungszentrum, wobei mindestens zwei Paletten zur Aufnahme von zu bearbeitenden Werkstuecken zwischen einem Maschinentisch und einem Ruestplatz bewegt werden koennen, indem jede Palette mit einem Palettenwechslerdrehteil in Wirkverbindung bringbar ist, dadurch gekennzeichnet, dass die Vorrichtung ein Palettenwechslerdrehteil (4) mit einer zugeordneten Hubeinrichtung (5; 6) aufweist, wobei das Palettenwechslerdrehteil (4) mittels der Hubeinrichtung (5; 6) in vertikaler Richtung um eine Hoehe (H) verlagerbar ist, deren Betrag groesser ist als der Betrag, der zwingend zum Wechsel der Paletten (1) notwendig ist.

Classifications:
International (IPC 8-9): B23Q7/02 (Advanced/Invention);
B23Q7/02 (Core/Invention)
CPC: B23Q7/1431
European: B23Q7/14K2

PatBase – DE202008012197_U1



Family:

Publication number	Publication date	Application number	Application date
DE102009040597 A1	20100415	DE200910040597	20090908
DE202008012197 U1	20100218	DE200820012197U	20080912

Priority:

DE200820012197U 20080912 DE200910040597 20090908

Probable Assignee: NILES SIMMONS INDUSTRIEANLAGEN

Assignee(s): (std)**:** NILES SIMMONS INDUSTRIEANLAGEN

Assignee(s): NILES SIMMONS INDUSTRIEANLAGEN GMBH

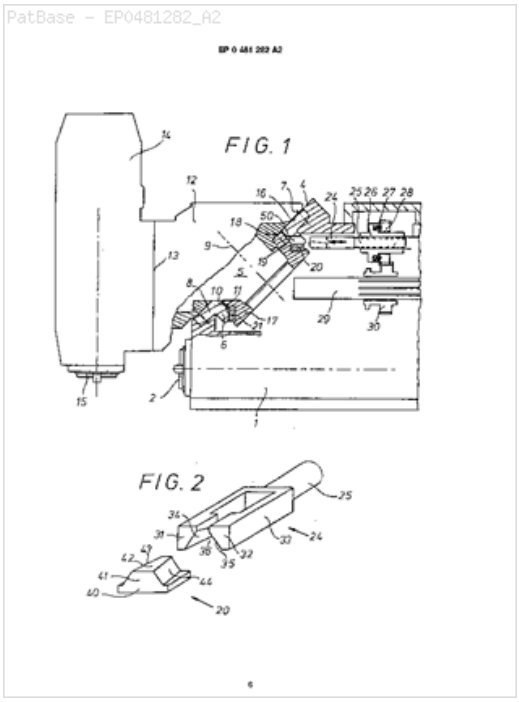
Inventor(s): (std)**:** FRAAS MICHAEL ; DELLING KLAUS

180) Family number: 3307330 (EP0481282A2) © PatBase

Title: INDEXING DEVICE FOR THE ROTATABLE HEAD ON AN UNIVERSAL MILLING MACHINE.

Abstract: The invention relates to a fixing device for the rotatable head on a universal milling machine, which rotatable head is mounted on a front sloping end wall (4) of the spindle housing (1) in such a way as to be rotatable through 180 DEG by motor drive and is guided in an outer ring (8), fastened to the end wall (4), by means of a hollow cylinder extension (17) concentric to the 45 DEG rotational axis (9). The rotatable head (12) and thus the vertical spindle (15) are fixed in the working position and in the stop position by means of locking elements actuated by motor drive. The fixing device according to the invention is of compact and simple design. A longitudinally slit clamping slide (24) is arranged in the spindle housing (1) in such a way as to be displaceable by motor drive. The clamping slide (24) has inclined contact surfaces (34, 35) on its two legs (31, 33). Located in the outer ring (8) fixed to the housing is a recess (50) for the positive-locking accommodation of the legs (31, 32) of the clamping slide (24). Fastened to the hollow cylinder extension (17) of the rotatable head (12) is at least one clamping block (20, 21), the inclined wedge surfaces (43, 44) of which correspond to the contact surfaces (34, 35) of the clamping slide (24).

Classifications:
International (IPC 8-9): B23Q16/04 (Advanced/Invention);
B23Q16/00 (Core/Invention)
International (IPC 1-7): B23C1/12 B23Q1/26 B23Q16/04
CPC: B23Q16/04
European: B23Q16/04



Family:

Publication number	Publication date	Application number	Application date
DE4031381 C1	19911031	DE19904031381	19901004
EP0481282 A2	19920422	EP19910116772	19911001

Priority:

DE19904031381 19901004

Probable Assignee: MAHO AG

Assignee(s): (std)**:** MAHO AG

Assignee(s): MAHO AG 8962 PFRONTEN DE ; MAHO AKTIENGESELLSCHAFT

Inventor(s): (std)**:** KRUG WILLY

Inventor(s): KRUG WILLY 3505 GUDENSBERG DE

Designated states: CH DE ES FR GB IT LI

181) Family number: 52365332 (US2012290120A)

© PatBase

Title: THREE AXIS DESKTOP MACHINING CENTER WITH A SIMPLIFIED MECHANISM FOR LOW COST IMPLEMENTATION

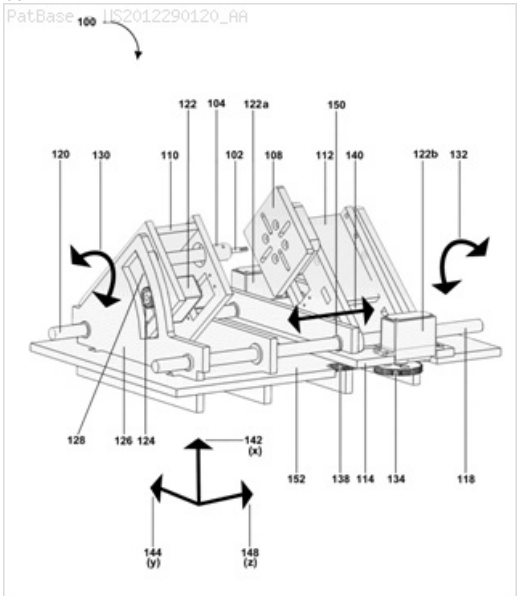
Abstract: A CNC three-axis desktop machining center and a method of use are provided by an embodiment that includes a means for mechanical control for these three axes by employing two pivoting structural arms that carry a machining head and a work stock fixturing table that in their respective arc motions intersect one another to create an X-Y swept area of interaction equal or greater than the total surface area of the preformed work stock to be machined. The third axis of control, at right angles to the plane described by the intersecting arcs of the two pivoting structural arms, may be comprised of a movable structural table to which one of the two pivoting arms is affixed.

Classifications:

International (IPC 8-9)**:** G05D3/00 (Advanced/Invention)

CPC: B23C1/20 B23Q11/0046 B23C1/02 B23Q1/44 B23Q1/4852 B23Q3/15536 B23Q3/15706

US: 700/160



Family:

Publication number	Publication date	Application number	Application date

US2012290120 AA	20121115	US20120463259	20120503

Priority:

US20110481782P 20110503 US20120463259 20120503

Probable Assignee: DAYTON DOUGLAS CAMERON

Assignee(s): (std)**:** DAYTON DOUGLAS CAMERON ; MOULTON TIMOTHY L

Inventor(s): (std)**:** DAYTON DOUGLAS CAMERON ; MOULTON TIMOTHY L

182) Family number: 12058336 (US6024354A)

© PatBase

Title: Clamping apparatus

Abstract: A housing (11) includes an annular driving member (16), into which a cylindrical pull rod (12) is inserted. An actuation member (26) is inserted into the pull rod (12). At the time of clamping, the pull rod (12) has an upper end portion fitted into a stepped hole (2) of a workpiece (1) and the driving member (16) is lowered. Then, first the pull rod (12) descends relatively to the actuation member (26) to project a plurality of engaging balls (13) outwards and subsequently these balls (13) are brought into butting contact with a lower step portion (8) of the stepped hole (2). Thus the driving member (16) pulls the workpiece (1) downward through the pull rod (12) and the balls (13).

Classifications:

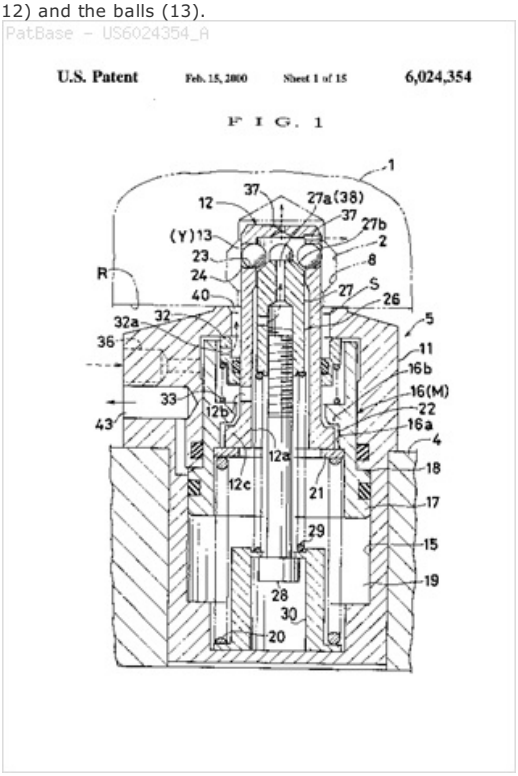
International (IPC 8-9): B23Q3/00 B23Q3/06 B25B5/06 B25B5/08 B29C33/30 B29C45/17 F15B15/02 F15B15/20 F16H25/18 F16H35/00 (Advanced/Invention);
B23Q3/06 F16H35/00 (Advanced/Non-invention);
B23Q3/06 B25B5/00 B29C33/30 B29C45/17 F15B15/00 F16H25/18 (Core/Invention)

International (IPC 1-7): B23Q3/00 B23Q3/06 B23Q3/10 B25B5/12 F15B15/02 F16H25/08 F16H25/18 F16H35/00

CPC: B29C33/305 B23Q1/0081 B29C45/1743 B23Q1/0072 F15B15/204 B25B5/06 B25B5/061 B25B5/087 Y10T74/18288 Y10T74/19623

European: B23Q1/00D B23Q1/00D3 B25B5/06 B25B5/06B B25B5/08D B29C33/30D B29C45/17C2 F15B15/20C

US: 269/138 269/309 74/409 74/54 74/540



Family:

Publication number	Publication date	Application number	Application date
DE69821707 D1	20040325	DE19986021707	19981017
DE69821707 D1	20040325	DE19986021707T	19981017
DE69821707 T2	20041125	DE19986021707T	19981017
EP0913587 A2	19990506	EP19980119648	19981017
EP0913587 A3	20011010	EP19980119648	19981017
EP0913588 A2	19990506	EP19980119674	19981017
EP0913588 A3	20011010	EP19980119674	19981017
EP0913588 B1	20040218	EP19980119674	19981017
JP11129136 A2	19990518	JP19970299762	19971031
JP11247959 A2	19990914	JP19980046567	19980227
JP3954704 B2	20070808	JP19970299762	19971031
KR100528366 B1	20060127	KR19980042730	19981013
KR19990037049 A	19990525	KR19980042730	19981013
KR19990037096 A	19990525	KR19980043057	19981014
TW379155 B	20000111	TW19980116450	19981002
TW396083 B	20000701	TW19980116445	19981002
US6024354 A	20000215	US19980182674	19981030
US6101888 A	20000815	US19980182673	19981030

Priority:

JP19970299762 19971031 JP19980046567 19980227 KR19980043057 19981014

Probable Assignee: KOSMEK KK

Assignee(s): (std)**:** KOSMEK KK ; KOSMEK LTD ; KOSMEK KOBE KK ; KOSMEK K K

Assignee(s): KABUSHIKI KAISHA KOSMEK ; KABUSHIKI KAISHA KOSMEK KOBE

Inventor(s): (std)**:** YONEZAWA KEITARO

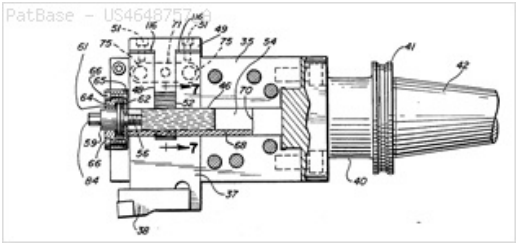
Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

183) Family number: 2111340 (US4648757A)

Title: PRECISION ADJUSTMENT SYSTEM FOR BORING TOOLS

Abstract: A system is disclosed for automatic radial adjustment of a boring tool in a machine tool spindle to accurately size a bore in a workpiece within extremely close tolerances over a wide range of bore sizes. The system includes a boring tool mounting a toolholder and cutter and a precision adjusting means for setting the radial position of the cutter, the precision adjusting means including an adjusting wedge housed within said boring bar and being threaded to a precision lead screw which is rotated for axial translation of the adjusting wedge, the wedge and toolholder having intermeshing toothed serrations axially skewed for radial movement of the toolholder in response to axial translation of the adjusting wedge; an adjusting actuator adapted for operative engagement with driver means on said precision lead screw; a probe which measures the size of a preliminary bore in the workpiece; an adjusting control operatively connected to the actuator for altering the radial position of the cutter and toolholder; and means for setting the adjusting control to effect an adjustment in the radial position of the toolholder and cutter by an amount proportional to the deviation between the size of the preliminary bore and the size of the final bore to be generated in the workpiece. The system may be used in any manual or numerically controlled machine capable of performing boring operations.

Classifications:
International (IPC 8-9): B23B29/00 B23B41/00 G05B19/401 (Advanced/Invention); G05B19/401 (Core/Invention)
International (IPC 1-7): B23B29/00 B23B41/00 B23B47/18 B23Q15/22
CPC: Y10T408/173 Y10T408/175 Y10T408/85892 Y10T408/858955 G05B19/401 G05B2219/45129 B23B29/03417
European: G05B19/401 S05B219/45129
US: 408/12 408/13 408/161 408/170



Family:

Publication number	Publication date	Application number	Application date
CA1201910 A1	19860318	CA19830420796	19830202
GB2131332 A1	19840620	GB19830000756	19830112
GB2131332 B2	19860416	GB19830000756	19830112
GB8300756 A0	19830216	GB19830000756	19830112
US4648757 A	19870310	US19820442625	19821118

Priority:
US19820442625 19821118 CA19830420796 19830202

Probable Assignee: AMCA INT CORP

Assignee(s): (std): GIDDINGS AND LEWIS ; AMCA INT CORP

Assignee(s): CITICORP USA INC ; AMCA INT ; GIDDINGS AND LEWIS INC ; GIDDINGS AND LEWIS INC A CORP OF WI ; PLUMMER HARVEY R

Inventor(s): (std): PLUMMER HARVEY R

Inventor(s): HARVEY R PLUMMER

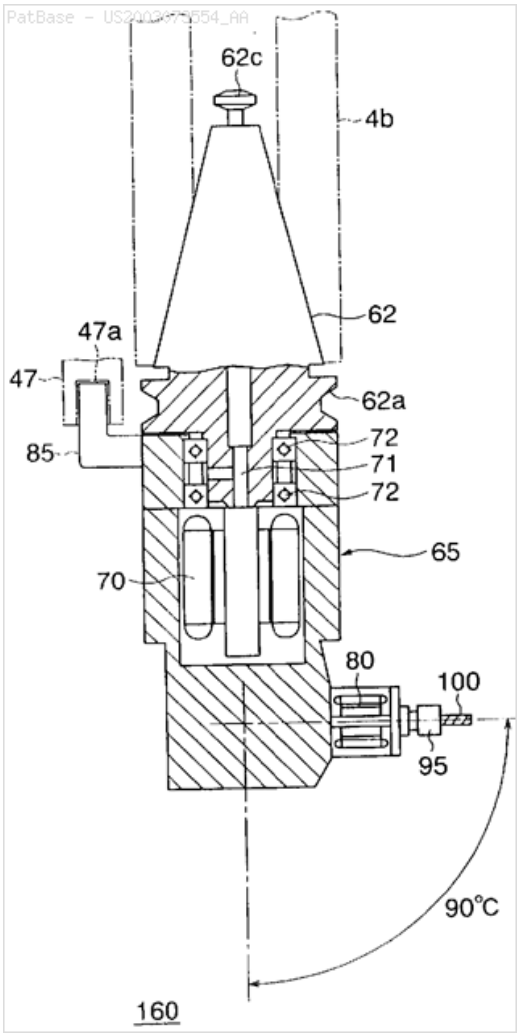
Agent(s): RIDOUT AND MAYBEE LLP

184) Family number: 28470341 (US2003073554A)

Title: TOOL, TOOL HOLDER, AND MACHINE TOOL

Abstract: A tool attachable to a spindle of a machine tool by an automatic tool changer in the same way as an ordinary tool, capable of being driven without connecting with an external power supply etc., and able to rotate at a rotational speed different from than that of the spindle of the machine tool without supply of electric power from the outside, provided with a machining tool for machining a workpiece, a motor connected with the machining tool and rotating the machining tool, and a generator to which rotary force is transmitted from the spindle of the machine tool and generating electric power to drive the motor, the shaft of the motor being arranged in an orientation different from the axial center of the spindle.

Classifications:
International (IPC 8-9): B23B29/12 B23H1/00 B23H1/02 B23H7/14 B23H7/26 B23Q1/00 B23Q11/12 B23Q15/00 B23Q3/12 B23Q5/04 B23Q5/10 H02K16/00 H02K7/20 H02K9/22 (Advanced/Invention); B23Q15/00 (Advanced/Non-invention); B23H1/02 B23H7/00 B23H7/26 B23Q1/00 B23Q11/12 B23Q3/00 B23Q5/00 H02K16/00 H02K7/00 H02K9/22 (Core/Invention)
International (IPC 1-7): B23C1/00 B23H1/02 B23H7/14 B23H7/26 B23Q1/00 B23Q11/12 B23Q15/00 B23Q3/12 B23Q3/157 B23Q5/04 H02K16/00 H02K7/20 H02K9/22
CPC: Y10T408/65 Y10T409/30448 Y10T409/30952 Y10T483/1736 B23Q5/10 B23Q5/043 B23Q5/045 Y10T409/309296 Y10T409/309352
European: B23Q5/04D B23Q5/04D2 B23Q5/10
US: 219/69.11 219/69.110S 219/69.15 219/69.150P 219/69.2 219/69.200S 408/124 409/144 409/23 409/230 409/230S 409/231 409/234 483/31 483/31P



Family:

Publication number	Publication date	Application number	Application date
JP2003117756 A2	20030423	JP20010317165	20011015
JP2003165027 A2	20030610	JP20010365920	20011130
JP2003170320 A2	20030617	JP20010367404	20011130
JP2003170327 A2	20030617	JP20010367428	20011130
JP4153189 B2	20080917	JP20010317165	20011015
KR100947414 B1	20100312	KR20020062712	20021015
KR101182040 B1	20120911	KR20090064722	20090716
KR20030031451 A	20030421	KR20020062712	20021015
KR20090125722 A	20091207	KR20090064722	20090716
US2003073554 AA	20030417	US20020270248	20021015
US2004169016 AA	20040902	US20040793230	20040305
US6752750 BB	20040622	US20020270248	20021015
US7004693 BB	20060228	US20040793230	20040305

Priority:

JP20010317165 20011015 JP20010365920 20011130 JP20010367404 20011130
JP20010367428 20011130 US20020270248 20021015 US20040793230 20040305

Probable Assignee: TOSHIBA KIKAI KK

Assignee(s): (std)**:** TOSHIBA MACHINE CO LTD

Assignee(s): ADACHI SAKASHI ; KATSUMATA KOJI ; TOSHIBA KIKAI K USHIKI KAISHA AB ; TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK ; TOSHIBA MACH CO LTD

Inventor(s): (std)**:** ADACHI MASARU ; ADACHI SAKASHI ; KATSUMATA KOJI

Agent(s): PILLSBURY WINTHROP SHAW PITTMAN LLP

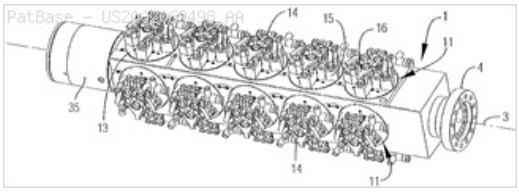
185) Family number: 28256347 (US2002069498A)

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Title: CHUCKING DEVICE, IN PARTICULAR FOR WORKPIECES THAT ARE TO BE MACHINED ON MORE THAN ONE SIDE

Abstract: A chucking device, in particular for workpieces that are to be machined on more than one side, has a workpiece carrier with at least one turret, arranged to receive workpieces, that is supported rotatably about an axis of rotation on the workpiece carrier, A positive-engagement locking device is associated with the turret, on the workpiece carrier, by which locking device the turret can be locked positionally precisely in a predetermined rotary angle position relative to the workpiece carrier. The locking device has at least three locking parts disposed coaxially to one another, which on the plane faces facing one another each carry pairs of cooperating locking means that can be brought into and out of engagement with one another by means of an axial relative motion of the locking parts. Associated actuating means bring the locking means of the locking parts selectively into and out of engagement in such a way that the third locking part, via its locking means, always remains locked with at least one locking part adjacent to it.

Classifications:
International (IPC 8-9): B23Q1/66 B23Q16/02 B23Q16/06 B23Q16/10 B23Q3/02 B23Q3/06 (Advanced/Invention); B23Q1/25 B23Q16/00 B23Q3/02 B23Q3/06 (Core/Invention)
International (IPC 1-7): B23C9/00 B23Q1/66 B23Q16/02 B23Q16/06 B23Q16/10 B23Q3/02 B23Q3/06 B23Q5/22
CPC: Y10S269/90 B23Q3/061 B23Q16/102 Y10T29/5127 Y10T29/5129 Y10T29/513 Y10T29/5196 Y10T74/14 Y10T409/30868 Y10T409/30896
European: B23Q16/10C B23Q3/06C
US: 269/900 29/33 29/33P 29/38 29/380R 29/38B 29/38C 29/38R 409/219 409/224 451/403 451/414 74/813 74/813R



Family:

Publication number	Publication date	Application number	Application date
AT327859 E	20060615	AT20010119316T	20010810
DE10044915 A1	20020418	DE20001044915	20000912
DE10044915 B4	20070726	DE20001044915	20000912
DE50109930 D1	20060706	DE20015009930	20010810
EP1186373 A1	20020313	EP20010119316	20010810
EP1186373 B1	20060531	EP20010119316	20010810
US2002069498 AA	20020613	US20010949609	20010910
US6629345 BB	20031007	US20010949609	20010910

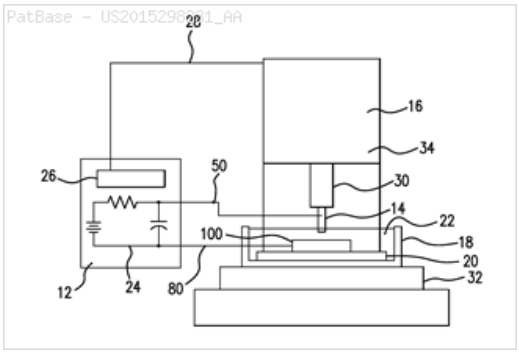
Priority:
DE20001044915 20000912 DE20015009930 20010810

Probable Assignee: ALBECK GMBH
Assignee(s): (std): ALBECK BEUNHARD ; ALBECK GMBH ; ALBECK TOBIES
Inventor(s): (std): ALBECK TOBIES ; ALBECK TOBIAS ; ALBECK BEUNHARD ; ALBECK BERNHARD
Designated states: AT CH DE FR GB IT LI

186) Family number: 56436352 (US2015298231A)

Title: PORTABLE MICRO-DEBURRING COMPONENT USING MICRO-ELECTRICAL DISCHARGE MACHINING PROCESS

Abstract: A deburring subassembly has a controller to generate an electrical current and move a deburring tool bit from a non-deburring position to a range of deburring positions. The electrical current permits deburring of the workpiece without damaging it. A workpiece securement subassembly secures the workpiece for formation on a computer numerical controlled (CNC) machine tool and also holds the workpiece in place for deburring. The electrical current is provided to a deburring tool bit. The controller thereby controls movement of the deburring tool bit to the range of deburring positions and generates the electrical current to deburr the workpiece.
Classifications:
International (IPC 8-9): B23C3/12 B23H1/02 B23H1/04 B23H1/08 B23H9/02 (Advanced/Invention)
CPC: B23H9/02 B23H1/02 B23H1/04
US: 219/69.15 219/69.16



Family:

Publication number	Publication date	Application number	Application date
DE602013044639 D1	20181031	DE201360044639T	20131105
EP2916987 A1	20150916	EP20130852808	20131105
EP2916987 A4	20160713	EP20130852808	20131105
EP2916987 B1	20181003	EP20130852808	20131105
ES2702177 T3	20190227	ES20130852808T	20131105
JP2015533350 T2	20151124	JP20150540871T	20131105
JP6265442 B2	20180124	JP20150540871T	20131105
PL2916987 T3	20190329	PL20130852808T	20131105
TW201436907 A	20141001	TW20130140741	20131108
TWI632010 B	20180811	TW20130140741	20131108
US2015298231 AA	20151022	US20130438828	20131105
WO14074524 A1	20140515	WO2013US68568	20131105

Priority:
US20120724120P 20121108 EP20130852808 20131105 WO2013US68568 20131105 US20130438828 20131105

Probable Assignee: SMALTEC INT LLC
Assignee(s): (std): SMALTEC INT LLC
Assignee(s): SMALTEC INT LLC LISLE
Inventor(s): (std): MRAZ JERRY ; MONTGOMERY JONATHAN
Inventor(s): MRAZ JERRY LISLE ; MONTGOMERY JONATHAN NAPERVILLE
Agent(s): HEINZE EKKEHARD; KITA AOYAMA INT PATENT BUREAU; KINNE CHARLES C
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID

IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

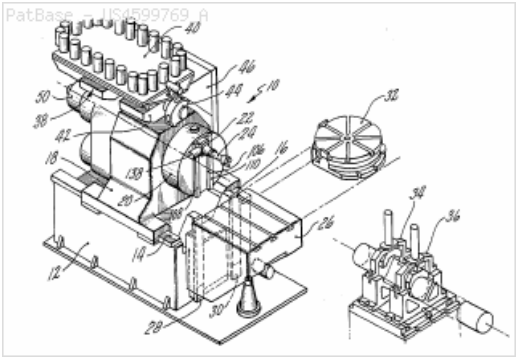
187) Family number: 5064353 (US4599769A)

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Title: MACHINE WITH ROTATING CUTTING TOOL

Abstract: A machine tool (10) with a rotating cutting tool (24) has a spindle assembly (20,48) mounted for rotation in a longitudinally movable headstock (18). The spindle assembly includes a spindle (48), driven by a motor (50) and an integral machining head (20) having a rotatably mounted drive screw (62). The drive screw carries a radially positionable follower (72) to which is connected a tool block (22) to define a radial slide for supporting the cutting tool. A drive shaft (82) extending through the spindle is in driving engagement with the drive screw such that rotation of the drive shaft relative to the spindle produces rotation of the drive screw and consequential radial movement of the follower and tool block. A motor (76) mounted on the spindle for rotation with the spindle is connected to the drive shaft for rotating it either a clockwise or counterclockwise sense to produce radial movement of the follower and tool block. A counterbalance block (70) is in threaded engagement with a threaded shaft (142) mounted in the machining head in driving connection with the drive shaft for providing dynamic balance. A tool changer assembly (38) is secured to a floor mounted support (46) for changing tools in the tool block.

Classifications:
International (IPC 8-9): B23B29/034 B23Q1/48 B23Q11/00 G05B19/23 G05B19/404 (Advanced/Invention); B23B29/00 B23Q1/25 B23Q11/00 G05B19/19 G05B19/404 (Core/Invention)
International (IPC 1-7): B23B3/26 B23C9/00
CPC: B23B29/03439 B23Q1/4804 B23Q11/0035 G05B19/232 G05B19/404 G05B2219/42186 G05B2219/49376 G05B2219/50293 Y10T29/5107 Y10T82/10 Y10T82/12 Y10T408/8598 Y10T409/307112 B23Q3/1574
European: B23B29/034N3B B23Q1/48A B23Q11/00D2 G05B19/23C1 G05B19/404 S05B219/42186 S05B219/49376 S05B219/50293
US: 29/26.00A 29/26A 408/181 409/191 82/1.11 82/1.2 82/1C 82/2E



Family:

Publication number	Publication date	Application number	Application date
US4599769 A	19860715	US19850709996	19850312

Priority:

US19820405434 19820805 US19850709996 19850312

Probable Assignee: COLT IND INC A CORP OF PA

Assignee(s): (std): COLT IND OPERATING CORP

Assignee(s): COLT INDUSTRIES OPERATING CORP ; PRATT AND WHITNEY CO INC ; SECURITY PACIFIC BUSINESS CREDIT INC ; WESTINGHOUSE CREDIT CORP ; PRATT AND WHITNEY CO INC AN OHIO CORP ; WESTINGHOUSE CREDIT A CORP OF DE CORP ; COLT IND ; COLT IND INC A CORP OF PA

Inventor(s): (std): LATZKO RICHARD I ; MARSLAND GEORGE H ; REUTELER JOHANN F

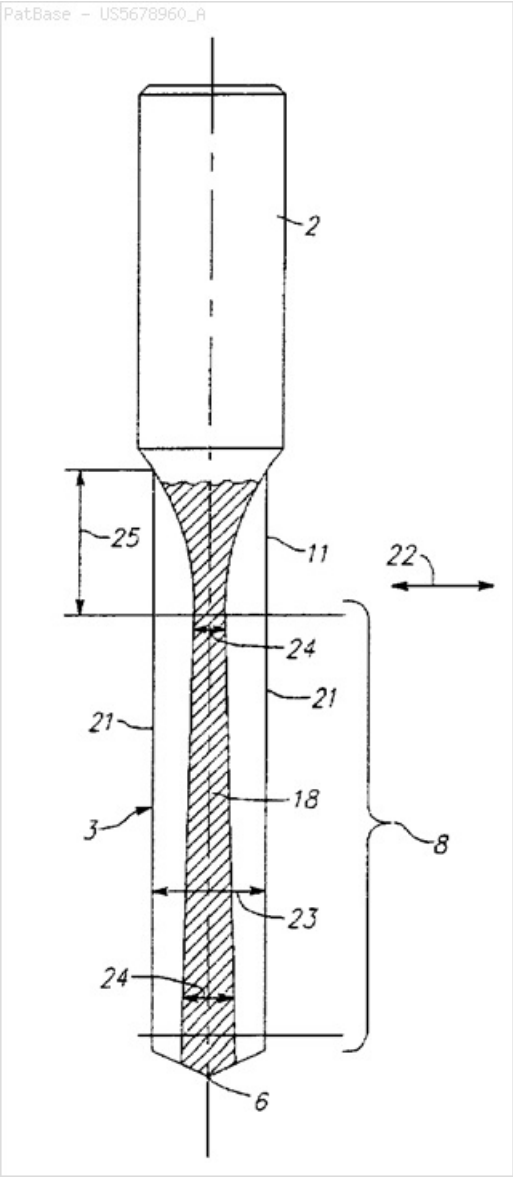
188) Family number: 17168357 (US5678960A)

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Title: TWIST DRILL

Abstract: PCT No. PCT/DE94/00895 Sec. 371 Date Feb. 2, 1996 Sec. 102(e) Date Feb. 2, 1996 PCT Filed Aug. 2, 1994 PCT Pub. No. WO95/04624 PCT Pub. Date Feb. 16, 1995The invention relates to a twist drill, especially for metals. It has a substantially cylindrical basic component (1) divided into a shaft (2) and a cutting section (3), the central longitudinal axis (5) of which is the axis of rotation of the twist drill. Several swarf grooves (4, 4') are made in the cylindrical surface of the basic component (1) which extend spirally and continuously from the shaft (2) to the drill tip (6) and bound a swarf chamber (35). The feature of the twist drill is that its drill core diameter tapers continuously from the drill tip (6) to the shaft (2).

Classifications:
International (IPC 8-9): B23B51/00 B23B51/02 (Advanced/Invention); B23B51/00 B23B51/02 (Core/Invention)
International (IPC 1-7): B23B51/00 B23B51/02
CPC: Y10T408/85 Y10T408/9097 B23B51/02 B23B2251/241 B23B2251/402 B23B2251/406
European: B23B51/02 L23B251/24B L23B251/40B L23B251/40F
US: 408/144 408/147 408/230



Family:

Publication number	Publication date	Application number	Application date
AT175139 E	19990115	AT19940922832T	19940802
CA2168889 AA	19950216	CA19942168889	19940802
CA2168889 C	20031209	CA19942168889	19940802
DE59407566 D1	19990211	DE19945007566	19940802
EP0712343 A1	19960522	EP19940922832	19940802
EP0712343 B1	19981230	EP19940922832	19940802
ES2127407 T3	19990416	ES19940922832T	19940802
JP3071466 B2	20000731	JP19940506151T	19940802
JP9501109 T2	19970204	JP19950506151T	19940802
US5678960 A	19971021	US19960592428	19960202
WO9504624 A1	19950216	WO1994DE00895	19940802

Priority:

DE19930011715U 19930806 DE19945007566 19940802 WO1994DE00895 19940802

Probable Assignee: KENNAMETAL HERTEL AG

Assignee(s): (std)**:** JUST WERNER ; KENNAMETAL HERTEL AG ; KENNAMETAL HERTEL WERKZEUGE AG ; MUEHLFRIEDEL DIETER ; KENNAMETAL HERTEL WERKZEUGE AND HARTSTOFFE AG

Assignee(s): KENNAMETAL HERTEL AG WERKZEUGE AND HARTSTOFFE 90 ; KENNAMETAL HERTEL AG WERKZEUGE AND HARTSTOFFE

Inventor(s): (std)**:** MUHLFRIEDEL DIETER ; MUEHLFRIEDEL DIETER ; JUST WERNER

Inventor(s): JUST WERNER D 91126 SCHWABACH DE ; MUEHLFRIEDEL DIETER D 91320 EBERMANNSTADT DE

Designated states: AT BE CA CH DE DK ES FR GB GR IE IT JP LI LU MC NL PT SE US

189) Family number: 23140357 (US2002061236A)

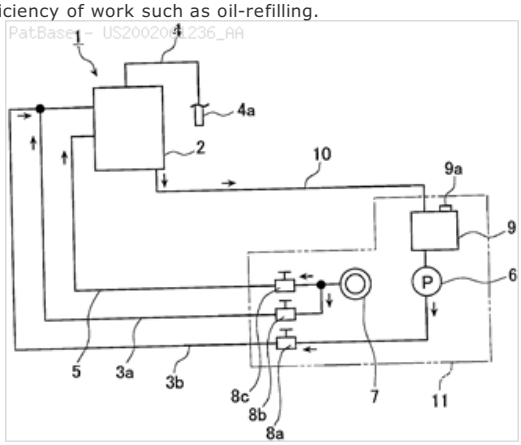
© PatBase

Title: CUTTING-OIL COATER AND CUTTING DEVICE

Abstract: A cutting-oil coater that prevents oil spray from liquefying during conveying and improves the efficiency of work such as oil-refilling by forming a spray feed portion and an oil storage portion separately from each other and making it possible to adjust the arrangement position. A cutting-oil coater includes a spray feed portion, an oil storage portion, an oil

feed means for feeding oil to the oil spray feed portion, and a spray conveying passage for conveying the oil spray inside the spray feed portion to the outside of the spray feed portion, wherein the spray feed portion and the oil storage portion are formed separately from each other and can be arranged in different positions respectively, and the arrangement can be adjusted. Thus, the spray feed portion is arranged in the vicinity of the cutting position of a machining tool and the fluid feed unit 11 is arranged at a place where a worker can carry out a work such as oil-refilling. Thus, it is possible both to prevent the oil spray from liquefying during conveying and to improve the efficiency of work such as oil-refilling.

Classifications:
International (IPC 8-9): B05B1/02 B05B7/32 B23Q11/00 B23Q11/10 (Advanced/Invention);
B05B7/24 B23Q11/10 (Core/Invention)
International (IPC 1-7): B05B1/02 B05B7/32 B23C1/00 B23C5/28 B23Q11/00 B23Q11/10
CPC: Y10T408/44 Y10T408/45 B23Q11/1084 Y10T409/303976 Y10T409/304032
European: B23Q11/10
US: 184/55.1 184/551 239/423 40/85.6 40/85.7 408/56 408/57 409/135 409/136 409/136P



Family:

Publication number	Publication date	Application number	Application date
DE10151589 A1	20020502	DE20011051589	20011023
DE10151589 B4	20130801	DE20011051589	20011023
JP2002126974 A2	20020508	JP20000327233	20001026
JP3650963 B2	20050525	JP20000327233	20001026
US2002061236 AA	20020523	US20010014628	20011022
US6773212 BB	20040810	US20010014628	20011022

Priority:
JP20000327233 20001026

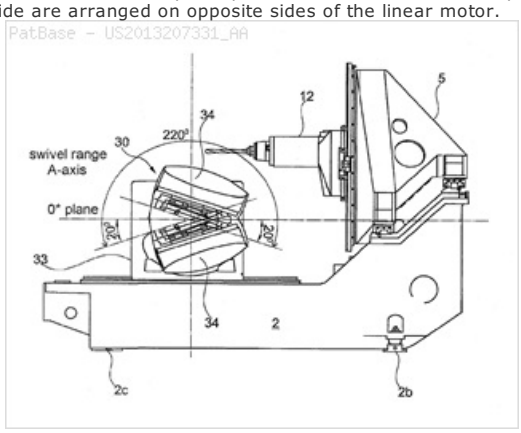
Probable Assignee: FUJI BC ENGINEERING CO LTD
Assignee(s): (std): FUJI KOEKI CO ; FUJI KOEKI CO LTD ; FUJI KOEKI CORP ; FUJI BC ENGINEERING CO
Assignee(s): FUJI BC ENGINEERING CO LTD ; FUJI KOEKI KK
Inventor(s): (std): INOUE TSUTOMU

190) Family number: 54157359 (US2013207331A)

Title: UNIVERSAL MACHINE TOOL INCLUDING A CHIP COLLECTING SPACE

Abstract: A machine tool comprising a machine column, a work spindle moveable in guides along the machine column in two coordinate axes by a motor and adapted to receive a cutting tool, a machine bed arranged on the front end of the machine column and on the top side of which a horizontal linear guide for a workpiece table is arranged, and a linear motor for moving the workpiece table in the horizontal linear guide in a further coordinate axis. A channel-like chip space for collecting chips accumulating when the workpiece is machined extends on the top side of the machine bed in the direction of the further coordinate axis. The linear motor is arranged on the top side of the machine bed laterally and parallel to the channel-like chip space, wherein first and second guide rails of the horizontal linear guide are arranged on opposite sides of the linear motor.

Classifications:
International (IPC 8-9): B23D45/16 B23Q1/00 B23Q1/01 B23Q1/48 B23Q1/56 B23Q1/64 B23Q11/00 B23Q11/08
B23Q7/00 (Advanced/Invention);
B23Q7/00 (Advanced/Non-invention)
CPC: B23Q1/017 B23Q7/00 B23Q11/0053 Y10T29/5196 Y10T409/30392 Y10T409/304088 Y10T409/305656 Y10T409/305824 Y10T409/307728 Y10T409/309576
US: 269/57 29/33P 409/134 409/137 409/165 409/168 409/202 409/235



Family:

Publication number	Publication date	Application number	Application date
CN103213021 A	20130724	CN201310043688	20130204
CN103213021 B	20160525	CN201310043688	20130204
DE102012201736 B3	20130627	DE201210201736	20120206
DE502013001313 D1	20151126	DE201350001313T	20130206
EP2623255 A1	20130807	EP20130154234	20130206
EP2623255 B1	20151014	EP20130154234	20130206
ES2551431 T3	20151119	ES20130154234T	20130206
IN00047KO2013 A	20130809	IN2013KO00047	20130115
JP2013158908 A2	20130819	JP20130019383	20130204
JP5398925 B2	20140129	JP20130019383	20130204
US2013207331 AA	20130815	US20130758995	20130204

US8714535 BB	20140506	US20130758995	20130204

Priority:

DE201210201736 20120206 EP20130154234 20130206

Probable Assignee: DECKEL MAHO PFRONTEN GMBH

Assignee(s): (std)**:** DECKEL MAHO PFRONTEN GMBH

Inventor(s): (std)**:** JUNG ROBERT ; GEISSLER ALFRED ; GEISLER ALFRED

Agent(s): MERH IP MATIAS ERNY REICHL HOFFMANN PATENTANWAELTE PARTG MBB; MERH IP MATIAS ERNY REICHL HOFFMANN; UNGRIA JAVIER; CHRISTENSEN OCONNOR JOHNSON KINDNESS PLLC

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

191) Family number: 49094363 (US2011142562A)

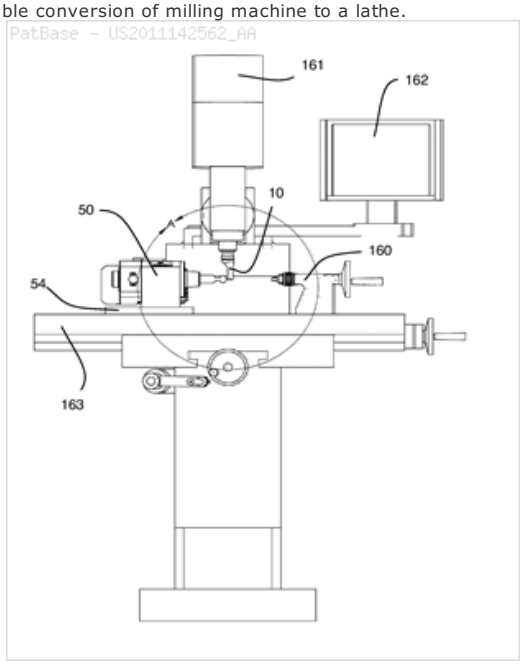
© PatBase

Title: METHOD AND SYSTEM INCLUDING A HORIZONTAL TURNING HEAD AND TURNING BAR FOR A MILLING MACHINE

Abstract: A system for converting a conventional vertical milling machine into a lathe includes a tool adapted to insert into the vertical spindle of the milling machine and is adapted to present a cutting edge aligned with the center vertical axis of the vertical milling machine spindle. A turning head assembly includes a horizontal spindle driven by an electric motor having an electric cooling fan. The turning head couples to the vertical milling machine so that it is adjustable in both the x and y directions. When used together, the turning bar and turning head enable conversion of milling machine to a lathe.

Classifications:

International (IPC 8-9): B23B1/00 B23C9/00 B23Q37/00 (Advanced/Invention)
CPC: B23Q39/02 B23B3/065 B23C1/06 B23Q37/002 Y10T29/5112 Y10T409/303752 Y10T409/309856
European: B23B3/06B B23C1/06 B23Q37/00B B23Q39/02
US: 29/27.00AS 29/27A 409/131 409/131P 409/240 409/240S



Family:

Publication number	Publication date	Application number	Application date
US2011142562 AA	20110616	US20100966309	20101213

Priority:

US20090286251P 20091214 US20100966309 20101213

Probable Assignee: STURGES DAN ALEXANDER

Assignee(s): (std)**:** STURGES DAN ALEXANDER

Inventor(s): (std)**:** STURGES DAN ALEXANDER

192) Family number: 41775365 (US2010313708A)

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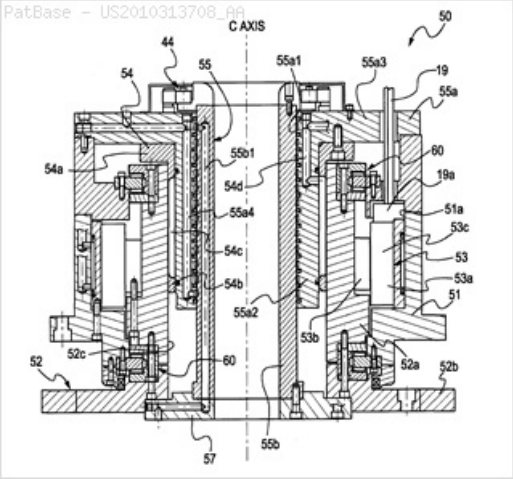
Title: ANGULAR INDEXING APPARATUS FOR MACHINE TOOL

Abstract: An angular indexing apparatus for a machine tool includes a housing, a rotating shaft, and a drive motor, the housing having a through hole, the rotating shaft (52) having a member that is rotationally driven secured to one end thereof, the rotating shaft being rotatably supported by a bearing in the through hole of the housing, the drive motor rotationally driving the rotating shaft to index an angular position thereof. The bearing is a roller bearing which has a plurality of rows and which is capable of supporting an axial-direction load and a radial-direction load. The rotating shaft is supported by two or more of the bearings disposed apart from each other in a direction of axis of rotation thereof.

Classifications:

International (IPC 8-9): B23Q1/40 B23Q1/52 B23Q16/00 B23Q16/02 F16C19/38 (Advanced/Invention);
B23Q1/25 B23Q1/26 B23Q16/00 F16C19/22 (Core/Invention)
CPC: B23Q2210/004 Y10T74/14 Y10T409/308512 F16C19/381 F16C2322/39 B23Q1/52
European: B23Q1/52 F16C19/38
US: 409/216 74/813.00RP 74/813R

PatBase - US2010313708_AA



Family:

Publication number	Publication date	Application number	Application date
CN101588893 A	20091125	CN200780039161	20071023
CN101588893 B	20110706	CN200780039161	20071023
EP2082829 A1	20090729	EP20070830350	20071023
EP2082829 A4	20120125	EP20070830350	20071023
JP2008050747 A1	20100225	JP20080540991T	20071023
JP5201681 B1	20130605	JP20080540991T	20071023
JP5201681 B2	20130605	JP20080540991T	20071023
KR20090077921 A	20090716	KR20097007826	20071023
TW200821083 A	20080516	TW20070139002	20071018
US2010313708 AA	20101216	US20070446004	20071023
WO08050747 A1	20080502	WO2007JP70616	20071023

Priority:

JP20060291813 20061026 JP20080540991 20071023 WO2007JP70616 20071023

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std)**:** TATSUDA YOSHINORI ; TSUDAKOMA CORP ; TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH

Assignee(s): TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA

Inventor(s): (std)**:** TATSUDA YOSHINORI ; YOSHINORI TATSUDA

Agent(s): SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

193) Family number: 11549370 (US6112133A)

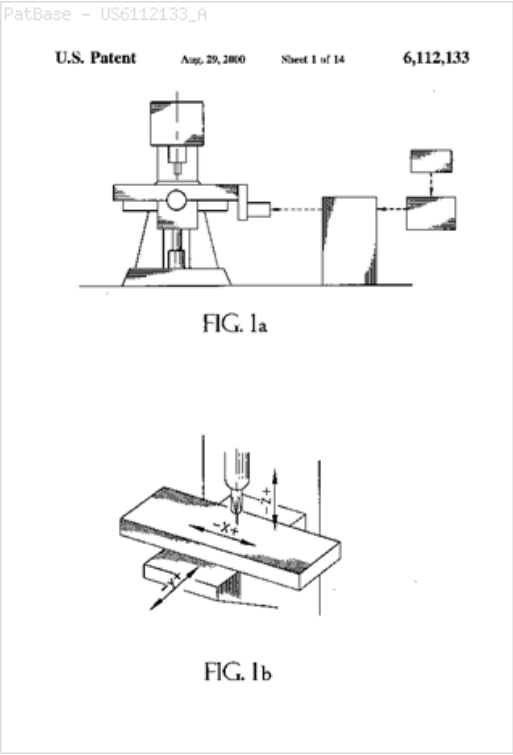
© PatBase

Title: VISUAL SYSTEM AND METHOD FOR GENERATING A CNC PROGRAM FOR MACHINING PARTS WITH PLANAR AND CURVILINEAR SURFACES

Abstract: The present invention comprises a system and method for generating a CNC program for machining a part having planar and curvilinear surfaces and surfaces of revolution comprising an interface for inputting part information including for at least one face corresponding to at least one surface of the part and having face information comprising a boundary, an orientation, and a type of machining function corresponding to the face. A set of features corresponding to each face is also input via the interface. Thereafter a set of machining operations to machine the set of features is generated. The machining operations are optimized to achieve a minimum process time to machine the part.

Classifications:

International (IPC 8-9): B23Q15/00 G05B19/409 G05B19/4093 G05B19/4097 (Advanced/Invention);
B23Q15/00 G05B19/409 G05B19/4097 (Advanced/Non-invention);
B23Q15/00 G05B19/409 G05B19/4093 G05B19/4097 (Core/Invention)
International (IPC 1-7): B23Q15/00 G05B19/409 G05B19/4097 G05B19/423 G06F15/02 G06F15/04 G06F17/00 G06F19/00 G06F7/00
CPC: Y10S707/99945 Y10S707/99948 G05B19/40937 G05B2219/32128 G05B2219/35168 G05B2219/36283 G05B2219/36284 G05B2219/36289 Y02P90/265 G05B19/4093
European: G05B19/4093 G05B19/4093M S05B219/32128 S05B219/35168 S05B219/36283 S05B219/36284 S05B219/36289
US: 700/180 700/182 707/104 707/104.1 707/999.104 707/999.107 708/130



Family:

Publication number	Publication date	Application number	Application date
AU199932914 A1	20000529	AU19990032914	19990212
AU199932914 A5	20000529	AU19990032914	19990212
DE19982989 T	20020328	DE19991082989T	19990212
DE19982989 T1	20020328	DE19991082989T	19990212
JP2002529843 T2	20020910	JP20000581514T	19990212
US6112133 A	20000829	US19980187573	19981105
US6112133 C1	20050118	US19980187573	19981105
WO0028393 A1	20000518	WO1999US03068	19990212

Priority:

US19980076261P 19980227 US19980187573 19981105 WO1999US03068 19990212

Probable Assignee: DELCAM LTD

Assignee(s): (std): IMCS INC

Assignee(s): IMCS INC MAPLE GLEN ; DELCAM LTD ; DELCAM PARTMAKER LTD

Inventor(s): (std): FISHMAN LENA

Inventor(s): LENA FISHMAN

Agent(s): TSURUTA JUNICHI; NISHIYAMA MASAYA; HIGUCHI SOTOJI; ISHIDA TAKASHI

Designated states: AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CU CY CZ DE DK EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT UA UG UZ VN YU ZW

194) Family number: 72477372 (WO18234193A1)

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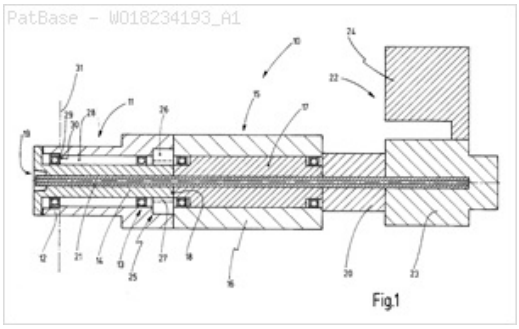
Title: WORKING SPINDLE HAVING A RADIAL CLAMP DEVICE

Abstract: The invention relates to a working spindle (10) comprising a spindle housing (11) and a spindle shaft (14) having an axial positioning surface (29) and an axial abutment surface (30), thereby providing the correct axial position of each appropriately provided spindle shaft (14) in the spindle housing (11). For non-rotatable retention of the spindle shaft (14) in the spindle housing (11), preferably with the motor (15) stopped, a brake unit (25) is provided which has a radially outer part (26) coupled non-rotatably to the spindle housing (11) and a radially inner part (27) coupled non-rotatably to the spindle shaft (14). The greatest external diameter of the circumferential surface (34) of the inner part (27) is smaller than the narrowest point of the passage (28) of the spindle housing between the brake unit (25) and the tool-side end of the spindle housing (11). Therefore, without further action and without removal of the brake unit, if required the spindle shaft (14) can be withdrawn axial from the spindle housing (11) and inserted again in the reverse manner. The working spindle (10) according to the invention has a simple structure and can be used in various ways. As a result, the working spindle is extremely easy to maintain.

Classifications:

International (IPC 8-9): B23B19/02 B23B7/00 B23C1/06 B23Q1/70 B23Q5/20 (Advanced/Invention); B23Q1/28 (Advanced/Non-invention)

CPC: B23Q1/70 B23Q1/287 B23Q5/20



Family:

Publication number	Publication date	Application number	Application date
DE102017113396 A1	20181220	DE201710113396	20170619
WO18234193 A1	20181227	WO2018EP65997	20180615

Priority:

DE201710113396 20170619

Probable Assignee: HELLER MASCHF GMBH GEB

Assignee(s): (std)**:** HELLER MASCHF GMBH GEB

Inventor(s): (std)**:** DORN THOMAS ; WALZ JUERGEN

Agent(s): RUEGER BARTHELT AND ABEL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

195) Family number: 6617377 (US4581808A)

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Title: ADJUSTABLE MACHINING SYSTEM AND IMPLEMENT THEREFORE

Abstract: A machine tool system having an adjustable implement mounted in a holder or chuck and moveably positioned relative to a moveable workpiece support, wherein implement adjustments are produced by controlled differential motion between the implement holder and an adjustment fixture on the workpiece support. The support is moved to engage the implement in the fixture, from which state further relative movement unlocks an implement clamp and produces a desired adjustment in the implement. Typical implement adjustment applications would include setting of a boring bar cutting radius (or setting of a measurement gauge dimension). The adjustments can be performed open loop based on prior calibration of implement adjustment versus extent of support motion, or closed loop wherein an initial cut (or measurement) is made by open loop implement adjustment with subsequent adjustments based upon a measurement made of the implements effective cutting (or measurement) dimension. Desired incremental changes in cut (or measurement) dimensions are then effectuated through corresponding incremental support motion. Closed loop mesurement and adjustment iterations largely overcome implement dimension errors due to rechucking, thermal drifts, machine motion position offsets, implement or contact point phenomena effects, speed-related dynamic distortions, gradual implement/wear and implement/workpiece force compliance. These measurements for iterative adjustment can be made with manual or automated gauging systems, either separate or integral to the machine adjustable implement system. The implement adjustment mechanism can be provided with a substantial mechanical advantage to correspondingly increase accuracy in implement adjustment.

Classifications:

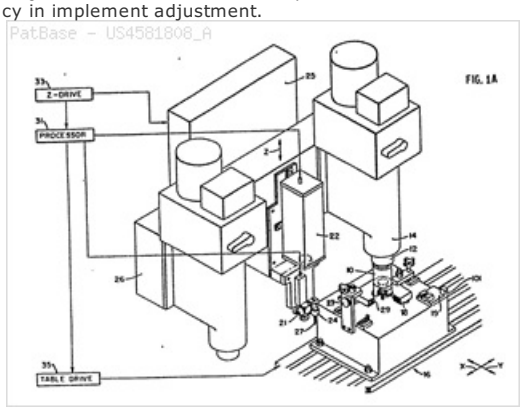
International (IPC 8-9): A43B17/14 A43B17/18 B23B29/00 B23B29/034 B23B41/16 B23Q17/22 B27K3/32 G02B17/08 G02B27/62 G02B7/18 G05B19/401 G05B19/404 (Advanced/Invention); A43B17/00 B23B29/00 B23B41/00 B23Q17/22 B27K3/16 G02B17/08 G02B27/62 G02B7/18 G05B19/401 G05B19/404 (Core/Invention)

International (IPC 1-7): B23B29/00 B23B29/034 B23B35/00 B23B39/14 B23B41/16 B23B49/00 B23C9/00 B23P13/04 B23Q15/00 B27G23/00 G01B5/20 G05B19/18

CPC: Y10T29/49996 Y10T408/175 Y10T409/303808 Y10T409/304648 Y10T409/307224 B23B29/03457 B23B29/03478 B23Q17/2233 B23Q17/2495 G05B19/401 G05B19/404 G05B2219/37345 G05B2219/37405 G05B2219/45129 G05B2219/50063 G05B2219/50293

European: B23B29/034N5 B23B29/034N7 B23Q17/22C G05B19/401 G05B19/404 S05B219/37345 S05B219/37405 S05B219/45129 S05B219/50063 S05B219/50293

US: 29/558 295/58 408/13 409/132 409/147 409/193



Family:

Publication number	Publication date	Application number	Application date
CA1223465 A1	19870630	CA19830420827	19830203
DE3376738 D1	19880630	DE19833376738	19830202
EP0100358 A1	19840215	EP19830901005	19830202
EP0100358 A4	19840413	EP19830901005	19830202
EP0100358 B1	19880525	EP19830901005	19830202
EP0231540 A2	19870812	EP19860202146	19830202
EP0231540 A3	19890510	EP19860202146	19830202
IT1162819 A	19870401	IT19830067125	19830204
IT8367125 A0	19830204	IT19830067125	19830204
JP59500094 T2	19840119	JP19830501079T	19830202
US4581808 A	19860415	US19820345752	19820204
WO8302739 A1	19830818	WO1983US00146	19830202

Priority:

US19820345752 19820204 WO1983US00146 19830202 CA19830420827 19830203

Probable Assignee: DRAPER LAB CHARLES S

Assignee(s): (std): DRAPER LAB CHARLES S

Assignee(s): THE CHARLES STARK DRAPER LABORATORY INC ; THE CHARLES STARK DRAPER LABORATORY ; STARK CHARLES DRAPER LABORATORY INC ; STARK CHARLES DRAPER LABORATORY INC THE ; HARLAN RAYMOND B ; GLICK KEITH ; LAWSON JOHN R ; THE CHARLES STARK DRAPER LABORATORYINC ; CHARLES STARK DRAPER LABORATORY ; CHARLES STARK DRAPER LABORATORY INC ; CHARLES STARK DRAPER LABORATORY INC A CORP OF MASS ; CHARLES STARK DRAPER LABORATORYINC

Inventor(s): (std): GLICK JOHN R LAWSON KEITH ; GLICK KEITH ; GLICK KEITH F ; HARLAN RAYMOND B ; LAWSON JOHN R

Inventor(s): RAYMOND B HARLAN ; RAYMOND BHARLAN ; JOHN R LAWSON KEITH GLICK ; JOHN RLAWSON KEITH GLICK

Agent(s): R WILLIAM WRAY AND ASSOCIATES

Designated states: DE FR GB JP SE

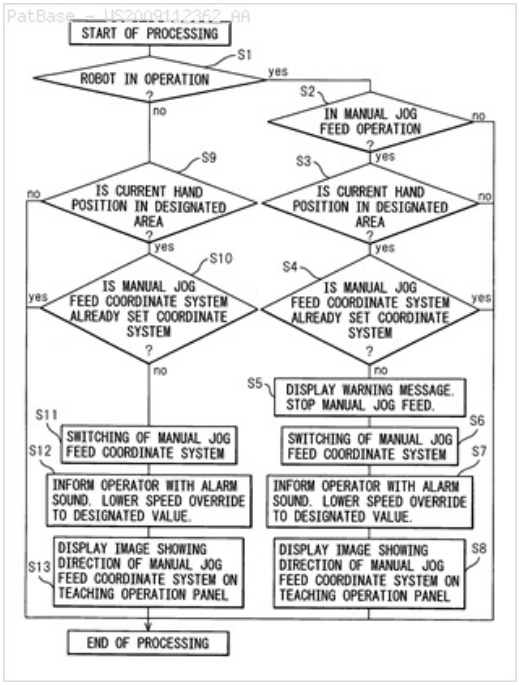
196) Family number: 43187377 (US2009112362A)

© PatBase

Title: CONTROLLER OF WORK PIECE-CONVEYING ROBOT

Abstract: A controller for work piece-conveying robot having: a coordinate system storage section for storing one or more manual jog feed coordinate systems; a working area setting section for setting to a machine tool a working area to which the manual jog feed coordinate system is assigned; a hand position obtaining section for obtaining a current position of the robot hand at each specified sampling period; a determination section for determining whether or not the current position of the robot hand obtained by the hand position obtaining section is within the working area set by the working area setting section; and a coordinate system switching section for switching a present manual jog feed coordinate system to the manual jog feed coordinate system assigned to the working area if it is determined by the determination section that the current position of the robot hand is within the working area.

Classifications:
International (IPC 8-9): B25J13/00 B25J9/00 B25J9/22 G05B15/00 G05B19/00 G05B19/19 G05B19/42 G05B19/425 (Advanced/Invention); B25J13/00 B25J9/00 G05B19/00 G05B19/19 G05B19/42 (Core/Invention)
CPC: Y02P90/083 B25J9/1674 G05B19/425 G05B2219/39442 G05B2219/39445
European: B25J9/16S G05B19/425 S05B219/39442 S05B219/39445
US: 700/251 700/264 700/264P 901/30 901/30S 901/5



Family:

Publication number	Publication date	Application number	Application date
CN101424935 A	20090506	CN200810149169	20080919
CN101424935 B	20110119	CN200810149169	20080919
DE602008025248 D1	20130808	DE200860025248T	20080909
EP2081096 A2	20090722	EP20080015845	20080909
EP2081096 A3	20110126	EP20080015845	20080909
EP2081096 B1	20130612	EP20080015845	20080909
JP2009110190 A2	20090521	JP20070280638	20071029
JP4249794 B1	20090408	JP20070280638	20071029
US2009112362 AA	20090430	US20080230858	20080905
US7848851 BB	20101207	US20080230858	20080905

Priority:

JP20070280638 20071029 EP20080015845 20080909

Probable Assignee: FANUC CORP

Assignee(s): (std): FANUC CORP ; FANUC LTD

Assignee(s): FANUC CO ; FANUC CO LTD

Inventor(s): (std): IKEDA YOSHITAKA ; NISHI HIROJI ; NISHI KOJI ; HIROJI NISHI ; YOSHITAKA IKEDA

Agent(s): WUESTHOFF AND WUESTHOFF PATENTANWAELTE PARTG MBB; THUM BERNHARD; DRINKER BIDDLE AND REATH; DRINKER BIDDLE AND REATH LLP

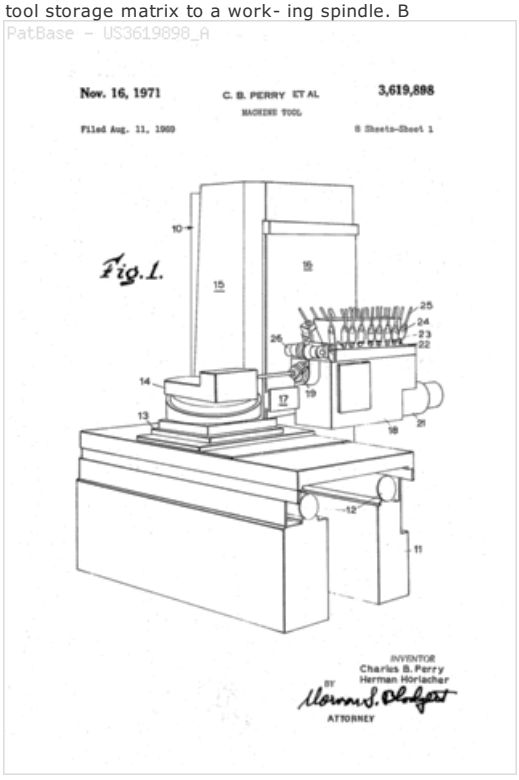
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK TR

197) Family number: 978377 (US3619898A)

Title: MACHINE TOOL

Abstract: ABSTRACT OF THE DISCLOSURE
This invention relates to a machine tool and, more particularly, to a machining apparatus having tool changing capabilities wherein a double-armed interchanger carries successive tools from a tool storage matrix to a work- ing spindle. B

Classifications:
International (IPC 8-9): B23Q3/155 (Advanced/Invention); B23Q3/155 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: B23Q3/1554 Y10T483/1776 Y10T483/1891
European: B23Q3/155D3
US: 29/568 295/680 483/48 483/68



Family:

Publication number	Publication date	Application number	Application date
US3619898 A	19711116	US19690849107	19690811

Priority:
US19690849107 19690811

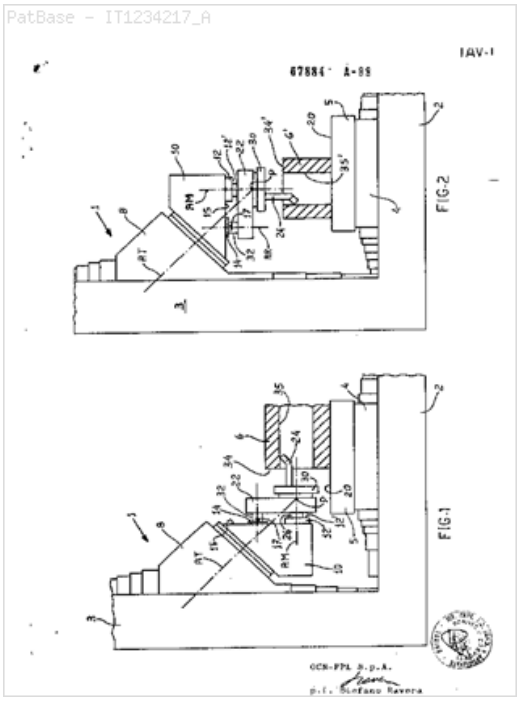
Probable Assignee:	CINCINNATI MILLING MACHINE CO
Assignee(s): (std):	CINCINNATI MILLING MACHINE CO
Assignee(s):	CINCINNATI MILLING MACHINE CO THE
Inventor(s): (std):	HORLACHER HERMAN ; PERRY CHARLES B
Inventor(s):	CHARLES B PERRY ; HERMAN HORLACHER

198) Family number: 6167378 (GB8920846A)

Title: WORKING HEAD FOR A NUMERICAL CONTROL MACHINE TOOL

Abstract: The head (11) is provided with a tool carrying spindle (12) and can be rocked with respect to a frame (8) on an axis inclined 45 DEG, to orientate the spindle in a vertical position or in an horizontal position. To effect facing works, boring works into holes of large diameter and conical boring works, a tool holder (22), is driven by the spindle (12). The holder (22) carries a device (22') for radially adjusting the tool (24), controlled by an auxiliary driving unit (14) located on the frame (8) parallel to the spindle and adapted to be clutched to the adjusting device when the tool holder is clutched to the spindle, the clutching not being affected by head swivelling. The spindle (12) is driven via gears from a hollow shaft in the head, a further shaft inside the first shaft providing, via worm gearing, the input to the auxiliary driving unit (14). Both shafts have joints allowing for axial movement of the head during uncoupling from the frame when being swivelled.

Classifications:
International (IPC 8-9): B23Q1/54 B23Q5/04 (Advanced/Invention); B23Q1/25 B23Q5/00 (Core/Invention)
International (IPC 1-7): B23B29/03 B23B29/034 B23C1/12 B23Q1/12
CPC: B23Q1/54 B23Q5/043
European: B23Q1/54 B23Q5/04D



Family:

Publication number	Publication date	Application number	Application date
DE3932237 A1	19900405	DE19893932237	19890927
FR2637211 A1	19900406	FR19890012717	19890928
GB2223194 A1	19900404	GB19890020846	19890914
GB8920846 A0	19891101	GB19890020846	19890914
IT1234217 A	19920506	IT19880067884	19881003
IT8867884 A0	19881003	IT19880067884	19881003

Priority:

IT19880067884 19881003

Probable Assignee: OCN PPL S P A

Assignee(s): (std)**:** OCN PPL S P A ; OCN PPL SPA

Inventor(s): (std)**:** LIMONGELLI FELICE ; LIMONCELLI FELICE ; GUELI FRANCESCO ; FAVARETO MARCELLO

Inventor(s): FAVARETO MARCELLO VILLARBASSE ; GUELI FRANCESCO BORGOFRANCO D IVREA ; MARCELLO FAVARETO ; LIMONCELLI FELICE SAMONE ; FELICE LIMONCELLI ; FELICE LIMONGELLI ; FRANCESCO GUELI

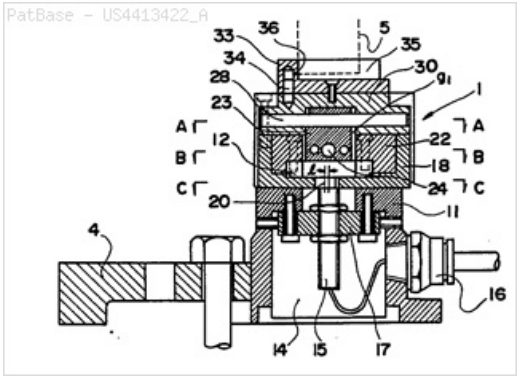
199) Family number: 2438379 (US4413422A)

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Title: APPARATUS FOR DETECTING THE POSITION OF A MACHINE TOOL SPINDLE

Abstract: An apparatus for detecting the position of a machine tool spindle is intended to detect the position of the thermally displaced spindle in the x and y directions, respectively, by a single proximity switch to prevent the accuracy of machining from being deteriorated by the thermal displacement due to the heat generation in the bearing or the like of the spindle operated at a high speed, and the apparatus includes a proximity switch fixedly mounted on a base, a proximity member having a sensing hole formed therein adjacent to the proximity switch and slidably mounted on the base, a contactor coupled to the proximity member, and mechanisms for returning the contactor and the proximity member into their original positions in response to the displacement thereof, the base being fixedly mounted on the table of the machine tool, and the contactor being formed with a right angle x-direction and y-direction contact surface adapted for contact with a measuring element mounted on the spindle of the machine tool, thereby using the detected values as zero points and subjecting the count values of coordinates x-axis and y-axis counters of an NC control panel to zero point calibration and using the resulting point as the origin of coordinate in the processing of the work.

Classifications:
International (IPC 8-9): B23Q17/22 G01M1/12 G05B19/18 (Advanced/Invention);
B23Q17/22 G01M1/00 G05B19/18 (Core/Invention)
International (IPC 1-7): B23Q17/00 G01B11/00 G01B7/00 G01M1/12 G05B19/18
CPC: B23Q3/15534 G05B19/18
European: G05B19/18
US: 33/174PC 33/185R 33/520 33/558



Family:

Publication number	Publication date	Application number	Application date
DE0051937 T1	19841025	DE19810304921T	19811020

DE3167868 D1	19850131	DE19813167868	19811020
EP0051937 A1	19820519	EP19810304921	19811020
EP0051937 B1	19841219	EP19810304921	19811020
JP1240943 C3	19841126	JP19800156987	19801110
JP57083342 A2	19820525	JP19800156987	19801110
JP59018183 B4	19840425	JP19800156987	19801110
KR19830008217 A	19831116	KR19810004031	19811023
KR830008217 A	19831116	KR19810004031	19811023
KR880001720 B1	19880908	KR19810004031	19811023
US4413422 A	19831108	US19810318364	19811105

Priority:

JP19800156987 19801110

Probable Assignee: KITAMURA MACHINERY CO LTD

Assignee(s): (std): KITAMURA MACHINERY CO LTD ; KITAMURA KOUICHIROU

Assignee(s): KITAMURA MACHINERY CO LTD A CORP OF JAPAN ; KITAMURA KOICHIRO ; KITAMURA KIKAI K K ; KITAMURA KIKAI K K TAKAOKA TOYAMA JP ; KITAMURA KIKAI KABUSHIKI KAISHA ; KITAMURA KIKAI KABUSHIKI KAISHA KITAMURA MACHINERY CO LTD ; KITAMURA KIKAI KITAMURA MACHINER KK ; KITAMURA KIKAI KK

Inventor(s): (std): KITAMURA KOICHI ; KITAMURA KOICHIRO ; KITAMURA KOUICHIROU

Inventor(s): KITAMURA KOICHI TAKAOKA SHI TOYAMA KEN JP

Designated states: BE DE FR GB IT NL SE

200) Family number: 34256383 (US2007258782A)

© PatBase

Title: PROCESSING TOOL

Abstract: A case is mounted to the outer portion of the bottom portion of the shank through a bearing and an absorption rod is situated in an axial hole provided in the axial direction on the bottom of the shank such that it is slidable in the axial direction. An absorption spring for urging the absorption rod in the axial direction is installed between the absorption rod and the shank and a tiltable case is situated on the bottom within the case such that it is capable of tilting with respect to the axial line. A holder is situated rotatably through a bearing within the tiltable case. A slidable holder provided with a chuck portion for a tool at a leading end thereof is situated slidably in the axial direction and the bottom end portion of the absorption rod and the top end portion of the holder are connected to each other through a universal joint. A tilt supporting pin unit in which a plurality of tilt supporting pins are directed downward and projected by being urged by a spring is situated within a case located around the outer peripheral portion of the universal joint and the tips of the tilt supporting pins of the tilt supporting pin unit are brought into contact with a pressure receiving plate provided above the tiltable case.

Classifications:

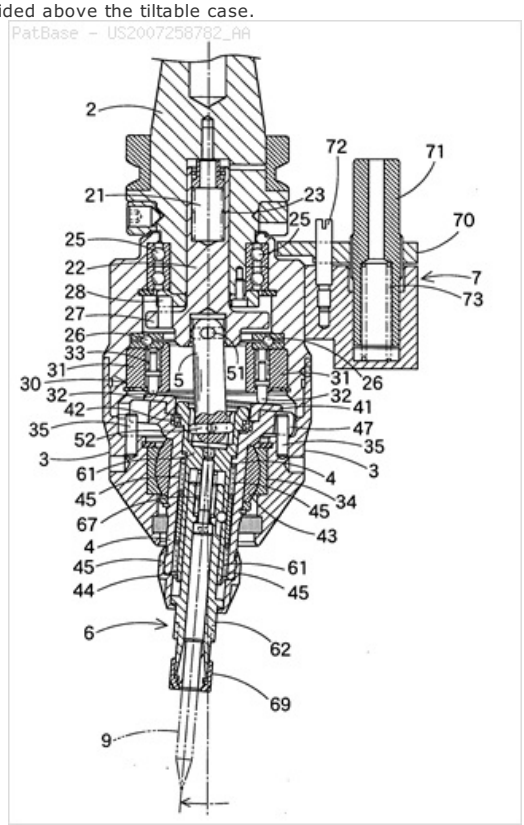
International (IPC 8-9): B23B31/00 B23B31/02 B23B31/36 B23B43/00 B23C3/12 B23C5/26 B23Q1/70 B23Q3/00 B23Q3/12 B23Q5/04 B24B41/04 B24B9/00 (Advanced/Invention);
B23B31/00 B23B31/36 B23C3/12 (Advanced/Non-invention);
B23B31/00 B23B31/02 B23B43/00 B23C3/12 B23C5/00 B23Q3/00 B23Q5/00 B24B41/00 B24B9/00 (Core/Invention);
B23C3/12 (Core/Non-invention)

International (IPC 1-7): B24B9/00

CPC: Y10T279/17017 Y10T408/665 B23Q11/0032 B23Q3/12 Y10T409/309408

European: B23Q11/00D B23Q3/12

US: 279/16 408/127 409/232



Family:

Publication number	Publication date	Application number	Application date
CN101069952 A	20071114	CN200710101128	20070429
CN101069952 B	20110720	CN200710101128	20070429
DE102007019515 A1	20071115	DE200710019515	20070425
DE102007019515 B4	20170914	DE200710019515	20070425
JP2007301641 A2	20071122	JP20060129379	20060508
JP3868474 B1	20070117	JP20060129379	20060508
KR101376242 B1	20140321	KR20070043990	20070507
KR20070108820 A	20071113	KR20070043990	20070507
TH90447 A	20080710	TH20071002209	20070504

TW200800499 A	20080101	TW20070113573	20070418
TWI413574 B	20131101	TW20070113573	20070418
US2007258782 AA	20071108	US20060634935	20061207
US7717653 BB	20100518	US20060634935	20061207

Priority:

JP20060129379 20060508

Probable Assignee: TSUKASA MACHINE IND CO LTD

Assignee(s): (std)**:** TSUKASA KOKI KK ; TSUKASA MACHINE IND CO LT ; TSUKASA MACHINE IND CO LTD ; TSUKASA MACHINE INDUSTRY CO LT ; TSUKASA MACHINE INDUSTRY CO LTD

Assignee(s): TSUKASA MACHINE INDUSTRY CO ; TSUKASA MACHINE IND ; TSUKASA MACHINE IND CO

Inventor(s): (std)**:** YOSHIHIRO MIYATA ; MAKOTO MIZUMUKAI ; MIZUMUKAI MAKOTO ; MIYATA YOSHIHIRO ; MIMUKAI MAKOTO ; MAKOTO MIYATA YOSHIHIRO MIZUMU

Inventor(s): MIYATA YOSHIHIRO MIZUMUKAI MAKOTO

Agent(s): KRATZ QUINTOS AND HANSON LLP; EDWARDS ANGELL PALMER AND DODGE LLP

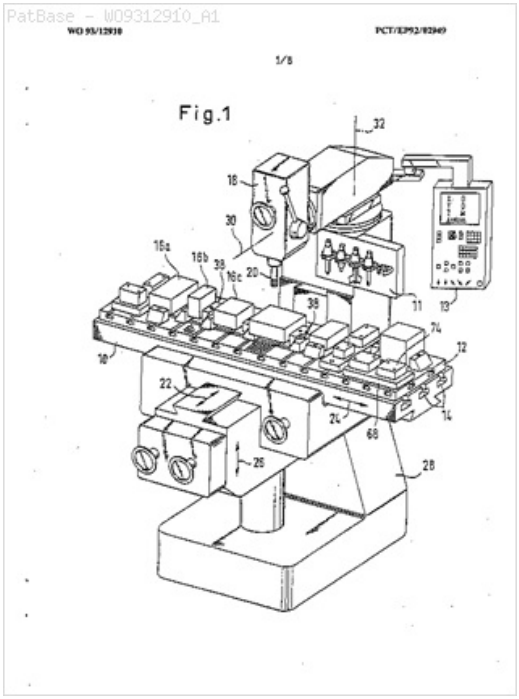
201) Family number: 12773384 (WO9312910A1)

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Title: MACHINING OR TESTING DEVICE, IN PARTICULAR MACHINE-TOOL, WITH A CLAMPING TABLE FOR OBJECTS TO BE CLAMPED

Abstract: In order to clamp an object (36) on a support surface (12a) of a support (12), the support surface (12) is provided with a grid, whereas the object (36) has on its base surface two crossed linear gratings (36b, 36c). Fastening means (12i, 12k) arranged at the side of the support below the support surface allow the object (36) to be clamped on the support surface (12a) in the area of the grid (12b).

Classifications:
International (IPC 8-9): B23Q16/08 (Advanced/Invention); B23Q16/00 (Core/Invention)
International (IPC 1-7): B23Q16/08 B23Q16/8 B23Q3/18 F16B1/00
CPC: B23Q16/08
European: B23Q16/08



Family:

Publication number	Publication date	Application number	Application date
AT152023 E	19970515	AT19920902118T	19921218
DE4142362 A1	19930708	DE19914142362	19911220
DE59208413 D1	19970528	DE19925008413	19921218
EP0617651 A1	19941005	EP19930902118	19921218
EP0617651 B1	19970423	EP19930902118	19921218
ES2102006 T3	19970716	ES19930902118T	19921218
WO9312910 A1	19930708	WO1992EP02949	19921218

Priority:

DE19914142362 19911220 DE19925008413 19921218 WO1992EP02949 19921218

Probable Assignee: FISCHER WOLFGANG

Assignee(s): (std)**:** FISCHER WOLFGANG

Assignee(s): FISCHER WOLFGANG 8401 AUFHAUSEN DE ; FISCHER WOLFGANG 93089 AUFHAUSEN DE

Inventor(s): (std)**:** FISCHER WOLFGANG

Inventor(s): FISCHER WOLFGANG 8401 AUFHAUSEN DE ; FISCHER WOLFGANG 93089 AUFHAUSEN DE

Designated states: AT BE CH DE DK ES FR GB GR IE IT JP LI LU MC NL PT SE US

202) Family number: 52369384 (WO12153157A2)

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Title: METHOD FOR OPTIMIZING CUTTING FORCES IN A MILLING PROCESS AND COMPUTER-CONTROLLED MILLING MACHINE USING THE SAME METHOD

Abstract: The present invention relates to a computer-controlled milling machine comprising a milling tool (210) for machining a workpiece, a measuring unit (230) for measuring the cutting forces exerted by the milling tool (210) to the workpiece, a simulation module (240) for simulating the milling process to determine a contact area between the workpiece and the milling tool (210) by using a multi-dexel representation of the workpiece, a prediction module (250) for receiving the milling force measurements and the simulated geometrical data, and for generating predicted cutting forces from the measured cutting forces and the simulated cutting forces, and a control unit (220) for receiving the predicted cutting forces and for adjusting the operational parameters of the milling process according to the predicted cutting forces so as to reach optimum values for the actual cutting forces acting to milling tool (210).The invention also relates to a method of optimizing cutting forces in a milling process using the aforementioned computer-controlled milling machine.

Classifications:
International (IPC 8-9): B23Q15/12 G05B17/02 G05B19/18 (Advanced/Invention)
CPC: G05B17/02 G05B2219/33301 G05B2219/37355 G05B2219/37437 G05B2219/49099

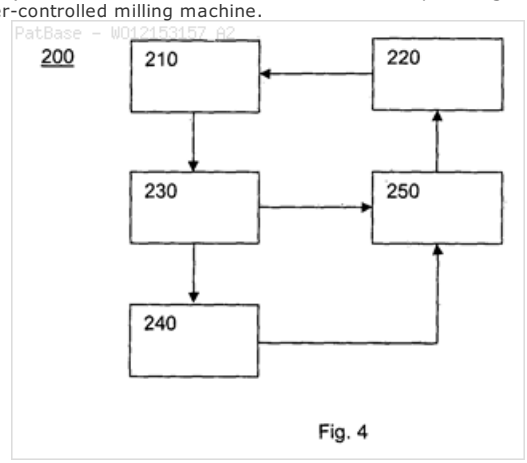


Fig. 4

Family:

Publication number	Publication date	Application number	Application date
HU1100243 AB	20121128	HU20110000243	20110509
HU4590 U	20160128	HU20130000121U	20110509
WO12153157 A2	20121115	WO2012HU00035	20120508
WO12153157 A3	20130307	WO2012HU00035	20120508

Priority:
HU20110000243 20110509

Probable Assignee: PECSI TUDOMANYEGYETEM

Assignee(s): (std)**:** PECSI TUDOMANYEGYETEM ; TUKORA BALAZS

Inventor(s): (std)**:** TUKORA BALAZS

Agent(s): DANUBIA PATENT AND LAW OFFICE LLC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

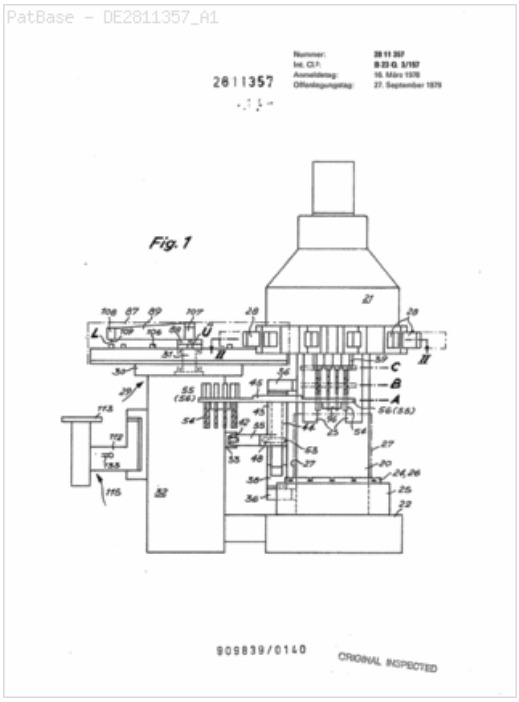
203) Family number: 1703384 (DE2811357A1)

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Title: TOOL CHANGER FOR MULTISPINDLE DRILLING MACHINE - HAS ROTATING ARM TO TRANSFER SETS OF DRILLS IN PARTICULAR CONFIGURATION FROM MAGAZINE

Abstract: The multiple spindle drilling machine (20) has a set of drills (39) arranged to drill a particular configuration of holes. This set can be quickly exchanged for another set to drill a different configuration by a rotating arm (45) mounted on a column (44) which can slide in a vertical guide (38). A magazine (29) for storing sets of drills is in the form of a rotating platform and brings the required set (55) in line with the arm (45). As the arm rises to receive the drill set (55) it also removes the drill set (39) from the drilling head (21). The arm (45) then rotates through 180 deg. to exchange the drill sets.

Classifications:
International (IPC 8-9): B23Q3/157 (Advanced/Invention);
B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: B23Q3/15713
European: B23Q3/157C



Family:

Publication number	Publication date	Application number	Application date
DE2811357 A1	19790927	DE19782811357	19780316

Priority:

DE19782811357 19780316

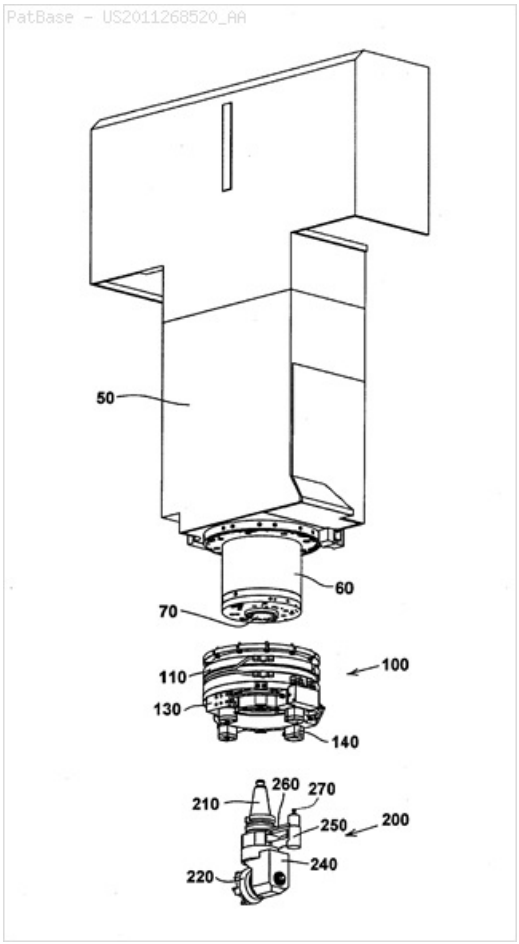
Probable Assignee:	EWERTOWSKI NORBERT ING GRAD
Assignee(s): (std)**:**	EWERTOWSKI NORBERT ING GRAD
Assignee(s):	EWERTOWSKI NORBERT ING
Inventor(s): (std)**:**	EWERTOWSKI NORBERT ING GRAD
Inventor(s):	EWERTOWSKI NORBERT ING

204) Family number: 47099385 (US2011268520A) © PatBase

Title: ANGLE TOOL HOLDER FOR FIVE-FACE MACHINING

Abstract: The invention provides an angle tool holder to be disposed on an attachment attached to a spindle head of a vertical machining center and holding the angle tool holder to enable five-face machining of a workpiece. The angle tool holder denoted as a whole by reference number 500 has a shank 510 inserted to a spindle of the main machine, wherein a rotation of the shank 510 is transmitted via a gear transmission mechanism or the like disposed in a housing 540 so that the direction of a drive shaft thereof is varied orthogonally to thereby drive the angle cutter 520. An arm 550 connected to the housing 540 has three pull stud bolts 570 disposed thereon. The three pull stud bolts 570 are arranged at 90-degree intervals, and are clamped simultaneously by three collet chucks out of the four collet chucks disposed on the attachment unit for five-face machining.

Classifications:
International (IPC 8-9): B23B51/00 B23C1/12 B23Q16/02 B23Q3/12 B23Q5/04 (Advanced/Invention)
CPC: Y10T408/865 Y10T409/30448 Y10T409/307672 Y10T409/308288 Y10T409/309296 Y10T483/1738 B23Q5/045 B23Q16/021
European: B23Q16/02B B23Q5/04D2
US: 408/187 408/187P 409/144 409/201 409/201S 409/212 409/212S 409/230 409/230S 483/32 483/32S



Family:

Publication number	Publication date	Application number	Application date
CN102149512 A	20110810	CN200980119744	20091001
CN102149512 B	20130821	CN200980119744	20091001
DE602009009156 D1	20121018	DE2009600091567	20091001
EP2335866 A1	20110622	EP20090845058	20091001
EP2335866 A4	20111102	EP20090845058	20091001
EP2335866 B1	20120822	EP20090845058	20091001
JP2011039886 A1	20130221	JP20100516714T	20091001
JP4542626 B1	20100915	JP20100516714T	20091001
US2011268520 AA	20111103	US20090992006	20091001
US8708623 BB	20140429	US20090992006	20091001
WO11039886 A1	20110407	WO2009JP67173	20091001

Priority:

EP20090845058 20091001 WO2009JP67173 20091001

Probable Assignee: YAMAZAKI MAZAK CORP

Assignee(s): (std)**:** ITO DAISUKE ; USUDA SATOI ; YAMAZAKI MAZAK CORP ; YOSHINOBU SATOSHI

Inventor(s): (std)**:** DAISUKE ITO ; SATOI USUDA ; SATOSHI YOSHINOBU ; ITO DAISUKE ; YOSHINOBU SATOSHI ; USUDA SATOI

Agent(s): VOSSIUS AND PARTNER PATENTANWAELTE RECHTSANWAELTE MBB; MOINAS MICHEL; AIVAZIAN DENIS; RENNER OTTO BOISSELLE AND SKLAR LLP; PATENT CORPORATE BODY DAI ICHI KOKUSAI TOKKYO JIMUSHO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

205) Family number: 28643386 (US5439431A)

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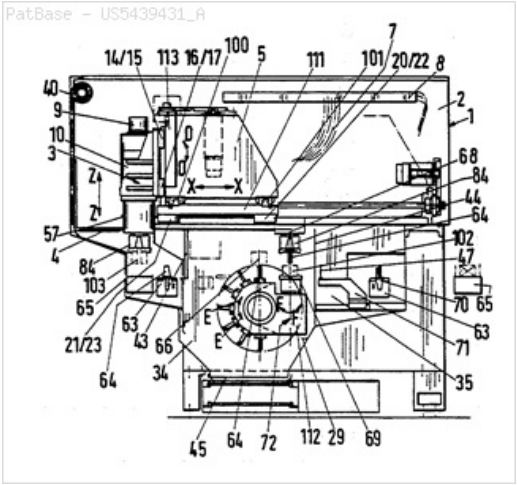
Title: MACHINING CENTRE CONSTRUCTED FROM ASSEMBLIES

Abstract: A machining center composed of a plurality of assemblies, with each assembly including a machine base. Each machine base includes a compound slide as well as guides for guiding a movement of the compound slide. A motor driven main spindle is adapted to be attached to the compound slide and is movable along a plurality of axes, with facilities being provided for collecting swarf and coolant. A working area housing is attached to the machine structure with the housing including a container adapted to be mounted on the machine structure as a module to house control elements and power supply. Openings are provided for enabling a collection and removal of swarf with additional openings being provided for enabling an accommodation of a storage and transportation unit. A probe is incorporated in a machine control for enabling a checking of machined workpieces, and a sheet metal cover, fastened to the compound slide, includes a hole penetrated by the motor spindle with a spindle attachment. The motor spindle penetrates the sheet metal cover in a sealed fashion.

Classifications:

International (IPC 8-9): B23B7/16 B23Q1/00 B23Q1/01 B23Q11/08

B23Q11/12 B23Q37/00 B23Q39/02 B23Q7/03 (Advanced/Invention); B23B7/00 B23Q1/00 B23Q11/08 B23Q11/12 B23Q37/00 B23Q39/00 B23Q7/03 (Core/Invention)
International (IPC 1-7): B23B27/00 B23B39/02 B23F23/02 B23Q1/00 B23Q1/01 B23Q1/02 B23Q11/02 B23Q11/12 B23Q3/152 B23Q3/157 B23Q37/00 B23Q39/00 B23Q39/02 B23Q7/00 G01B21/00
CPC: B23Q11/0067 Y10S29/056 B23Q11/08 B23Q1/00 B23Q7/03 B23Q37/00 Y10T29/5114 Y10T74/219 Y10T408/91 Y10T409/30392 Y10T483/16 Y10T483/1705 Y10T483/1719 Y10T483/1795 Y10T409/309576
European: B23Q1/00 B23Q11/08 B23Q37/00 B23Q7/03
US: 29/27C 29/DIG.56 408/234 409/134 409/235 483/14 483/18 483/24 483/56 74/608



Family:

Publication number	Publication date	Application number	Application date
AT168303 E	19980815	AT19930104144T	19930314
AU199336786 A1	19931111	AU19930036786	19930406
AU657852 B2	19950323	AU19930036786	19930406
BRPI9301487 A	19931013	BR1993PI01487	19930407
CA2093773 AA	19931011	CA19932093773	19930408
CA2093773 C	20011218	CA19932093773	19930408
CN1059622 C	20001220	CN19931004213	19930410
CN1080230 A	19940105	CN19931004213	19930410
CZ282078 B6	19970514	CZ19930000627	19930409
CZ9300627 A3	19940119	CZ19930000627	19930409
DE4212175 A1	19931014	DE19924212175	19920410
DE4212175 C2	19940210	DE19924212175	19920410
DE59308762 D1	19980820	DE19935008762	19930314
DE9321647 U1	20020207	DE19930021647U	19930314
DK0568798 T3	19990201	DK19930104144T	19930314
DK0568798 T4	20031027	DK19930104144T	19930314
EP0568798 A1	19931110	EP19930104144	19930314
EP0568798 B1	19980715	EP19930104144	19930314
EP0568798 B2	20031001	EP19930104144	19930314
EP0568798 B9	20040506	EP19930104144	19930314
ES2118153 T3	19980916	ES19930104144T	19930314
ES2118153 T5	20040701	ES19930104144T	19930314
JP2653413 B2	19970917	JP19930083173	19930409
JP6143102 A2	19940524	JP19930083173	19930409
KR0124546 B1	19971209	KR19930005922	19930409
MX9302059 A1	19940729	MX19930002059	19930407
PL171162 B1	19970328	PL19930298447	19930408
PL298447 A1	19940808	PL19930298447	19930408
RU2129064 C1	19990420	RU19930004677	19930409
US5439431 A	19950808	US19930043796	19930407
ZA9302520 A	19931028	ZA19930002520	19930408

Priority:

DE19924212175 19920410 DE199300216470 19930314 DE19935008762 19930314
EP19930104144 19930314

Probable Assignee: EMAG HOLDING GMBH

Assignee(s): (std): EHMAG MASHINEN FERTRIBS U SE ; EHMAG MASHINEN FERTRIBS U SERVIS GMBKH ; EHMAG MASHINEN FERTRIBS UND SE ; EMAG MASCH VERTRIEBS SERV GMBH ; EMAG MASCH VERTRIEBS U S ; EMAG MASCHFAB GMBH ; EMAG MASCH VERTIEBS U SERVICE GMBH

Assignee(s): EMAG MASCHINEN VERTIEBS UND SERVICE GMBH ; EMAG HOLDING GMBH ; EMAG MASCHF GMBH ; EMAG MASCH VERTRIEBS U SERVICE GMBH 73084 SALACH DE ; EMAG MASCHINEN VERTRIEBS UND SERVICE GMBH 73084 SA ; EMAG MASCHINENFABRIK GMBH ; EMAG MASCHINEN VERTRIEBS UND SERVICE GMBH 73084 SALACH DE ; EMAG MASCH VERTRIEBS U ; EMAG MASCH VERTRIEBS U SERVICE GMBH ; EMAG MASCHINEN VERTRIEBS UND SERVICE GMBH ; EHMAG MASHINEN FERTRIBS UND SERVIS GMBKH ; EE EMU AA GEE FUEATORIIPUSU UNTO ZERUIISU GMBH ; EE M A G FUEATORIIPUSU AND ZERUBUIISU GMBH

Inventor(s): (std): KHAJNTS SHTAJNBAKH ; NORBERT HEBBRUEGGEN ; NORBERT HEBBRUGGEN ; NORBERT HESSBRUEGGEN ; NORBERT HESSBRUGGEN ; NORBERT KHESBRJUGGEN ; HEINA STEINBACH ; HEINZ STEINBACH ; HESBRUEGGEN NORBERT ; HESSBRUEGGEN NORBERT ; STEINBACH HEINZ ; STEINBACH HEINA ; HESSBRUGGEN NORBERT ; HEBBRUGGEN NORBERT

Inventor(s): HESSBRUEGGEN NORBERT 7321 ESCHENBACH DE ; NORUBERUTO HESUBURIYUTSUGEN ; NORUBERUTO HESUBURYUTSUGEN ; STEINBACH HEINZ 7900 ULM DE ; STEINBACH HEINZ W 7900 ULM DE ; HAINTSU SHIYUTAINBATSUHA ; HAINTSU SHUTAINBATSUHA

Agent(s): PHILLIPS ORMONDE FITZPATRICK

Designated states: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

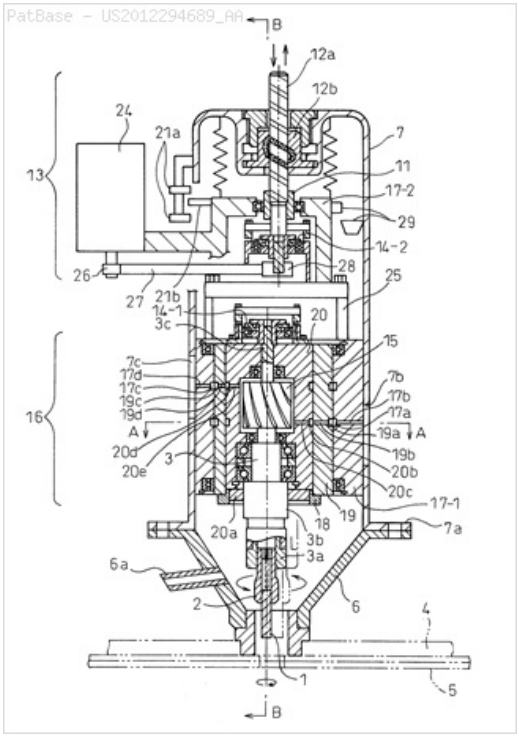
206) Family number: 49385387 (US2012294689A)

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Title: HOLE MAKING APPARATUS

Abstract: An eccentric rotation drive mechanism which is rotatably contained in a first slide container is provided with an outer cylinder, an internal cylinder which is housed at eccentric position thereof and a first air motor contained therein. One end of a rotation shaft portion, that is, a shaft of the first air motor is fastened to a hole making tool, the other end of which is coupled to the end surface of the outer cylinder through a first reduction device. The rotation of the air motor makes the hole making tool rotate and revolve and simultaneously the rotation of a second air motor mounted outside of a casing is transmitted to a ball screw through a rotation transmission device inside of a second slide container to advance and retreat a feed drive mechanism so as to machine a hole in a workpiece.

Classifications:
International (IPC 8-9): B23C1/06 B23C3/00 B23C9/00 B23Q11/10 B23Q5/22 (Advanced/Invention)
CPC: Y10T409/307616 B23B51/0036 B23B2226/275 B23C3/02 B23C2220/52
European: B23B51/00D2 L23B226/27B
US: 409/200



Family:

Publication number	Publication date	Application number	Application date
CN102892538 A	20130123	CN201080065838	20101228
EP2529867 A1	20121205	EP20100844756	20101228
JP2011093002 A1	20130530	JP20110551721T	20101228
US2012294689 AA	20121122	US20100575824	20101228
WO11093002 A1	20110804	WO2010JP73902	20101228

Priority:

JP20100019541 20100129 WO2010JP73902 20101228

Probable Assignee: OSG CORP

Assignee(s): (std): HAMAMATSU FOUND SCI AND TECH PRO ; HAMAMATSU FOUNDATION FOR SCIENCE AND TECHNOLOGY PROMOTION ; OSG CORP ; YAGISITA HUKUZO ; YAGISTA HUKUZO

Assignee(s): YAGASITA HUKUZO

Inventor(s): (std): YAGISITA HUKUZO ; YAGISTA HUKUZO

Agent(s): DEMPSTER BENJAMIN JOHN NAFTEL; AOKI ATSUSHI; SHIMADA TETSURO; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

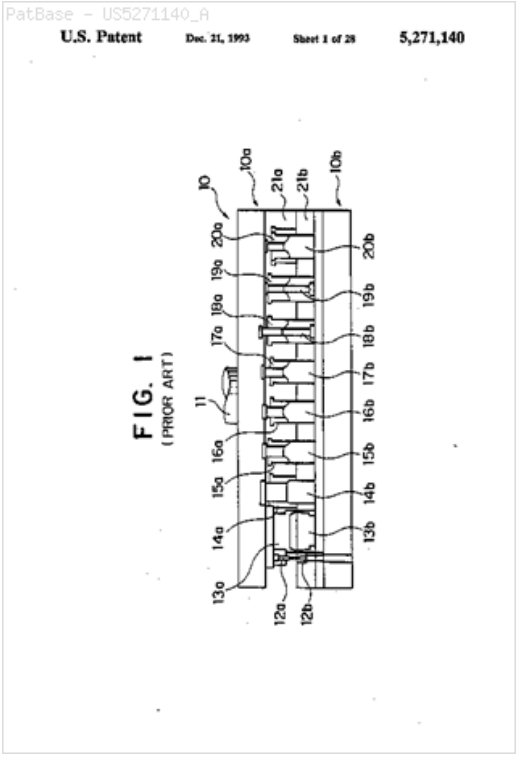
207) Family number: 29117389 (US5271140A)

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Title: INDEX-FEED MACHINING SYSTEM

Abstract: An index-feed machining system having a pilot machining device for sequentially forming pilot portions on a workpiece indexed at predetermined pitches, a pilot guide means engaging with the pilot portions, and a plurality of independent machining means corresponding to a plurality of machining processes; all of these means being sequentially disposed in the feeding direction of workpiece; in which the pilot machining means and the pilot guide means are constructed integrally. The index-feed machining system lends itself to the easy positioning of machining means, and to the manufacture of high-precision products.

Classifications:
International (IPC 8-9): B21D43/04 B21D43/05 B21D43/06 B23Q16/02 B23Q41/04 B30B13/00 B30B15/02 B30B15/06 G05B19/418 (Advanced/Invention);
B21D43/04 B21D43/05 B23Q41/00 B30B13/00 B30B15/02 B30B15/06 G05B19/418 (Core/Invention)
International (IPC 1-7): B21D43/00 B21D43/04 B23P23/00 B23Q16/02 B23Q41/04 B26D1/03 B26F1/04 B30B13/00 B30B15/02 B30B15/06
CPC: Y10T29/5138 Y10T29/5191 Y10T29/5197 Y10T29/5198 Y10T29/53257 Y10T29/53409 B21D43/06 B21D43/05 Y10T83/4577 Y02P90/02
European: B21D43/05 B21D43/06
US: 29/335 29/33K 29/33Q 29/33S 29/564.2 29/758 29/793 72/442



Family:

Publication number	Publication date	Application number	Application date
CA2042472 AA	19911112	CA19912042472	19910510
CA2042472 C	19950117	CA19912042472	19910510
DE69105611 D1	19950119	DE19916005611	19910508
DE69105611 T2	19950413	DE19916005611T	19910508
EP0456205 A1	19911113	EP19910107473	19910508
EP0456205 B1	19941207	EP19910107473	19910508
JP2504605 B2	19960605	JP19900121760	19900511
JP2909146 B2	19990623	JP19900121758	19900511
JP2909147 B2	19990623	JP19900121759	19900511
JP3217778 B2	20011015	JP19900121761	19900511
JP4017930 A2	19920122	JP19900121760	19900511
JP4017996 A2	19920122	JP19900121758	19900511
JP4017997 A2	19920122	JP19900121759	19900511
JP4017998 A2	19920122	JP19900121761	19900511
KR19910019725 A	19911219	KR19910007529	19910510
KR950001029 B1	19950208	KR19900007529	19910510
KR950001029 B1	19950208	KR19910007529	19910510
KR950001029 B1	19950208	KR19900007529	19910510
US5271140 A	19931221	US19910697602	19910508

Priority:

JP19900121758 19900511 JP19900121760 19900511 JP19900121759 19900511
JP19900121761 19900511 CA19912042472 19910510 CA19912042472 19910510

Probable Assignee: INST TECH PRECISION ENG

Assignee(s): (std): HODEN SEIMITSU KAKO KENGKYUSHO ; INST TECH PRECISION ELECT ; INST TECH PRECISION ENG ; MIYAGI KK ; INSTITUTE OF TECHNOLOGY PRECISION ELECTRICAL DISCH

Assignee(s): OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORK' ; INSTITUTE OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORK'S ; INSTITUTE OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORK S ; INSTITUTE OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORK S KAWASAKI KANAGAWA JP ; INSTITUTE OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORKS ; OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORK S INST ; OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORKS INST ; OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORK S KAWASAKI KANAGAWA JP INST ; OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORK'S INST ; OF TECHNOLOGY PRECISION ELECTRICAL DISCHARGE WORK ; HODEN SEIMITSU KAKO KENKYUSHO KK ; HODEN SEIMITSU KAKO KENKYUSHO LTD ; IGARASHI KAZUO ; FUTAMURA SHOJI

Inventor(s): (std): IKARASHI KAZUO ; IGARASHI KAZUO ; IGARASHI KASUO ; FUTAMURA SHOJI C O INST OF TEC ; FUTAMURA SHOJI

Inventor(s): FUTAMURA SHOJI C O INST OF TECH PREC ELECT KAWASAK ; FUTAMURA SHOJI C O INST OF TECH PREC ELECT

Agent(s): SIM AND MCBURNEY

Designated states: DE IT

208) Family number: 32649390 (WO06018165A1)

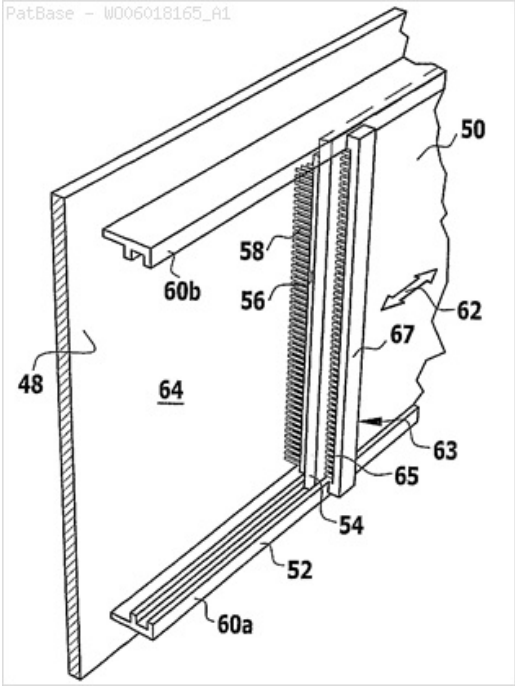
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Title: MACHINE TOOL, COLD-ROLLING MACHINE, AND METHOD FOR CLEANING MACHINE TOOL ZONES

Abstract: The aim of the invention is to create a machine tool comprising at least one movable functional device that can be used in a simple fashion. Said aim is achieved by providing at least one cleaning device which is disposed and embodied such

that a cleaning process can be performed by moving the at least one functional device.

Classifications:
International (IPC 8-9): B02B1/00 B21H3/06 B21H5/02 B23Q1/25 B23Q11/00 (Advanced/Invention);
B02B1/00 B21H3/00 B21H5/00 B23Q1/25 B23Q11/00 (Core/Invention)
International (IPC 1-7): B21H3/06 B23Q11/00
CPC: B21H3/06 B21H5/027 B23Q11/0875
European: B21H3/06 B23Q11/08H L21H5/02R



Family:

Publication number	Publication date	Application number	Application date
AT387985 E	20080315	AT20050774988T	20050805
DE102004041022 A1	20060302	DE200410041022	20040817
DE502005003124 D1	20080417	DE200550003124T	20050805
EP1781448 A1	20070509	EP20050774988	20050805
EP1781448 B1	20080305	EP20050774988	20050805
ES2300044 T3	20080601	ES20050774988T	20050805
WO06018165 A1	20060223	WO2005EP08545	20050805

Priority:
DE200410041022 20040817 WO2005EP08545 20050805

Probable Assignee: EX CELL O GMBH

Assignee(s): (std): BOEHLER HARALD ; EX CELL O GMBH ; HOFMANN GERHARD ; PIKISCH JOHANNES ; STANIK MARKUS

Assignee(s): EX CELL O GMBH HOFMANN GERHARD BOEHLER HARALD PIKI

Inventor(s): (std): BOEHLER HARALD ; HOFMANN GERHARD ; PIKISCH JOHANNES ; STANIK MARKUS ; BOHLER HARALD

Inventor(s): B AND XD6 HLER HARALD

Agent(s): REGELMANN THOMAS

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

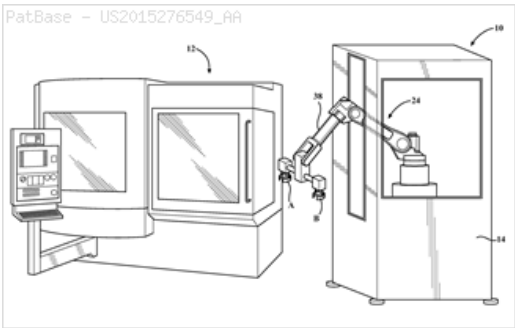
209) Family number: 60453391 (US2015276549A)

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Title: FLEXIBLE AUTOMATION CELL FOR PERFORMING SECONDARY OPERATIONS IN CONCERT WITH A MACHINING CENTER AND ROLL CHECK OPERATIONS

Abstract: An automation cell incorporating elements for performing secondary operations on a machined part is adapted to be disposed adjacent to a machining center for performing the primary operations on the part. The cell incorporates a robotic arm capable of being moved into position with respect to the machining center so as to load machined parts into the machining center and unload primarily machined parts for the performance of secondary operations in the cell. In a preferred embodiment the automation cell performs roll check operations on the primarily machined gear by bringing it into meshed engagement with a master gear and rotating the meshed gears and employing a sensor to monitor the roll-out of the machined gear.

Classifications:
International (IPC 8-9): B07C5/00 B23F23/02 B23F23/12 B23K26/36 B23Q17/20 B23Q7/04 B25J11/00 B25J15/00 B25J15/02 B25J21/00 G01B5/08 G01B7/00 G01B7/28 G01M13/02 G01M13/021 (Advanced/Invention);
B23Q17/00 (Advanced/Non-invention)
CPC: G01M13/021 B23F23/02 B23Q7/04 B23Q17/20 B23Q2017/001 B25J15/0052 B25J21/00 G01B7/282 G01B7/283 B23F23/1218 B23Q7/048 G01B7/003
US: 209/552 219/121.68 33/501.19 33/501.7 414/222.07



Family:

Publication number	Publication date	Application number	Application date
US2015276549 AA	20151001	US20150673932	20150331
US2017131179 AA	20170511	US20170412621	20170123
US2017254724 AA	20170907	US20170592306	20170511
US9551628 BB	20170124	US20150673932	20150331
US10132717 BB	20181120	US20170412621	20170123
US10228303 BB	20190312	US20170592306	20170511

Priority:

US20140972897P 20140331 US20150673932 20150331 US20170412621 20170123 US20170592306 20170511

Probable Assignee: AUTOMATION CONTROLS AND ENGINEERING LLC

Assignee(s): (std): AUTOMATION CONTROLS AND ENG LLC ; AUTOMATION CONTROLS AND ENGINEERING LLC

Inventor(s): (std): LAZIC PREDRAG ; MACKEY CHRIS ; MOORE STEVE

Agent(s): DINSMORE AND SHOHL LLP

210) Family number: 33901391 (US2009053005A)

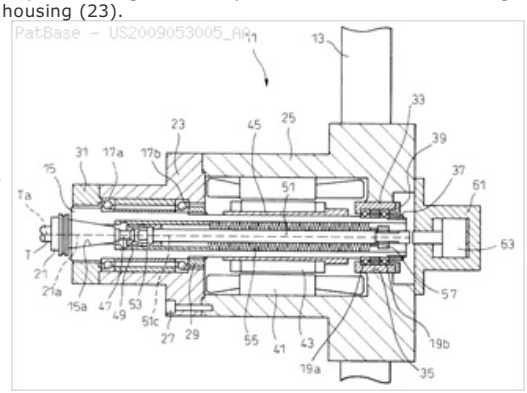
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Title: SPINDLE DEVICE OF MACHINE TOOL

Abstract: The present invention provides a cartridge-type spindle device having an easily separable structure despite the fact that it comprises a rotary joint for a through spindle coolant device. In the cartridge replacement type spindle device (11), front bearings of the spindle are built in a front housing (23) and rear bearings of the spindle (15) are supported on a rear housing (25) so that, when the front housing (23) is separated from the rear housing (25), the front bearings (17a, 17b), the spindle (15), and the rear bearings (19a, 19b) can be separated from the rear housing (25) integrally with the front housing (23). The rotary joint is disposed in a piston (63) of an unclamp means for unclamping a tool (21, T) mounted to the forward end of the spindle (15), so that a draw bar (51) accompanied by a seal ring can be separated from the rear housing (25) and the rotary joint together with the spindle (15) and the front housing (23).

Classifications:

International (IPC 8-9): B23B19/02 B23C7/00
B23Q11/10 (Advanced/Invention);
B23B19/00 B23C7/00 (Core/Invention)
CPC: Y10T408/44 Y10T409/304032 Y10T409/309352
Y10T409/309464 B23B31/265 B23B31/302 B23Q1/70
European: B23B31/26B2 B23B31/30B B23Q1/70
US: 408/56 409/136 409/136S 409/231 409/231P 409/233 409/233S



Family:

Publication number	Publication date	Application number	Application date
DE602005040860 D1	20131010	DE200560040860T	20050526
EP1958718 A1	20080820	EP20050745780	20050526
EP1958718 A4	20101124	EP20050745780	20050526
EP1958718 B1	20130814	EP20050745780	20050526
US2009053005 AA	20090226	US20050914832	20050526
US7972096 BB	20110705	US20050914832	20050526
WO06126284 A1	20061130	WO2005JP10093	20050526

Priority:

EP20050745780 20050526 WO2005JP10093 20050526

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std): KIKKAWA YASUHIKO ; MAKINO MILLING MACHINE

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std): KIKKAWA YASUHIKO

Inventor(s): KIKKAWA YASUHIKO MAKINO MILLING MACHINE CO LTD ; KIKKAWA YASUHIKO MAKINO MILLING MACHINE CO LTD MINAMITSURU GUN

Agent(s): BECKER KURIG STRAUS; PAUL AND PAUL

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

211) Family number: 6132396 (DD296439A)

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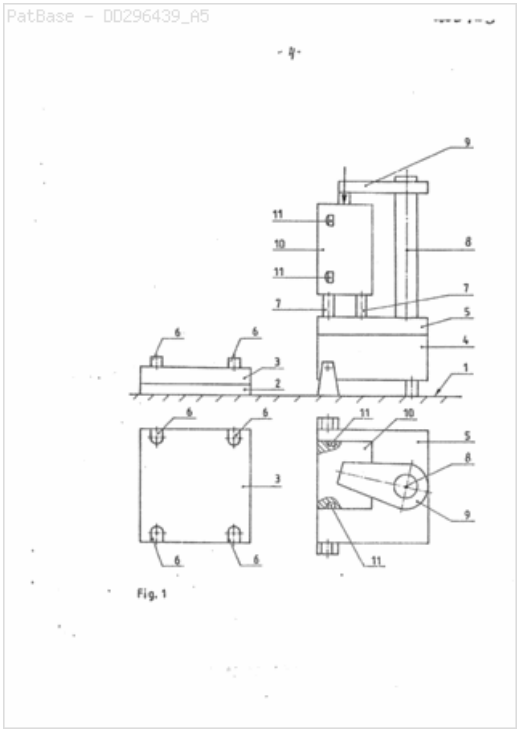
Title: VORRICHTUNG ZUM AUFNEHMEN UND UEBERGEBEN VON WERKSTUECKEN DEVICE FOR TAKING AND PASSING OF WORKPIECES (Machine translation)

Abstract: Source: DD296439A [DE] [Source: Claim 1] 1. Vorrichtung zum Aufnehmen und uebergeben von Werkstuecken, insbesondere fuer die flexible Sechsseitenbearbeitung, mit zwei unter dem Einfluss mindestens einer Steuerung stehenden und auf einem gemeinsamen oder benachbarten Gestellen manipulierbaren Aufnahmeorganen, gekennzeichnet dadurch, dass das erste Aufnahmeorgan (5,19) eine erste Spannvorrichtung fuer anzuarbeitende und mit Formelementen (11) zu versehende Werkstuecke (10) und das zweite Aufnahmeorgan (3,18) eine mit den Formelementen (11) der angearbeiteten Werkstuecke (10) zusammenwirkende zweite Spannvorrichtung aufweist und mindestens ein Aufnahmeorgan (5, 19,3,18) in

eine Lage bringbar ist, in der das angearbeitete Werkstueck (10) von der ersten in die zweite Spannvorrichtung uebergebbar ist.

Machine translation: [Source: claim 1] 1 device to record and pass of workpieces, in particular for flexible six page editing, with two under following the influence of at least one control and manipulated on a common or adjacent frames recording organs, characterized by the fact that the first recording body (5.19) (11) to wrap pieces (10) and the second recording body (3.18) a a first fixture for to zuarbeitende and with form elements with the form elements (11) of the processed workpieces (10) interacting second clamping device has and at least one recording organ (5, 19,3,18) in a location it is bath in the attached work piece (10) from the first into the second Collet is transmitted.

Classifications:
International (IPC 8-9): B23Q7/00 (Advanced/Invention);
B23Q7/00 (Core/Invention)
International (IPC 1-7): B23Q7/00



Family:

Publication number	Publication date	Application number	Application date
DD296439 A5	19911205	DD19900342646	19900710

Priority:
DD19900342646 19900710

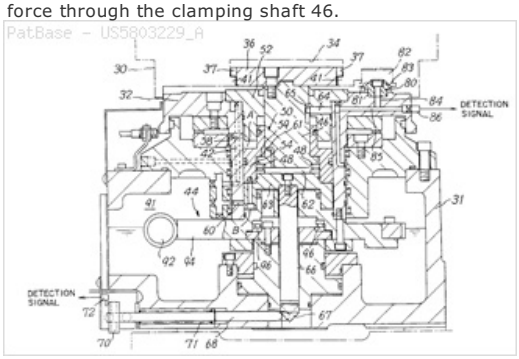
Probable Assignee: HECKERT CHEMN WERKZEUGMASCH
Assignee(s): (std): HECKERT CHEMN WERKZEUGMASCH ; HECKERT CHEMNITZER WERKZEUGMAS
Assignee(s): HECKERT CHEMNITZER WERKZEUGMASCHINEN GMBH DE
Inventor(s): (std): GOTTMANN RALF ; HORN WOLFGANG ; LASCH THORSTEN ; PIEGERT RUDOLF
Inventor(s): PIEGERT RUDOLF DE ; LASCH THORSTEN DE ; HORN WOLFGANG DE ; GOTTMANN RALF DE

212) Family number: 11126398 (US5803229A)

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Title: PALLET CHANGER

Abstract: A pallet changer such that deformation of the pallet at the time of clamping the pallet is suppressed and drawing-in and drawing-out operations of the pallet with respect to the pallet clamping apparatus is eliminated to contribute to high speed pallet exchange is provided. Holding portions 41 projected toward an bore portion 34 opened to the central portion at the lower surface of the pallet 30 are provided. Engagement portions 37 which can be engaged and withdrawn or disengaged with respect to the holding portions 41 are provided at the outer circumferential portion of a disk-shaped clamping member 36 to rotatably and vertically movably supporting the clamping member 36 through a clamping shaft 46, and to connect the clamping member 36 to a driving section 50 for producing a clamping force through the clamping shaft 46.
Classifications:
International (IPC 8-9): B23B31/113 B23Q3/00 B23Q5/02 B23Q7/00 B23Q7/14 (Advanced/Invention);
B23Q7/00 (Advanced/Non-invention);
B23B31/10 B23Q3/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q3/00 B23Q5/02 B23Q7/00 B65G37/00
CPC: Y10T29/5196 B23Q7/1431 B23B31/113
European: B23B31/113 B23Q7/14K2
US: 198/345.3 29/33P



Family:

Publication number	Publication date	Application number	Application date
JP8187637 A2	19960723	JP19940328843	19941228
KR0168506 B1	19990201	KR19950061345	19951228

KR100168506 B1	19990201	KR19950061345	19951228
KR19960021381 A	19960718	KR19950061345	19951228
TW393367 B	20000611	TW19950113886	19951226
US5803229 A	19980908	US19950580123	19951228

Priority:

JP19940328843 19941228

Probable Assignee: TOSHIBA MACHINE CO LTD

Assignee(s): (std)**:** TOSHIBA MACHINE CO LTD

Assignee(s): TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK ; TOSHIBA MACH CO LTD ; TOSHIBA MACHINE CO

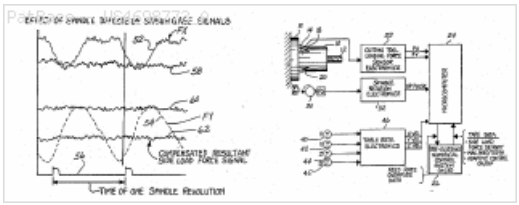
Inventor(s): (std)**:** HOSOKAWA UTAKA ; HOSOKAWA YUTAKA

213) Family number: 5406400 (US4698773A)

Title: Adaptive feed rate override system for a milling machine

Abstract: A system is provided for adaptively limiting the feed rate of a milling machine's positioning axes during a milling operation. Normal operation of the milling machine is controlled by a numerical control system (26). The invention utilizes strain gauges (18, 20) which sense loading force on the cutting tool during milling. A computer (24) is operatively connected to the strain gauges (18, 20). The computer is programmed to receive signals from the strain gauges and to use such signals to automatically override the programmed feed rate in the numerical control system (20), to maintain a specified peak side load on the cutting tool.

Classifications:
International (IPC 8-9): G05B19/18
G05B19/416 (Advanced/Invention);
G05B19/18 G05B19/416 (Core/Invention)
International (IPC 1-7): G05B19/00 G05B19/24
CPC: G05B19/182 G05B19/4163 G05B2219/37357 G05B2219/45145
European: G05B19/18B G05B19/416A S05B219/37357 S05B219/45145
US: 318/571 318/646 364/474 700/160 700/188



Family:

Publication number	Publication date	Application number	Application date
US4698773 A	19871006	US19860825134	19860131

Priority:

US19860825134 19860131

Probable Assignee: BOEING CO

Assignee(s): (std)**:** BOEING CO

Assignee(s): BOEING CO A CORP OF WASHINGTON ; THE BOEING COMPANY

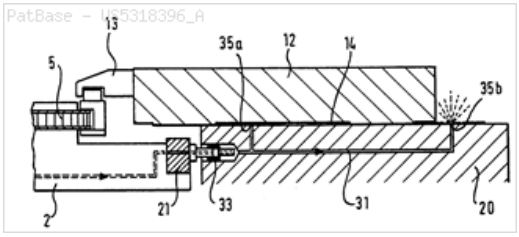
Inventor(s): (std)**:** JEPPSSON JAN

214) Family number: 17108403 (US5318396A)

Title: PALLET CARRIER FOR MACHINE TOOLS

Abstract: The subject of the present invention is a pallet carrier for machine tools, said carrier being mounted on an NC work table and comprising profiled slideways as well as centering elements and hydraulic clamping members. For thorough cleaning and improved adjustment the invention provides pressure-fluid ducts within the pallet carrier coupled to quick-action connectors in the front of the pallet carrier and leading to spray nozzles which are disposed within the slide faces of the said slideways.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/26 B23Q1/38 B23Q3/00 B23Q7/00 B23Q7/14 (Advanced/Invention);
B23Q1/00 B23Q1/26 B23Q3/00 B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23C3/06 B23Q1/0 B23Q1/00 B23Q1/26 B23Q3/00 B23Q7/00 B23Q7/14
CPC: Y10T409/304088 Y10T409/30868 B23Q7/1431 B23Q1/38 B23Q7/1426
European: B23Q1/38 B23Q7/14K B23Q7/14K2
US: 409/137 409/219



Family:

Publication number	Publication date	Application number	Application date
DE59205453 D1	19960404	DE19925005453	19920818
DE9110427 U1	19911114	DE19910010427U	19910823
EP0529480 A1	19930303	EP19920114070	19920818
EP0529480 B1	19960228	EP19920114070	19920818
ES2086596 T3	19960701	ES19920114070T	19920818
JP6063835 A2	19940308	JP19920266461	19920824
US5318396 A	19940607	US19920934369	19920821

Priority:

DE19910010427U 19910823 DE19919110427U 19910823 DE19925005453 19920818

Probable Assignee: DECKEL MAHO GMBH

Assignee(s): (std)**:** DECKEL MAHO GMBH ; MAHO WERKZEUGMASCHBAU BABEL ; MAHO AG

Assignee(s): MAHO WERKZEUGMAS BABEL AND CO ; MAHO AG 8962 PFRONTEN DE ; MAHO AKTIENGESELLSCHAFT ; DECKEL MAHO GMBH 87459 PFRONTEN DE ; MAHO 8962 PFRONTEN DE AG

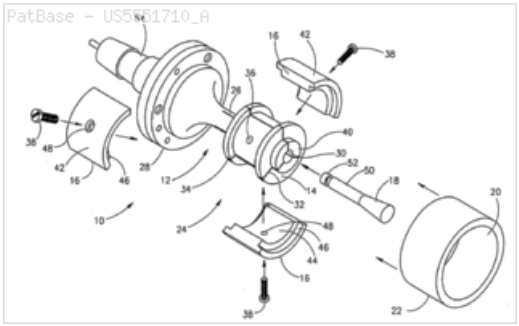
Inventor(s): (std): BERUNAA BABERU ; HAAS PETER ; BABEL WERNER ; PEETAA HAASU
Inventor(s): BABEL WERNER W 8962 PFRONTEN DE ; HAAS PETER W 8959 RIEDEN DE
Designated states: CH DE ES FR GB IT LI

215) Family number: 9916406 (US5551710A)

Title: UNIVERSAL MODULAR SLEEVE-CLAMP SYSTEMS

Abstract: A universal sleeve-clamp for using interchangeable jaw pieces to clamp a workpiece has a sleeve with a plurality of radially moveable elements. Features are provided for locating and attaching the jaw pieces to the radially moveable elements so that, when a clamping taper is made to bear against the radially moveable elements, the radially moveable elements, and hence the interchangeable jaw pieces, are moved radially to clamp the workpiece. The clamping taper may be externally tapered to form an expanding mandrel, or internally tapered to form a collet chuck. The jaw pieces, which are made of soft metal or other easily machinable material, may be shaped for clamping multiple diameters, clamping thin-walled workpieces or for clamping a workpiece eccentrically. A locator plate is used to give additional support to a workpiece, or to align it in a known rotational position for static fixturing.

Classifications:
International (IPC 8-9): B23B31/40 (Advanced/Invention); B23B31/00 (Core/Invention)
International (IPC 1-7): B23B31/40 B23Q B25B5/04
CPC: Y10S269/90 B23B31/4033 Y10T279/1008 Y10T279/1045 Y10T279/17452 Y10T279/3468 Y10T279/3487
European: B23B31/40B4
US: 269/238 269/48.1 269/481 269/900 269/91 269/95 279/153 279/156 279/2.03 279/2.12 279/20 279/212 279/46.6 279/466



Family:

Publication number	Publication date	Application number	Application date
US5551710 A	19960903	US19950396040	19950228
US5918868 A	19990706	US19950396036	19950228
WO9627476 A2	19960912	WO1996US02618	19960227
WO9627476 A3	19961031	WO1996US02618	19960227

Priority:
US19950396036 19950228 US19950396040 19950228
Probable Assignee: TECHCOM TECHNICAL COMPUTERIZED FIXTURING LTD
Assignee(s): (std): FRIEDMAN MARK M ; TECHCOM TECHNICAL COMPUTERIZED
Assignee(s): TECHCOM TECHNICAL COMPUTERIZED FIXTURING LTD
Inventor(s): (std): BRUCHMAN ASHER
Designated states: AT BE CA CH CN DE DK ES FR GB GR IE IT JP KR LU MC NL PT SE

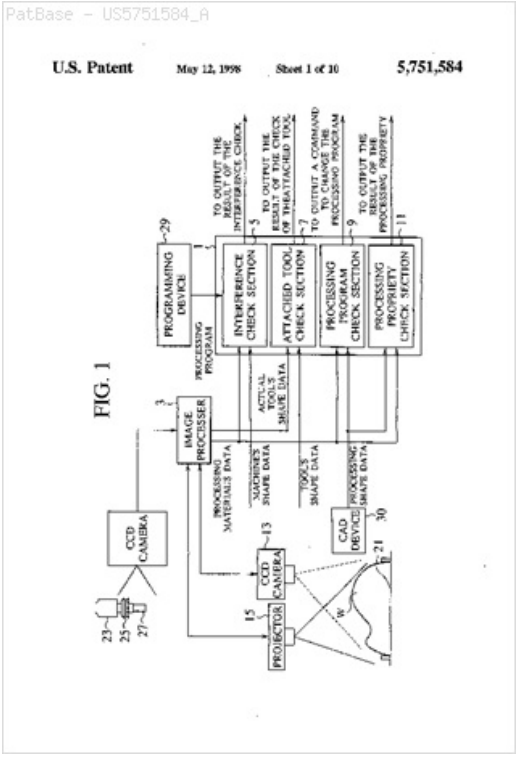
216) Family number: 10805406 (US5751584A)

Title: Method for checking interference, method for checking processing program, and method for checking processing propriety

Abstract: The processing material's shape data is obtained by measuring the three-dimensional shape of the processing material W by the three-dimensional measuring device 45, the machine's shape data defining the three-dimensional shape of the machine side including the main shaft head provided with the processing tool and the tool holder attached thereto is obtained, and whether the coordinate position of said processing material given by said processing material's shape data is in the space to be occupied by the machine given by said machine's shape data or not is determined at the relative movement position between the main shaft head (43) and the work table (35) by the execution of the processing program by the arithmetic processing by means of an arithmetic processing means, and when the coordinate position of the processing material W is in the space to be occupied by the machine, it is determined that the processing material W and the machine interfere with each other.

Classifications:
International (IPC 8-9): B23Q15/00 B23Q17/24 G05B19/4061 G05B19/4068 G05B9/02 (Advanced/Invention); B23Q15/00 B23Q17/24 G05B19/406 G05B9/02 (Core/Invention)
International (IPC 1-7): B23Q15/00 G05B19/4061 G05B19/4068 G05B9/02 G06F19/00 G06G7/6466
CPC: G05B19/4061 G05B19/4068 G05B2219/35313 G05B2219/35317 G05B2219/36178 G05B2219/37567
European: G05B19/4061 G05B19/4068 S05B219/35313 S05B219/35317 S05B219/36178 S05B219/37567
US: 364/474.2 700/166 700/174 700/175 700/178

PatBase – US5751584_A



Family:

Publication number	Publication date	Application number	Application date
DE69523520 D1	20011206	DE19956023520	19950814
DE69523520 T2	20020508	DE19956023520T	19950814
EP0697639 A1	19960221	EP19950112793	19950814
EP0697639 B1	20011031	EP19950112793	19950814
JP2004009293 A2	20040115	JP20030291472	20030811
JP4180469 B2	20081112	JP20030291472	20030811
JP8052638 A2	19960227	JP19940191525	19940815
US5751584 A	19980512	US19950514666	19950814

Priority:

JP19940191525 19940815 JP20030291472 20030811

Probable Assignee: TOSHIBA KIKAI KK

Assignee(s): (std): TOSHIBA MACHINE CO LTD

Assignee(s): TOSHIBA KIKAI K K ; TOSHIBA KIKAI K K TOKIO TOKYO ; TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK ; TOSHIBA MACH CO LTD

Inventor(s): (std): KONO MAKOTO ; HIROSE TOSHIYUKI ; KAWANO MAKOTO ; KUMAMOTO SATOSHI ; NODA YUTAKA ; YUASA AKIHIKO

Agent(s): MIYOSHI HIDEKAZU

Designated states: DE FR GB

217) Family number: 30397406 (US2004056401A)

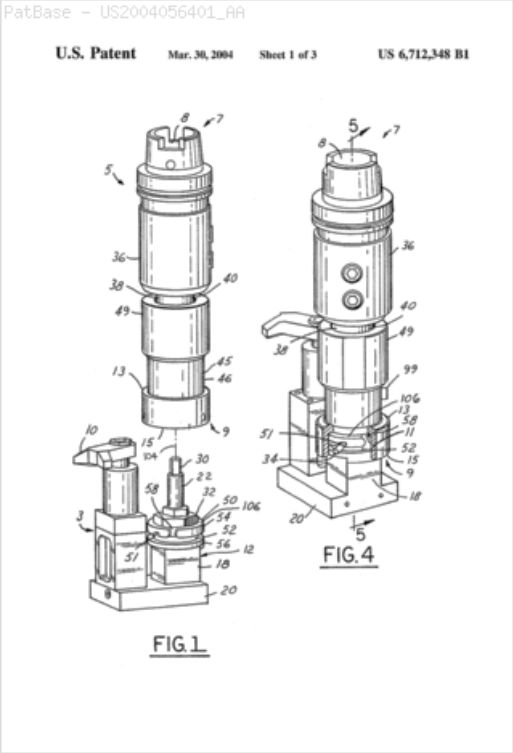
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Title: ADAPTER FOR AGILE FIXTURING AUTOMATION

Abstract: An adapter for picking up and placing a fixture element on a fixture body using a controlled tool handling device having a tool translating and rotating spindle. The spindle has a tool receiving end and an axis of rotation. The adapter receives a cylindrical post member of a fixture element on a fixture body. The adapter has a first end having a receptacle for receiving the end of the spindle. The second end of the adapter is displaced from the first end and includes a cylindrical socket formed on the end. The socket is co-axial with the spindle and receives the cylindrical post member of the fixture element. A fluid passage is formed in the adapter from the receptacle to the cylindrical socket. The cylindrical socket has an upstream end and a down stream end. A piston is disposed in the upstream end of the socket. The piston is moveable longitudinally within the socket in response to fluid pressure delivered from the spindle through the fluid passage. The downstream end of the socket has a circumference with radially inwardly protruding bayonet pins for engaging a circumferential groove of the cylindrical post member.

Classifications:

International (IPC 8-9): B23Q16/00 B25B5/16 (Advanced/Invention); B23Q16/00 B25B5/00 (Core/Invention)
International (IPC 1-7): B23Q1/25 B25B1/00
CPC: B23Q16/001 B25B5/16
European: B23Q16/00C B25B5/16
US: 269/24 269/27 269/329 269/71



Family:

Publication number	Publication date	Application number	Application date
US2004056401 AA	20040325	US20030392295	20030318
US6712348 BA	20040330	US20030392295	20030318

Priority:

US20020413188P 20020924 US20030392295 20030318

Probable Assignee: GM GLOBAL TECHNOLOGY OPERATIONS LLC

Assignee(s): (std)**:** GEN MOTORS CORP ; KRAMARCZYK MARK A ; JONES GARY LEE ; LIN YHU TIN ; BARTOS ANDREW LESLIE ; BOJDA PHILLIP A

Assignee(s): CITICORP USA INC ; CITICORP USA INC AGENT FOR BANK PRIORITY SECURED P ; CITICORP USA INC AGENT FOR BANK PRIORITY SECURED PARTIES AS ; CITICORP USA INC AGENT FOR HEDGE PRIORITY SECURED ; CITICORP USA INC AGENT FOR HEDGE PRIORITY SECURED PARTIES AS ; GENERAL MOTORS CORP ; UNITED STATES DEPARTMENT OF TREASURY ; GM GLOBAL TECHNOLOGY OPERATIONS INC ; UAW RETIREE MEDICAL BENEFITS TRUST ; WILMINGTON TRUST CO ; GM GLOBAL TECHNOLOGY OPERATIONS LLC

Inventor(s): (std)**:** BARTOS ANDREW LESLIE ; BOJDA PHILLIP A ; JONES GARY LEE ; KRAMARCZYK MARK A ; LIN YHU TIN

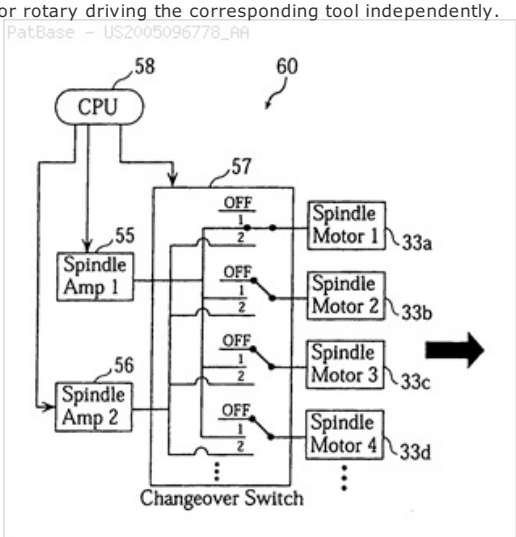
218) Family number: 31873410 (US2005096778A)

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Title: MACHINING CENTER

Abstract: There is provided a machining center capable of simplifying a driving force transmitting mechanism and restraining occurrence of noise and vibration. A machining center having a turret head **20** with a plurality of tools on a turret base **5** includes one tool drive motor for each tool, the tool drive motor rotary driving the corresponding tool independently.

Classifications:
International (IPC 8-9)**:** B23B29/24 B23B29/32 B23P23/00 B23P23/02 B23Q3/155 B23Q3/157 B23Q37/00 B23Q5/54 G05B19/404 G06F19/00 (Advanced/Invention);
B23B29/24 B23P23/00 B23Q3/155 B23Q3/157 B23Q37/00 B23Q5/00 G05B19/404 G06F19/00 (Core/Invention)
International (IPC 1-7)**:** B23B29/24 B23B29/32 B23P23/00 B23P23/02 B23Q3/155 B23Q3/157 B23Q37/00 B23Q5/54 G06F19/00
CPC: G05B19/404 G05B2219/41117 G05B2219/50001
European: G05B19/404 S05B219/41117 S05B219/50001
US: 700/179 700/179P



Family:

Publication number	Publication date	Application number	Application date
DE102004044187 A1	20050525	DE200410044187	20040913

JP2005088099 A2	20050407	JP20030321911	20030912
JP2005088100 A2	20050407	JP20030321912	20030912
JP2005088103 A2	20050407	JP20030322161	20030912
US2005096778 AA	20050505	US20040938869	20040913
US7206658 BB	20070417	US20040938869	20040913

Priority:

JP20030321911 20030912 JP20030321912 20030912 JP20030322161 20030912

Probable Assignee: MORI SEIKI CO LTD

Assignee(s): (std)**:** MORI SEIKI CO LTD ; MORI SEIKI SEISAKUSHO KK

Assignee(s): PINER ZACK ; NAKAHIRA HIROKI ; HIRAMOTO KAZUYUKI ; KOBI TAKAHIRO ; KONISHI KYLE ; LIU JIANCHENG ; MORI SEIKI CO

Inventor(s): (std)**:** HIRAMOTO KAZUYUKI ; KOBI TAKAHIRO ; KONISHI KYLE ; KOO TAKAHIRO ; LIU JIANCHENG ; NAKAHIRA HIROKI ; PINER ZACK ; RIYUU KENSEI

Agent(s): SMITH PATENT OFFICE

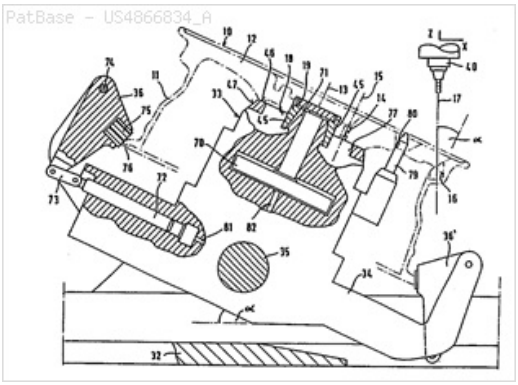
219) Family number: 3074410 (US4866834A)

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Title: METHOD FOR PRODUCING MOUNTING AND VALVE BORES IN A WHEEL

Abstract: A methode serves for producing bores in wheels of motor vehichles, in particular for producing mounting bores (14) in a wheel disk (12) or valve bores in a rim of the wheels. The bore has a larger diameter (D1, D3) in the area of the surfaces (135, 136) of the wheel disk than in the area between these surfaces. In order to enable a countersunk portion to be produced in the area of the bore also in the surface opposite the machining surface, with the wheel in a signle mounting position, a tool (160) is employed whose bottom face exhibits a hook-like configuration (162, 163, 164, 165) and which can be passed through the bore in vertical direction (170), in axially displaced relation. Thereafter, the tool (160) is returned to a position in which it is aligned with the axis (15) of the bore, then rotated and retracted. whereby a countersunk portion (144) of larger diameter is produced. Finally, the tool can be removed from the bore by carrying out the described steps in the reverse order.

Classifications:
International (IPC 8-9)**:** B23B41/00 B23B51/10 B60B3/16 B60C29/02 (Advanced/Invention)
International (IPC 1-7)**:** B23B35/00 B23B41/00 B23B7/00 B23C1/14 B23C9/00 B23D51/10 B23P23/00 B23Q3/157 B60B3/16 B60C29/02
CPC: Y10T29/5109 Y10T408/52 Y10T409/308792 Y10T409/30896 Y10T29/49492 Y10T408/03 Y10T409/303752 Y10T483/10 Y10T483/16 B23B41/00 B23B51/102
European: B23B41/00 B23B51/10C
US: 29/159.1 29/27R 29/568 29/894.3 408/1R 408/69 409/131 409/221 409/224 483/1 483/14



Family:

Publication number	Publication date	Application number	Application date
DE3735858 A1	19890503	DE19873735858	19871023
DE3735858 C2	19910627	DE19873735858	19871023
DE3735859 A1	19890503	DE19873735859	19871023
DE3735859 C2	19920527	DE19873735859	19871023
DE3867418 D1	19920213	DE19883867418	19880930
DE3881643 D1	19930715	DE19883881643	19880930
EP0312819 A1	19890426	EP19880116196	19880930
EP0312819 B1	19920102	EP19880116196	19880930
EP0316552 A2	19890524	EP19880116200	19880930
EP0316552 A3	19890705	EP19880116200	19880930
EP0316552 B1	19930609	EP19880116200	19880930
ES2028969 T3	19920716	ES19880116196T	19880930
ES2046268 T3	19940201	ES19880116200T	19880930
JP1127209 A2	19890519	JP19880264271	19881021
JP2116404 A2	19900501	JP19880264272	19881021
US4866834 A	19890919	US19880255901	19881011
US5023983 A	19910618	US19880255904	19881011

Priority:

DE19873735858 19871023 DE19873735859 19871023 DE19883881643 19880930 DE19883867418 19880930

Probable Assignee: CHIRON WERKE GMBH AND CO TALSTRASSE 23 D 7200 TUTTLINGEN FEDERAL REPUBLIC OF GERMANY KG

Assignee(s): (std)**:** CHIRON WERKE GMBH

Assignee(s): CHIRON WERKE GMBH AND CO 7200 TUTTLINGEN DE KG ; CHIRON WERKE GMBH AND CO KG ; CHIRON WERKE GMBH AND CO KG 7200 TUTTLINGEN DE ; CHIRON WERKE GMBH AND CO TALSTRASSE 23 D 7200 TUTT ; CHIRON WERKE GMBH AND CO TALSTRASSE 23 D 7200 TUTTLINGEN FEDERAL REPUBLIC OF GERMANY KG

Inventor(s): (std)**:** RUTSCHLE EUGEN ; WINKLER HANS HENNING ; WINKLER HANS HENNING DR ; WINKLER HANS HENNING DR ING ; RUETSCHLE EUGEN DIPL ING ; OIGEN RIYUTSUCHIYURE ; HANSU HENINGU BUINKURAA ; RUETSCHLE EUGEN

Inventor(s): RUETSCHLE EUGEN 7202 MUEHLHEIM DE ; RUETSCHLE EUGEN W 7202 MUEHLHEIM DE

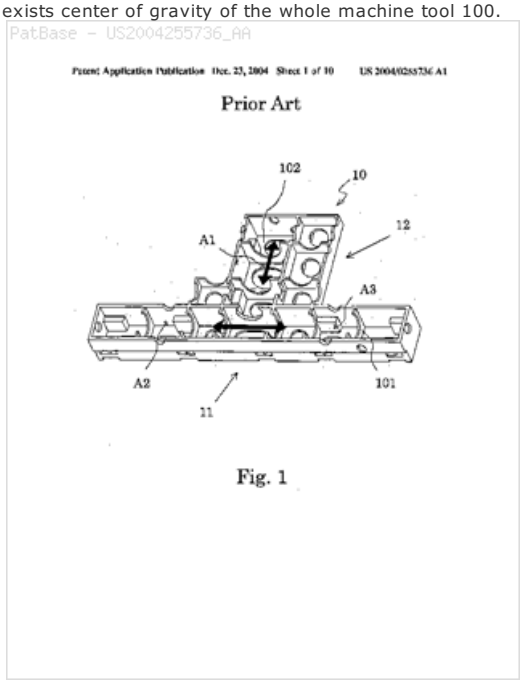
Designated states: CH DE ES FR GB IT LI SE

220) Family number: 31411413 (US2004255736A)

Title: MACHINE TOOL AND BED THEREOF

Abstract: It is an object of the present invention to provide a bed of a machine tool to be stably leveled and supported by three support points and to reduce the strain of the bed of which structure is simplified. The bed 10 of the machine tool 100 according to the present invention comprises three props 60, 61-63, 70, 71-73 and a ceiling 18. The props 60, 61-63, 70, 71-73 are arranged as a triangle. The ceiling 18 is put on the props 60, 61-63, 70, 71-73 and supports at least one tool box 30 and work saddle 20. In the triangle in view of horizontal plane, there exists center of gravity of the whole machine tool 100.

Classifications:
International (IPC 8-9): B23B17/00 B23Q1/00 B23Q1/01 B24B41/02 B24B5/04 B24B5/42 (Advanced/Invention);
B23Q1/00 (Advanced/Non-invention);
B23B17/00 B23Q1/00 B24B41/00 B24B5/00 (Core/Invention)
International (IPC 1-7): B23B47/00 B23C1/00 B23Q1/00 B23Q1/01 B24B41/02
CPC: Y10T82/2566 Y10T408/91 B24B5/42 B23Q1/015 B24B5/04 B24B41/02 Y10T409/309576
European: B23Q1/01B B24B41/02 B24B5/04 B24B5/42
US: 408/234 409/235 451/34 451/340 82/149



Family:

Publication number	Publication date	Application number	Application date
DE602004002992 D1	20061214	DE200460002992T	20040616
DE602004002992 T2	20070614	DE200460002992T	20040616
EP1488887 A1	20041222	EP20040014115	20040616
EP1488887 B1	20061102	EP20040014115	20040616
JP2005007494 A2	20050113	JP20030171867	20030617
JP2005131767 A2	20050526	JP20030372977	20031031
JP2005131768 A2	20050526	JP20030372978	20031031
JP4120486 B2	20080716	JP20030171867	20030617
JP4124098 B2	20080723	JP20030372978	20031031
JP4165370 B2	20081015	JP20030372977	20031031
US2004255736 AA	20041223	US20040860157	20040604
US7503244 BB	20090317	US20040860157	20040604

Priority:
JP20030171867 20030617 JP20030372977 20031031 JP20030372978 20031031

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP ; TOYODA MACHINE WORKS LTD

Assignee(s): TOYODA KOKI KK ; TOYODA MACH WORKS LTD

Inventor(s): (std): FUKUDA EIJI ; FUKUTA EIJI ; KIKUCHI HIROAKI ; KIKUCHI HIROO ; NAKAMURA AKIHIRO ; NAKAMURA TERUHIRO ; OKADA KIKUTOSHI

Agent(s): OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT PC

Designated states: DE FR GB

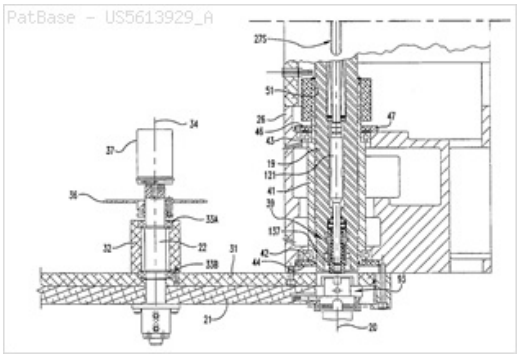
221) Family number: 8746413 (US5613929A)

Title: MACHINE TOOL WITH BAR-SPINDLE AND DIN STANDARD TOOLHOLDER CHANGER

Abstract: In a vertical machining center, a spindle-drive sleeve is axially immovable in the machine frame, but rotates about its longitudinal axis to rotate a spindle mounted in the sleeve for rotation by the sleeve while axially slidable independent of the sleeve. A linear drive, non-rotating ball screw connected to the upper end of the spindle is driven axially by a rotationally powered, axially anchored ball nut to advance and retract the spindle in the sleeve. A drawbar coupling system extends inside the spindle from the top to the bottom to connect to any one of various toolholders in an index disk which is rotatable for positioning toolholders sequentially in line with the spindle axis. A pneumatically actuated drawbar operator shaft extends inside and coaxially with the ball screw from the top to the bottom. The shaft actuator is mounted to the top of the ball screw and drives the shaft axially inside the screw when a toolholder is to be approached for connection. Axial movement of the spindle by rotation of the ball nut in one rotational direction places the spindle in position for coupling to a toolholder in the index disk. Deactivation of the actuator enables a spring to secure a set of gripping fingers in the spindle onto the toolholder.

Classifications:
International (IPC 8-9): B23B31/26 B23B47/18 B23C5/26
B23Q3/157 (Advanced/Invention);
B23B31/02 B23C5/00 B23Q3/157 (Core/Invention)

International (IPC 1-7): B23B47/18 B23C5/26 B23Q3/157
CPC: Y10T408/94 Y10T409/309464 Y10T483/10 Y10T483/1736 B23Q3/15706 B23B31/265
European: B23B31/26B2 B23Q3/157B
US: 408/238 409/233 483/1 483/31



Family:

Publication number	Publication date	Application number	Application date
AU199658866 A1	19961230	AU19960058866	19960603
CA2223270 AA	19971202	CA19962223270	19960603
EP0836541 A1	19980422	EP19960920614	19960603
EP0836541 A4	19981118	EP19960920614	19960603
JP11504575 T2	19990427	JP19970501026T	19960603
US5613929 A	19970325	US19950478898	19950607
WO9640471 A1	19961219	WO1996US08416	19960603

Priority:
US19950478898 19950607 WO1996US08416 19960603

Probable Assignee: HURCO COMPANIES INC
Assignee(s): (std): HURCO CO INC
Assignee(s): HURCO COMPANIES INC ; BANK ONE INDIANA NA ; BAYER JACK L
Inventor(s): (std): BAYER JACK L
Inventor(s): JACK L BAYER
Agent(s): SMART AND BIGGAR
Designated states: AL AM AT AU AZ BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CZ DE DK EE ES FI FR GA GB GE GN GR HU IE IL IS IT JP KE KG KP KR KZ LK LR LS LT LU LV MC MD MG MK MN MW MX NL NO NZ PL PT RO RU SD SE SG SI SK SZ TJ TM TR TT UA UG UZ VN

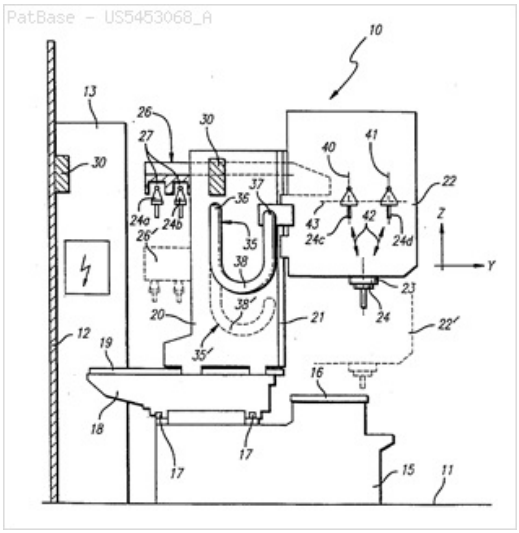
222) Family number: 11877418 (US5453068A)

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Title: MACHINE TOOL

Abstract: A machine tool comprises a tool exchanger for exchanging tools between a vertical-axis spindle and a load/unload position of a tool magazine. The load/unload position is located, in a front view of the machine tool, above the spindle and laterally offset therefrom. The tool exchanger, further, comprises two exchanger arms operating reciprocally, each contributing to conveying a first tool from the spindle to the load/unload position and, simultaneously, a second tool from the load/unload position to the spindle. The exchanger arms are each rotatable about one separate axis only. Each of the exchanger arms exchanges its associated tool between the spindle and one separate transfer position each. The two transfer positions associated to the two exchanger arms are located at different distances in front of the load/unload position on the tool magazine. Further, a transfer device is provided for transferring the tools between the load/unload position and, alternately, one of the transfer positions.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: Y10T483/1752 Y10T483/1776 B23Q3/15773 B23Q3/15526 B23Q3/1554
European: B23Q3/155D2 B23Q3/155D3 B23Q3/157D
US: 483/38 483/48



Family:

Publication number	Publication date	Application number	Application date
DE4330853 C1	19950119	DE19934330853	19930911
DE59400156 D1	19960418	DE19945000156	19940824
EP0642879 A1	19950315	EP19940113196	19940824
EP0642879 B1	19960313	EP19940113196	19940824
ES2085179 T3	19960516	ES19940113196T	19940824
JP2814058 B2	19981022	JP19940210721	19940812

JP7164272 A2	19950627	JP19940210721	19940812
US5453068 A	19950926	US19940303779	19940909

Priority:

DE19934330851 19930911 DE19934330853 19930911 DE19934330854 19930911
DE19945000156 19940824

Probable Assignee: CHIRON WERKE GMBH AND CO KG

Assignee(s): (std)**:** CHIRON WERKE GMBH

Assignee(s): CHIRON WERKE GMBH 78532 TUTTLINGEN DE ; CHIRON WERKE GMBH AND CO KG ; CHIRON WERKE GMBH AND CO KG 78532 TUTTLINGEN DE

Inventor(s): (std)**:** RUETSCHLE EUGEN ; RUETSCHLE EUGEN DIPL ING ; RUTSCHLE EUGEN DIPL ING ; RUDORUFU HANINGAA ; OIGEN RIYUTSUCHIYURE ; HANINGER RUDOLF

Inventor(s): HANINGER RUDOLF D 78606 SEITINGEN DE ; RUETSCHLE EUGEN DIPL ING 78570 MUEHLHEIM DE ; HANINGER RUDOLF 78606 SEITINGEN DE ; RUETSCHLE EUGEN DIPL ING D 78570 MUEHLHEIM DE

Designated states: DE ES FR GB IT

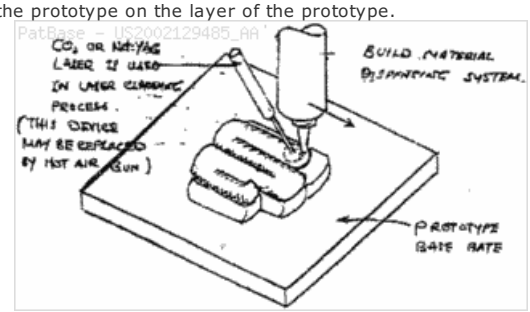
223) Family number: 28291418 (US2002129485A)

© PatBase

Title: METHOD AND APPARATUS FOR PRODUCING A PROTOTYPE

Abstract: An apparatus for producing a prototype, the apparatus comprising a headstock having a plurality of machining apparatuses for carrying out respective manufacturing processes on a prototype. Also disclosed is a method of producing a prototype, comprising the steps of: forming a layer of the prototype; performing a machining process on the layer to remove a part of the layer, and subsequently forming a successive layer of the prototype on the layer of the prototype.

Classifications:
International (IPC 8-9): B23P17/00 G05B19/00 G05B19/4099 (Advanced/Invention); B23P17/00 G05B19/00 G05B19/4097 (Core/Invention)
International (IPC 1-7): B23P17/00 G05B19/00 G05B19/4099
CPC: Y10T29/49982 G05B19/4099 G05B2219/49017 B33Y10/00 B29C64/106 Y02P80/40
European: G05B19/4099 S05B219/49017
US: 29/527.2 29/527.200P



Family:

Publication number	Publication date	Application number	Application date
AU2002236036 AA	20020924	AU20020236036	20020227
US2002129485 AA	20020919	US20010974583	20011009
WO02073325 A2	20020919	WO2002GB00886	20020227
WO02073325 A3	20030530	WO2002GB00886	20020227
WO02073325 B1	20031113	WO2002GB00886	20020227

Priority:

US20010275497P 20010313 US20010974583 20011009 WO2002GB00886 20020227

Probable Assignee: MILLING SYSTEMS AND CONCEPTS P

Assignee(s): (std)**:** BONG TECK KEONG ; CHONG YEW HING ; HOARTON LLOYD DOUGLAS CHARLES ; MILLING SYSTEMS AND CONCEPTS P ; MOK STEVEN SIONG CHEAK ; TOH DA JUN

Assignee(s): MILLING SYSTEMS AND CONCEPTS PTE LTD

Inventor(s): (std)**:** BONG TECK KEONG ; CHONG YEW HING ; MOK STEVEN SIONG CHEAK ; TOH DA JUN

Inventor(s): YEW HING CHONG ; TECK KEONG BONG ; STEVEN SIONG CHEAK MOK ; DA JUN TOH

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

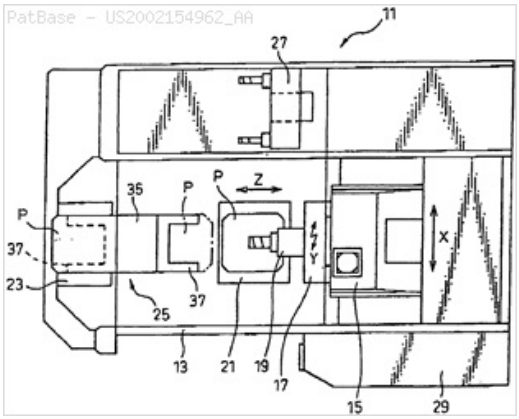
224) Family number: 28298421 (US2002154962A)

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Title: MACHINE TOOL AND ITS PALLET CHANGING DEVICE

Abstract: The present relates to a machine tool for machining a workpiece by moving a tool and the workpiece relative to each other and to a pallet changer thereof. The machine tool is provided with a spindle for mounting the tool thereon, a table for a pallet (P) having the workpiece mounted thereon to be placed on the table, a pallet loading station for setting up the workpiece to the pallet (P) on the pallet loading station, and a pair of pallet change arms arranged to swivel about a vertical axis between the table and the pallet loading station, one pallet change arm (37) of which is arranged to be able to move independently of the other pallet change arm (37) in the vertical direction. The present invention makes it possible to set the vertical position of the pallet change arm on the side of the pallet loading station to a level lower than that on the side of the table, thereby improving the efficiency and safety of the set-up job.

Classifications:
International (IPC 8-9): B23Q7/00 B23Q7/14 (Advanced/Invention); B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23C1/02 B23C9/00 B23Q1/66 B23Q7/00 B23Q7/14
CPC: Y10T29/5196 Y10T409/30532 Y10T409/308792 B23Q7/1431
European: B23Q7/14K2
US: 198/346.1 29/330P 29/33P 409/159 409/221 414/744.3



Family:

Publication number	Publication date	Application number	Application date
DE60112098 D1	20050825	DE20016012098	20010809
DE60112098 D1	20050825	DE20016012098T	20010809
DE60112098 T2	20060608	DE20016012098T	20010809
EP1310324 A1	20030514	EP20010956827	20010809
EP1310324 A4	20040317	EP20010956827	20010809
EP1310324 B1	20050720	EP20010956827	20010809
JP2002014013 A1	20030930	JP20020519138T	20010809
JP3939247 B1	20070704	JP20020519138T	20010809
JP3939247 B2	20070704	JP20020519138T	20010809
US2002154962 AA	20021024	US20020110592	20020411
US6647605 BB	20031118	US20020110592	20020411
WO0214013 A1	20020221	WO2001JP06880	20010809

Priority:

JP20000245798 20000814 WO2001JP06880 20010809

Probable Assignee: MAKINO MILLING MACHINE COMAPANY LTD

Assignee(s): (std)**:** HIRAMOTO KAZUYUKI ; HOSHI TAKASHI ; MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE ; TADA KEIGO

Assignee(s): MAKINO MILLING MACHINE CO LTD ; MAKINO MILLING MACHINE COMAPANY LTD ; MAKINO MILLING MACHINE CO LTD TOKIO TOKYO ; MAKINO MILLING MACHINE CO

Inventor(s): (std)**:** HIRAMOTO KAZUYUKI ; HOSHI TAKASHI ; TADA KEIGO

Agent(s): TSURUTA JUNICHI; NISHIYAMA MASAYA; HIGUCHI SOTOJI; ISHIDA TAKASHI; SHIMADA TETSURO

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT JP LI LU MC NL PT SE TR US

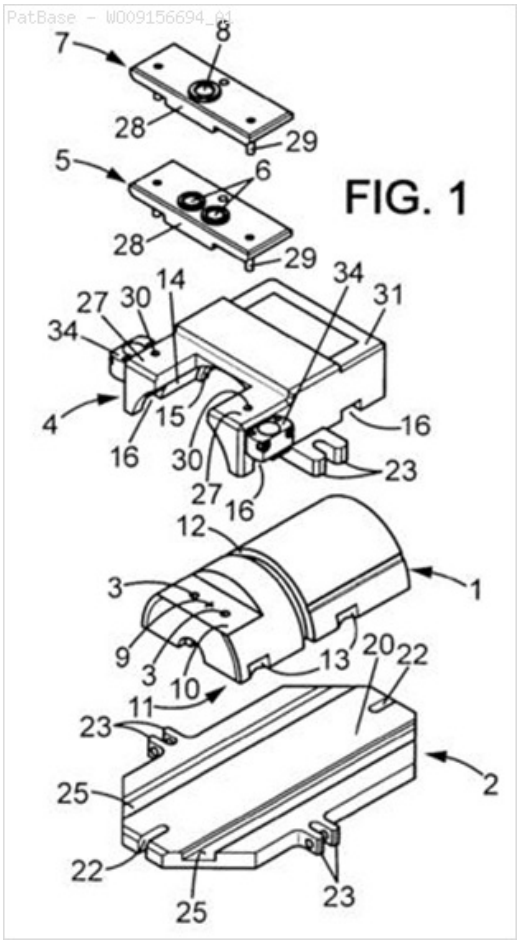
225) Family number: 44166421 (WO09156694A1)

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Title: TOOLING FOR ADAPTING A MOULD TO NEW RAPID-COUPLING CONNECT STANDARDS

Abstract: The tooling comprises: a cap (4) that conforms to the semicylindrical external outline of the half-mould (1) to be adapted, which part comprises: a projecting flange (15) that engages in a reference groove (12) on the external surface of said half-mould (1); specific means for assembling the latter with said cap (4), in order to fix said cap with respect to the reference plane (11) of said half-mould; a mount (2) that receives the pre-assembled assembly formed from the cap and the half-mould, which mount includes features for clamping said cap while using the diametral surface of the mould as reference plane (11) and for allowing it to be fitted on and fastened to a conventional drill or the like; and plate-shaped templates (5) and (7) provided with drill bushings (6) and (8) respectively, which plates engage with centring features that are placed on said cap (4) in order, on the one hand, for the active drill bushing to be precisely positioned and fixed and, on the other hand, for the bushing to be stored awaiting use.

Classifications:
International (IPC 8-9): B23B47/28 B29C33/30 B29C49/42 B29C49/48 (Advanced/Invention);
B23B47/00 B29C33/30 B29C49/42 B29C49/48 (Core/Invention)
CPC: B29C49/48 B23B47/281 B29C33/0083 B29C33/306 B29C49/42
European: B23B47/28B B29C33/00L B29C33/30E B29C49/42 B29C49/48



Family:

Publication number	Publication date	Application number	Application date
FR2933025 A1	20100101	FR20080003611	20080627
FR2933025 B1	20121214	FR20080003611	20080627
WO09156694 A1	20091230	WO2009FR51212	20090625

Priority:

FR20080003611 20080627

Probable Assignee: SIDEL PARTICIPATIONS

Assignee(s): (std)**:** DAGORN DANIEL ; SIDEL PARTICIPATIONS

Inventor(s): (std)**:** DAGORN DANIEL

Inventor(s): DANIEL DAGORN

Agent(s): CABINET PLASSERAUD; RELIGIEUX BERNARD

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

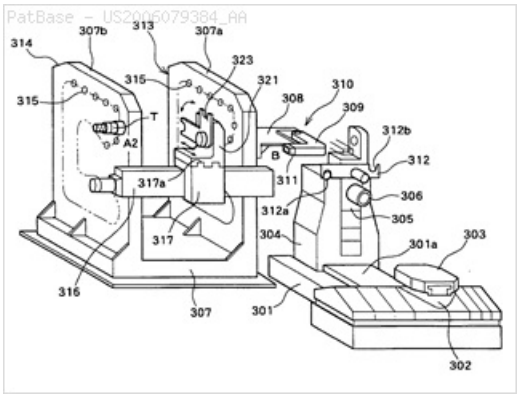
226) Family number: 32817425 (US2006079384A)

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Title: TOOL CHANGER AND MACHINE TOOL EQUIPPED WITH THE TOOL CHANGER

Abstract: A tool changer, used for exchanging tools between a tool magazine and a tool spindle of a machine tool, includes a tool-changing unit and a feed screw. The tool-changing unit has a rotating shaft with a changing arm attached to one end thereof and a rotating drive motor attached to the other end thereof. The feed screw has one end to which a drive motor is attached to cause the tool-changing unit to perform a feed operation of a tool and also perform detachment/attachment of the tool by utilizing the feed operation. Additionally, the feed screw is parallel to a rotational axis of the tool spindle positioned at a tool-changing position.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
CPC: Y10T483/13 Y10T483/175 Y10T483/176 B23Q3/15713
European: B23Q3/157C
US: 483/37 483/41 483/7



Family:

Publication number	Publication date	Application number	Application date
DE102005047788 A1	20060427	DE200510047788	20051006
DE102005047788 B4	20160714	DE200510047788	20051006
JP2006130645 A2	20060525	JP20050262409	20050909
JP4970761 B2	20120711	JP20050262409	20050909
US2006079384 AA	20060413	US20050243601	20051005
US7485082 BB	20090203	US20050243601	20051005

Priority:

JP20040296913 20041008 JP20050262409 20050909

Probable Assignee: OKUMA CORP

Assignee(s): (std)**:** OKUMA CORP AICHI ; OKUMA MACHINERY WORKS LTD ; YOSHIDA MAKOTO

Assignee(s): OKUMA AICHI CORP ; OKUMA CORP

Inventor(s): (std)**:** YOSHIDA MAKOTO ; YOSHIDA MUTSUMI

Agent(s): MATTHEW E CONNORS ESQ GAUTHIER AND CONNORS LLP; GAUTHIER AND CONNORS LLP

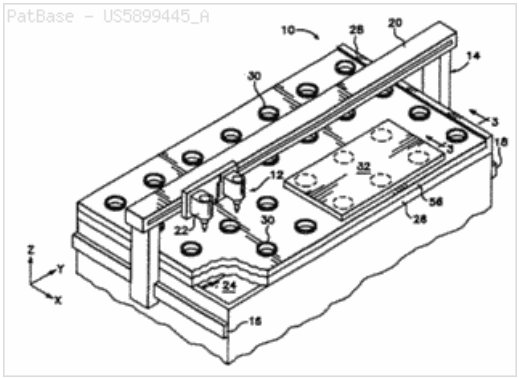
227) Family number: 30883426 (US5899445A)

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Title: Locking ring vacuum clamping system with load/unload capabilities

Abstract: PCT No. PCT/US96/05488 Sec. 371 Date Oct. 14, 1997 Sec. 102(e) Date Oct. 14, 1997 PCT Filed Apr. 18, 1996 PCT Pub. No. WO96/33049 PCT Pub. Date Oct. 24, 1996An apparatus for supporting and vacuum chucking a work piece have a mounting surface, a surface having a spaced array of apertures defined therein which are operatively connected to a vacuum source. The apparatus also contains a plurality of fixed pods each seated over and surrounding one of a apertures, said pods having an upper surface for supporting a work piece above the mounting surface and further having a hollow interior adapted to receive an accessory therein to transmit the vacuum to the work piece and locking components for fixing the pods to mounting surface.

Classifications:
International (IPC 8-9): B23Q1/03 B24B41/06 B25B11/00 B25B5/06 (Advanced/Invention);
B25B5/00 (Core/Invention)
International (IPC 1-7): B23B35/00 B23B47/00 B23C9/00 B24B1/00 B25B11/00 B26D1/00
CPC: B25B5/06 B25B5/061 B25B11/005 B23Q1/032 B24B41/068
European: B23Q1/03B B24B41/06G B25B11/00C B25B5/06 B25B5/06B
US: 269/21 269/293 269/296



Family:

Publication number	Publication date	Application number	Application date
US5899445 A	19990504	US19970945009	19971014
WO9633049 A1	19961024	WO1996US05488	19960418

Priority:

US19950424098 19950419 WO1996US05488 19960418 US19970945009 19971014

Probable Assignee: KIMBLE ALVIN J

Assignee(s): (std)**:** KIMBLE ALVIN J

Inventor(s): (std)**:** KIMBLE ALVIN J

Designated states: AT BE CA CH DE DK ES FI FR GB GR IE IT JP KR LU MC NL PT SE US

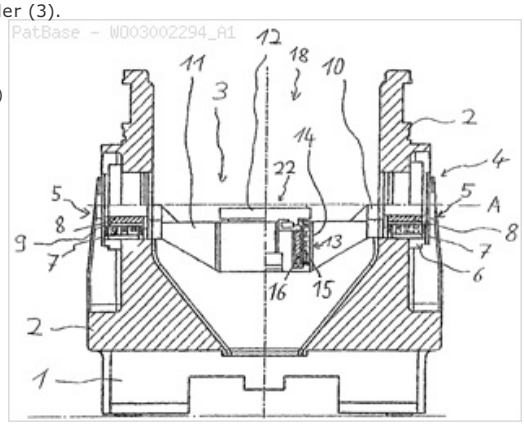
228) Family number: 17097426 (WO03002294A1)

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Title: MACHINE TOOL

Abstract: The invention relates to a machine tool. In order to produce a safe, robust and low-maintenance structure, wherein it is possible to adjust the work-piece holder device in a precise and advantageously rapid manner, the inventive machine tool is provided with the following features; a machine bed (1), a displaceable spindle (19); two lateral receiving elements (2) arranged on the side areas of the machine bed (1), whereby a recess (4) is formed in each lateral receiving element (2); a workpiece holder (3) which is pivotably disposed in the recess (4); and two motors (5) disposed in the recesses (4) for pivoting the workpiece holder (3), whereby each motor (5) engaging with the motor housing (6) thereof in the recesses (4), is fixed to the lateral receiving element (2), and is provided with a direct drive. The machine tool holder (3) is rigidly connected to the driven shafts (8) of the motor (5) and is supported by the driven shafts (8), and engine bearings (37) for both motors are provided as bearings for the workpiece holder (3).

Classifications:
International (IPC 8-9): B23Q1/01 B23Q1/52 B23Q1/70 B23Q11/00 B23Q5/28 B23Q7/02 (Advanced/Invention);
B23Q1/00 B23Q1/25 B23Q11/00 B23Q5/22 B23Q7/02 (Core/Invention)
International (IPC 1-7): B23Q1/00 B23Q1/01 B23Q1/52 B23Q1/70 B23Q11/00 B23Q5/02 B23Q5/28
CPC: B23Q1/015 B23Q1/52 B23Q5/28 B23Q7/02
European: B23Q1/01B B23Q1/52 B23Q5/28 B23Q7/02



Family:

Publication number	Publication date	Application number	Application date
AT320326 E	20060415	AT20020754238T	20020621
DE10292818 D2	20040701	DE20021092818	20020621
DE20110420 U1	20010927	DE20012010420U	20010626
DE50206088 D1	20060511	DE20025006088	20020621
EP1399288 A1	20040324	EP20020754238	20020621
EP1399288 B1	20060315	EP20020754238	20020621
WO03002294 A1	20030109	WO2002DE02258	20020621

Priority:

DE20012010420U 20010626 DE20021092818 20020621 WO2002DE02258 20020621
DE20025006088 20020621

Probable Assignee: ANDREU KOSTAKIS

Assignee(s): (std): ANDREU KOSTAKIS ; BONNEICK HEINZ

Inventor(s): (std): ANDREU KOSTAKIS ; BONNEICK HEINZ

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

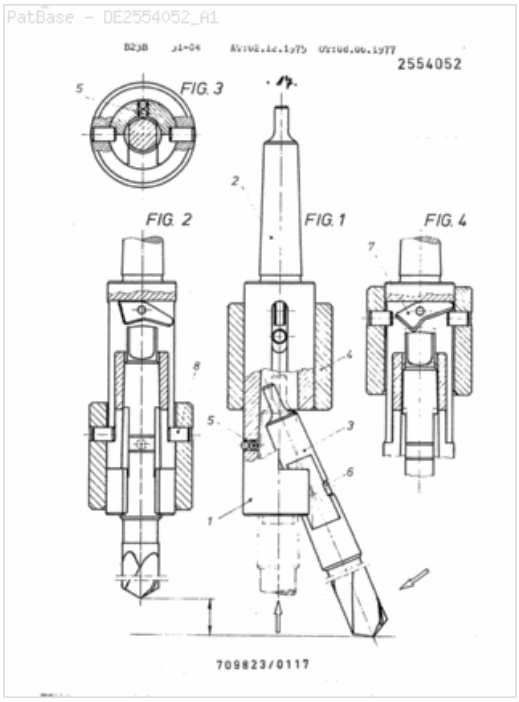
229) Family number: 2494427 (DE2554052A1)

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Title: TOOL FIXTURE FOR RAPID INSERT EXCHANGE - HAS SOCKET BODY AND HOLE FOR INSERT WITH HALF ONE SIDE PARTIALLY FREE

Abstract: The tool fixture is centrally in a machine tool spindle or forms in its own right a spindle end for exchange rapidly of inserts or tool shafts with conical, cylindrical or polygonal shape. There is a socket shaped base body (1) with normal tool fixture (2) has an appropriately shaped hole to take the quick change insert (3). By means of a short inlet reaching the axis centre, the hole is on half of its side partially free. At the end of the socket a long half ring is centrally cut to a determined width. A quick change insert (3) (or tool shaft), by reason of its appropriate guide length is fully enclosed at its upper end and at the bottom is centrally supported at an enclosed angle of about 270 deg.

Classifications:
International (IPC 8-9): B23B31/10 (Advanced/Invention);
B23B31/10 (Core/Invention)
International (IPC 1-7): B23B31/04
CPC: B23B31/10
European: B23B31/10



Family:

Publication number	Publication date	Application number	Application date
DE2554052 A1	19770608	DE19752554052	19751202

Priority:

DE19752554052 19751202

Probable Assignee: STEINKE HERMANN O

Assignee(s): (std)**:** STEINKE HERMANN O

Inventor(s): (std)**:** STEINKE HERMANN O

Inventor(s): O STEINKE HERMANN

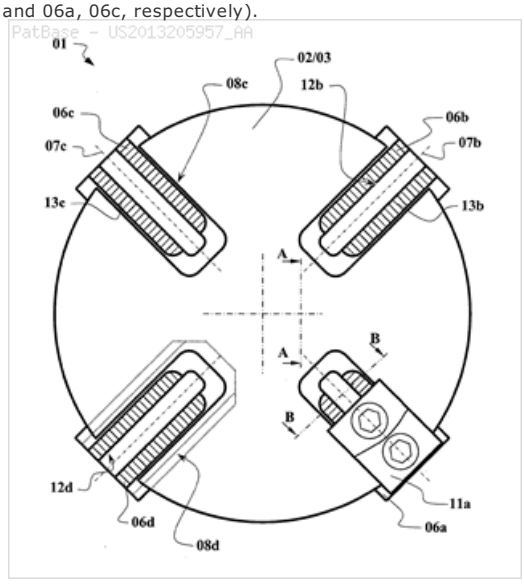
230) Family number: 49900428 (US2013205957A)

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Title: CENTRIC CLAMPING DEVICE

Abstract: A clamping device (01), for use on a lathe, includes a plurality of basic clamping supports (06), which can be moved in a star-shaped formation in relation to an axis of rotation and on each of which a clamping jaw (11) for clamping workpieces can be attached. The basic clamping supports (06) can be adjusted simultaneously by means of an adjusting drive (21, 36) of the clamping device (01). At least two basic clamping supports (06) are coupled directly or indirectly to one another by an outer rocker (15). At least in the middle of the adjusting path, a limited inward displacement of a basic clamping support (06a, 06c, and 06b, 06d, respectively) leads to a swiveling of the outer rocker (15a, 15c) and an outward displacement of the other coupled basic clamping support (06b, 06d, and 06a, 06c, respectively).

Classifications:
International (IPC 8-9)**:** B23B31/02 B23B31/16 (Advanced/Invention)
CPC: B23B31/02 Y10T82/2572 Y10T82/2579 Y10T279/19 Y10T279/1913 Y10T279/1961 B23B31/16 B23B31/16045 B23B2215/64 B23B2231/22 Y10T82/2552 B23B2231/30
European: B23B31/16 B23B31/16C L23B215/64 L23B231/22
US: 1/1 82/142



Family:

Publication number	Publication date	Application number	Application date
DE502011006732 D1	20150603	DE201150006732T	20110330
EP2566644 A1	20130313	EP20110733779	20110330
EP2566644 B1	20150429	EP20110733779	20110330
US2013205957 AA	20130815	US20110695890	20110330

US9156092 BB	20151013	US20110695890	20110330
WO11137884 A1	20111110	WO2011DE000345	20110330
WO11137884 A4	20120301	WO2011DE000345	20110330
WO11137884 A8	20121129	WO2011DE000345	20110330

Priority:

DE201010022804 20100505 DE201010023797 20100615 WO2011DE000345 20110330
EP20110733779 20110330 WO2011DE00345 20110330

Probable Assignee: KARLEIN BIRGITT

Assignee(s): (std): KARLEIN BIRGIT ; KARLEIN BIRGITT ; KARLEIN EUGEN

Inventor(s): (std): KARLEIN BIRGIT ; KARLEIN EUGEN ; KARLEIN BIRGITT

Agent(s): ADVOTEC PATENT U RECHTSANWAELTE; ADVOTEC; MCGLEW AND TUTTLE PC; BOECK BERNHARD

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

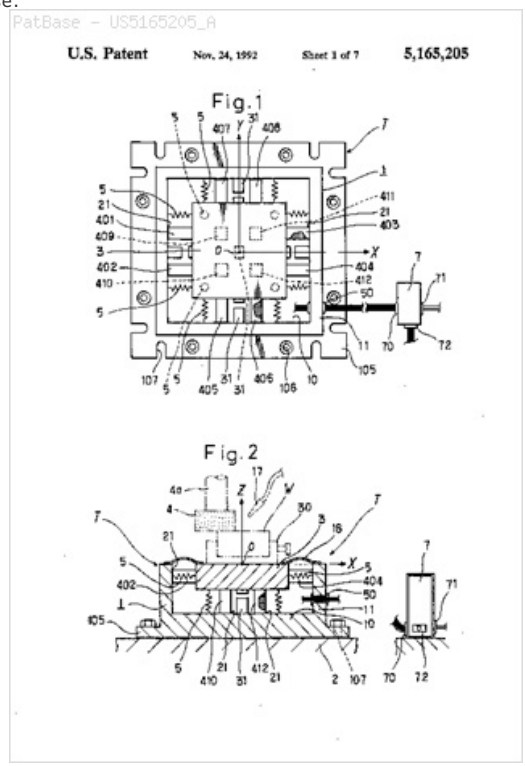
231) Family number: 5211430 (US5165205A)

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Title: Device for vibrating materials to be ground

Abstract: A device for vibrating a workpiece to be processed, serves as a workpiece table to be used to processing the workpiece by means of a rotating tool having a grindstone. The device comprises a table for supporting the workpiece and a base to be detachably furnished to the table of a processing machine. The table is supported on the base via a plurality of piezoelectric actuators each of which is connected electrically to an external controller for vibrating the workpiece being processed by actuating selectively a driving voltage from the controller. The piezoelectric actuator is a laminated piezoelectric element, at least one end of which is secured to the base.

Classifications:
International (IPC 8-9): B23Q1/34 B23Q1/36 B23Q15/013 B24B1/04 B24B35/00 B24B47/02 B24B7/22 (Advanced/Invention)
International (IPC 1-7): B24B1/04 B24B41/06 B24B47/02
CPC: B23Q1/34 B23Q1/36 B23Q15/013 B24B1/04 B24B7/228 B24B35/005
European: B23Q1/34 B23Q1/36 B23Q15/013 B24B1/04 B24B35/00B B24B7/22E
US: 366/108 366/111 451/272 451/392 51/121 51/283R



Family:

Publication number	Publication date	Application number	Application date
DE3879448 D1	19930422	DE19883879448	19880623
DE3879448 T2	19930729	DE19883879448T	19880623
EP0323518 A1	19890712	EP19880906026	19880623
EP0323518 A4	19901205	EP19880906026	19880623
EP0323518 B1	19930317	EP19880906026	19880623
JP1002852 A2	19890106	JP19870155340	19870624
JP2005785 C3	19960111	JP19870155340	19870624
JP64002852 A2	19890106	JP19870155340	19870624
JP7022876 B4	19950315	JP19870155340	19870624
KR930002184 B1	19930327	KR19880071316	19881020
KR930002184 B1	19930327	KR19880701316	19880623
KR930002184 B1	19930327	KR19880071316	19881020
US5165205 A	19921124	US19880269145	19881028
WO8810174 A1	19881229	WO1988JP00620	19880623

Priority:

JP19870155340 19870624 WO1988JP00620 19880623

Probable Assignee: JAPAN RES DEV CORP

Assignee(s): (std): JAPAN RES DEV CORP

Assignee(s): RES DEV CORP OF JAPAN ; RESEARCH DEVELOPMENT CORP ; RESEARCH DEVELOPMENT CORP OF

JAPAN TOKIO TOKYO JP ; RESEARCH DEVELOPMENT OF JAPAN CORP

Inventor(s): (std): SUZUKI KIYOSHI ; OHMORI HITOSHI ; NAKAGAWA TAKEO ; OOMORI HITOSHI ; OMORI HITOSHI

Inventor(s): NAKAGAWA TAKEO KAWASAKI SHI KANAGAWA KEN 211 JP ; OHMORI HITOSHI TOKYO 174 JP ; SUZUKI KIYOSHI YOKOHAMA SHI KANAGAWA KEN 222 JP

Designated states: AT BE CH DE FR GB IT KR LI LU NL SE US

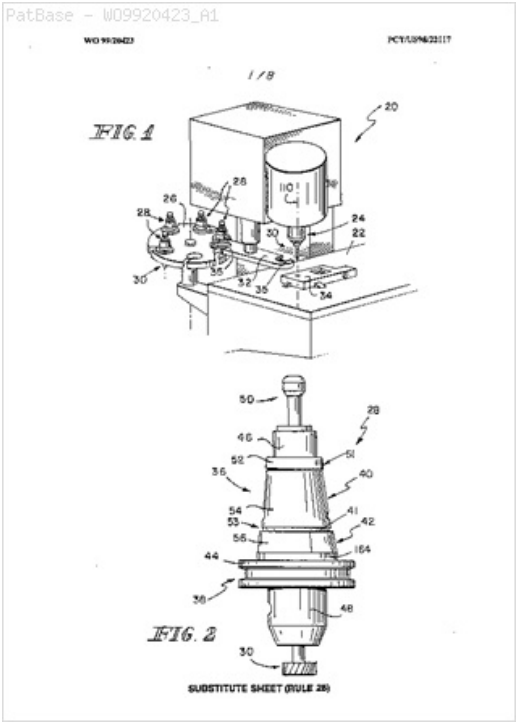
232) Family number: 11340430 (WO9920423A1)

© PatBase

Title: TOOL HOLDER

Abstract: A tool holder (28) is configured to mount a tool (30) to a rotatable spindle (24) of a high-precision machining center (20). Tool holder (28) includes a body member (38), a sleeve (40) positioned to lie around body member (38) and formed to include an inclined ramp (41), and a collet (42) positioned to lie around body member (38) beneath sleeve (40). Body member (38) moves axially relative to sleeve (40) to bring collet (42) into engagement with inclined ramp (41) of sleeve (40). Collet (42) slides on inclined ramp (41) and flexes radially to engage spindle (24) to stabilize tool holder (28) and tool (30) in spindle (24).

Classifications:
International (IPC 8-9): B23B31/00 B23B31/20 B23B31/26 (Advanced/Invention); B23B31/00 B23B31/02 B23B31/20 (Core/Invention)
International (IPC 1-7): B23B31/02 B23B31/10 B23B5/22 B23C5/22
CPC: B23B31/006 B23B31/202 B23B31/263 B23B2231/04 B23B2231/2091
European: B23B31/00F B23B31/20B1 B23B31/26B1 L23B231/04 L23B231/20T1



Family:

Publication number	Publication date	Application number	Application date
AU199912714 A1	19990510	AU19990012714	19981020
WO9920423 A1	19990429	WO1998US22117	19981020

Priority:

US19970062826P 19971020 WO1998US22117 19981020

Probable Assignee: LLOYD DON R

Assignee(s): (std): LLOYD DON R

Assignee(s): DON R LLOYD

Inventor(s): (std): LLOYD DON R

Inventor(s): DON R LLOYD

Designated states: AT AU BE BR CA CH CY DE DK ES FI FR GB GR IE IT JP LU MC MX NL PT SE US

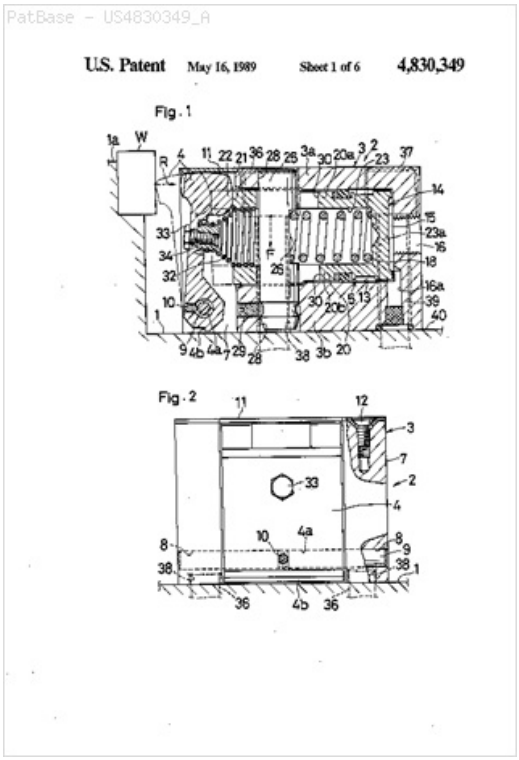
233) Family number: 17110432 (US4830349A)

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Title: Hydraulic clamp with a swinging clamp arm

Abstract: A hydraulic clamp is provided that is suited for fixing a workpiece on the table of a machining center work pallet and the like. In a clamp housing there are arranged a swingable clamp arm and a hydraulic cylinder one before the other longitudinally, the clamp arm being pivotably supported near the lower end thereof to be freely swingable longitudinally, an elastic body is provided to extend from the clamp arm at the middle in height to a constituent member of the hydraulic cylinder so that the clamp arm is pushed back to be inward of the front face of the clamp housing in the absence of hydraulic oil pressure, while the clamp arm is driven forward by a piston of the hydraulic cyinder to be beyond of the front face thereof when sufficient oil pressure is provided to the hydraulic cylinder.

Classifications:
International (IPC 8-9): B23Q3/06 B25B5/06 F16B2/06 F16B2/10 (Advanced/Invention); B23Q3/06 F16B2/02 (Core/Invention)
International (IPC 1-7): B23Q3/06 B23Q3/08 F16B2/06 F16B2/10
CPC: B25B5/061 B25B5/064
European: B25B5/06B B25B5/06B2
US: 269/157 269/239 269/32



Family:

Publication number	Publication date	Application number	Application date
DE3777936 D1	19920507	DE19873777936	19870922
DE3785679 D1	19930603	DE19873785679	19870922
DE3785679 T2	19931104	DE19873785679T	19870922
EP0261945 A1	19880330	EP19870308405	19870922
EP0261945 B1	19920401	EP19870308405	19870922
EP0422691 A1	19910417	EP19900122053	19870922
EP0422691 B1	19930428	EP19900122053	19870922
JP1856049 Y	19920224	JP19860145246U	19860922
JP1856050 Y	19920224	JP19860145247U	19860922
JP2026589 Y2	19900719	JP19860145246U	19860922
JP2026590 Y2	19900719	JP19860145247U	19860922
JP63050629 U1	19880406	JP19860145246U	19860922
JP63050630 U1	19880406	JP19860145247U	19860922
US4830349 A	19890516	US19870100554	19870922

Priority:

JP19860145246U 19860922 JP19860145247U 19860922

Probable Assignee: KOSMEK KK

Assignee(s): (std): KOSMEK AMAGASAKI KK ; KOSMEK KK

Assignee(s): KABUSHIKI KAISHA KOSMEK ; KABUSHIKI KAISHA KOSMEK AMAGASAKI HYOGO JP

Inventor(s): (std): MIYATA ICHIRO

Inventor(s): MIYATA ICHIRO AMAGASAKISHI HYOGOKEN JP ; MIYATA ICHIRO KOBE SHI HYOGO JP

Designated states: DE FR GB IT

234) Family number: 60020434 (US2017185064A)

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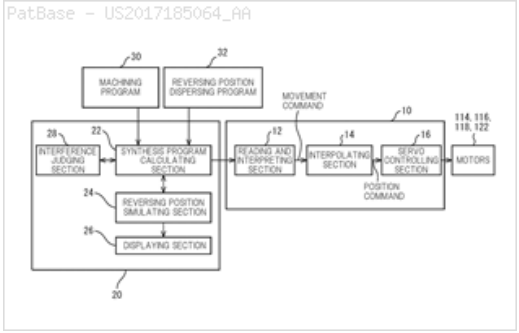
Title: MACHINING METHOD AND A CONTROL DEVICE FOR A MACHINE TOOL

Abstract: In this machining method, in which a rotary tool is moved relative to a workpiece and/or the workpiece is moved relative to the rotary tool so as to machine a curved surface on said workpiece, rotation in the direction of said curved surface is added to the workpiece such that the positions of reversal marks left on the curved surface per tool path are dispersed in the direction of said rotation.

Classifications:

International (IPC 8-9): G05B19/18 G05B19/27 G05B19/404 G05B19/4069 G05B19/416 G06F19/00 (Advanced/Invention); G05B19/19 (Advanced/Non-invention)

CPC: G05B2219/37618 G05B2219/37355 G05B19/182 G05B19/195 G05B19/416 G05B19/404 G05B19/27 G05B2219/41032 G05B2219/41079 G05B2219/41265



Family:

Publication number	Publication date	Application number	Application date
CN105917282 A	20160831	CN201480072374	20140813
EP3101498 A1	20161207	EP20140881214	20140813
EP3101498 A4	20171025	EP20140881214	20140813
JP2015114861 A1	20170323	JP20150559729T	20140813
JP6076507 B1	20170208	JP20150559729T	20140813
KR101954295 B1	20190305	KR20167014439	20140813
KR20160078483 A	20160704	KR20167014439	20140813
US2017185064 AA	20170629	US20140115546	20140813
US10146204 BB	20181204	US20140115546	20140813
WO15114811 A1	20150806	WO2014JP52316	20140131
WO15114861 A1	20150806	WO2014JP71406	20140813

Priority:

WO2014JP52316 20140131 WO2014JP71406 20140813

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std): MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std): KANAYA JUN ; SUZUKI KYOHEI ; MASUMIYA YASUNORI

Agent(s): MCWILLIAMS DAVID JOHN; AOKI ATSUSHI; SHIMADA TETSURO; MORRISON AND FOERSTER LLP; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

235) Family number: 4941434 (US5091861A)

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Title: System for automatic finishing of machine parts

Abstract: A system for automatic finishing of machined parts comprising apparatus for defining a workpiece and finishing parameters thereof corresponding to a finishing task, apparatus for calcualting a three-dimensional path about the workpiece along which a finishing tool is drawn in order to perform the finishing task, apparatus for testing the placement of the workpiece and for correcting the three-dimensional path to account for workpiece misplacement, and finishing apparatus operative to move the finishing tool along the three dimensional path in order to perform the finishing task.

Classifications:

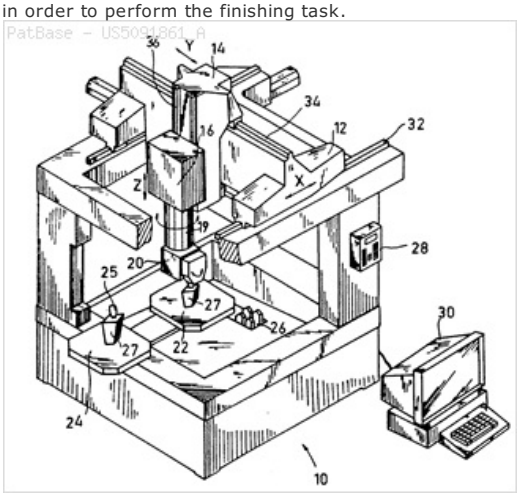
International (IPC 8-9): B23B31/26 B23Q1/00 B23Q1/01 B23Q1/48 B23Q3/06 B23Q3/155 B25B5/06 G05B19/18 G05B19/408 G05B19/4099 (Advanced/Invention);
B23B31/02 B23Q1/00 B23Q1/25 B23Q3/06 B23Q3/155 B25B5/00 G05B19/18 G05B19/408 G05B19/4097 (Core/Invention)

International (IPC 1-7): B23P9/00 G06F15/46

CPC: B23B31/265 B23Q1/0009 B23Q1/015 B23Q1/48 B23Q3/062 B23Q3/15526 B25B5/06 G05B19/18 G05B19/4083 G05B19/4099 G05B2219/35097 G05B2219/35121 G05B2219/35128 G05B2219/35316 G05B2219/36503 G05B2219/37056 G05B2219/37194 G05B2219/37198 G05B2219/37441 G05B2219/45151 G05B2219/50109 G05B2219/50211 G05B2219/50247

European: B23B31/26B2 B23Q1/00B B23Q1/01B B23Q1/48 B23Q3/06D B23Q3/155D2 B25B5/06 G05B19/18 G05B19/408A G05B19/4099 S05B219/35097 S05B219/35121 S05B219/35128 S05B219/35316 S05B219/36503 S05B219/37056 S05B219/37194 S05B219/37198 S05B219/37441 S05B219/45151 S05B219/50109 S05B219/50211 S05B219/50247

US: 364/474.34 700/192 700/193



Family:

Publication number	Publication date	Application number	Application date
IL89484 A0	19890910	IL19890089484	19890303
IL89484 A1	19920818	IL19890089484	19890303
US5091861 A	19920225	US19890427687	19891025

Priority:

IL19890089484 19890303

Probable Assignee: NCT LTD

Assignee(s): (std): N C T LTD ; NCT LTD ; NCT LTD NUMERICAL CONTROL TECH

Assignee(s): NCT LTD NUMERICAL CONTROL TECHNOLOGY

Inventor(s): (std): BERMAN MICHAEL ; GELLER YAIR ; KATSAV ORIT

Agent(s): SANFORD TCOLB AND CO

236) Family number: 5064438 (US4599786A)

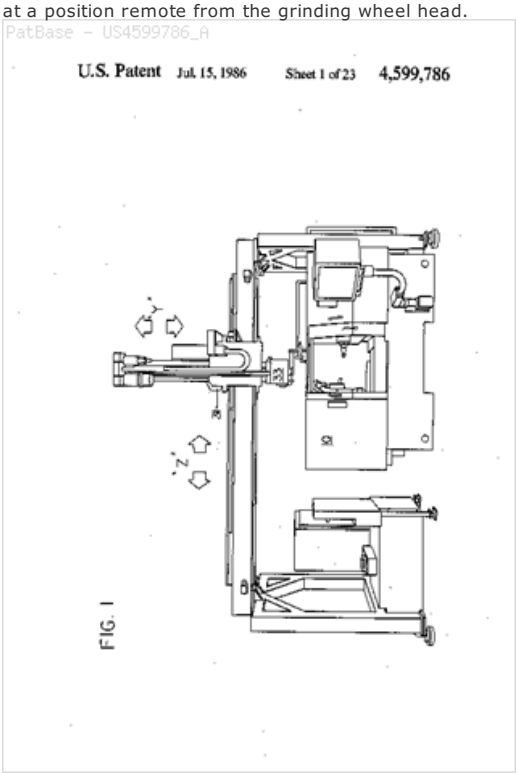
© PatBase

Title: GRINDING MACHINE WITH APPARATUS FOR CHANGING GRINDING WHEEL TOOLS AND WORKPIECES

Abstract: A grinding machine utilizes a gantry type loader for exchanging workpieces with the work support spindle of the machine. The loading head of the gantry loader has a rotatable workpiece gripper assembly to switch the parts end-for-end

during the loading and unloading process. The loading head is also fitted with nonrotating workpiece grippers which are spring biased to mechanically grip and extract a grinding wheel tool from a grinding wheelhead and exchange the tool with a different tool located in a tool support pocket of a tool storage matrix at a position remote from the grinding wheel head.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 B23Q7/04 B24B41/00 B24B45/00 (Advanced/Invention); B23Q3/155 B23Q3/157 B23Q7/04 B24B41/00 B24B45/00 (Core/Invention)
International (IPC 1-7): B23Q3/157 B24B41/00 B24B45/00
CPC: Y10T483/16 Y10T483/1705 Y10T483/1724 Y10T483/174 Y10T483/1786 B23Q7/046 B24B41/005 B24B45/003
European: B23Q7/04E B24B41/00C B24B45/00B
US: 29/568 483/14 483/18 483/26 483/33 483/52 D15/124



Family:

Publication number	Publication date	Application number	Application date
DE3582212 D1	19910425	DE19853582212	19850904
EP0174799 A2	19860319	EP19850306287	19850904
EP0174799 A3	19870225	EP19850306287	19850904
EP0174799 B1	19910320	EP19850306287	19850904
JP62255040 A2	19871106	JP19850195697	19850904
US4599786 A	19860715	US19840647314	19840904

Priority:
US19840647314 19840904 JP19850195697 19850904

Probable Assignee: UNOVA IP CORP

Assignee(s): (std)**:** CINCINNATI MILACRON HEALD ; CINCINNATI MILACRON INC

Assignee(s): UNOVA IP CORP ; SHINSHINATEI MIRAKURON HIIRUDO CORP ; CINCINNATI MILACRON HEALD CORP ; CINCINNATI MILACRON HEALD CORP A CORP OF DE ; CINCINNATI MILACRON HEALD CORP WORCESTER MASS US

Inventor(s): (std)**:** HAABAATO AARU UUTENUORUDO ; UHTENWOLDT HERBERT R

Inventor(s): UHTENWOLDT HERBERT R MA 01602 US

Designated states: DE FR GB

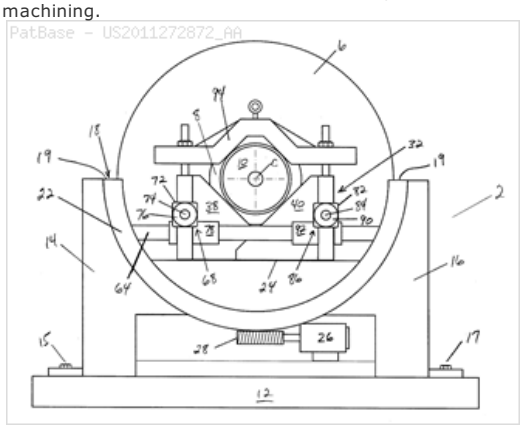
237) Family number: 49901439 (US2011272872A)

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Title: CRADLE FOR MACHINING OF LARGE PINIONS

Abstract: A cradle device for large pinion gears or blanks wherein a pinion may be supported and rotated for machining. The cradle device comprises one or more adjustable prismatic units each including a plurality of angular plates that are movable toward and/or away from one another along the width of the cradle device in order to raise and lower, and/or laterally shift, a pinion placed thereon so as to position the pinion for machining.

Classifications:
International (IPC 8-9): B23F1/00 B23F23/06 B23Q1/26 B23Q1/52 B23Q3/00 B23Q3/06 B25B1/00 B25B1/24 B41N (Advanced/Invention)
CPC: B23Q2240/007 B23F23/06 B25B1/20 B25B5/147 B23Q3/00 B23Q1/527 B23Q3/062 B25B1/2484
European: B23F23/06 B23Q1/52C B23Q3/06D B25B1/20 B25B1/24C B25B5/14D
US: 269/287 269/289MR 269/58 269/58S 269/61 269/61P 269/71



Family:

Publication number	Publication date	Application number	Application date
CN102869475 A	20130109	CN201180022166	20110503
CN102869475 B	20151125	CN201180022166	20110503
DE602011004178 D1	20140206	DE201160004178T	20110503
EP2566657 A1	20130313	EP20110718642	20110503
EP2566657 B1	20131211	EP20110718642	20110503
IN09583DN2012 A	20160115	IN2012DN09583	20121106
JP2013529141 T2	20130718	JP20130509156T	20110503
JP5787985 B2	20150930	JP20130509156T	20110503
US2011272872 AA	20111110	US20110098518	20110502
US8714536 BB	20140506	US20110098518	20110502
WO11140004 A1	20111110	WO2011US34878	20110503

Priority:

US20100331549P 20100505 US20110098518 20110502 EP20110718642 20110503 WO2011US34878 20110503

Probable Assignee: GLEASON WORKS

Assignee(s): (std)**:** GLEASON WORKS ; STADTFELD HERMANN J

Assignee(s): GLEASON WORKS ROCHESTER ; MANUFACTURERS AND TRADERS TRUST CO ; THE GLEASON WORKS

Inventor(s): (std)**:** STADTFELD HERMANN J

Inventor(s): HERMANN J STADTFELD

Agent(s): LEINWEBER AND ZIMMERMANN; ROBERT L; MCDOWELL ROBERT L

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG UZ VC VN ZA ZM ZW

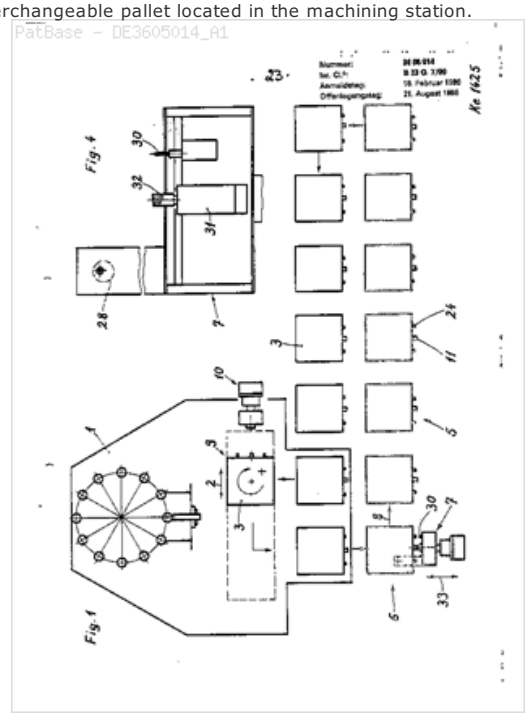
238) Family number: 3855440 (DE3605014A1)

© PatBase

Title: Program-controlled machining centre

Abstract: A program-controlled machining centre having a pallet station containing a multiplicity of interchangeable pallets is described. Each interchangeable pallet is provided with a pressure-actuated clamping device for clamping at least one workpiece to be machined in the machining centre. The workpieces are clamped to the interchangeable pallets in a setting-up station, to which a supply unit with means for producing and monitoring the requisite clamping pressure is allocated. In order to ensure that machining of the workpieces in the machining station of the machining centre is impossible if the clamping pressure has dropped to an inadmissibly low extent, a pressure-monitoring device is likewise allocated to the machine table of the machining centre. Before the start of machining and during the machining of the workpiece, the pressure-monitoring device checks the clamping pressure and if need be causes the machine control to bring the clamping pressure to the requisite value. To this end, a further supply unit is allocated to the machining station. For the purpose of influencing the clamping pressure, this further supply unit can be coupled to the interchangeable pallet located in the machining station.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q3/16 B25B5/06 (Advanced/Invention);
B23Q1/00 B23Q3/00 B25B5/00 (Core/Invention)
International (IPC 1-7): B23Q39/02 B23Q7/00
CPC: B23Q1/0018 B23Q3/16 B25B5/061
European: B23Q1/00B2 B23Q3/16 B25B5/06B



Family:

Publication number	Publication date	Application number	Application date
DE3605014 A1	19860821	DE19863605014	19860218
DE3605014 C2	19881103	DE19863605014	19860218

Priority:

DE19853505698 19850219 DE19863605014 19860218

Probable Assignee: KEMPTENER GMBH MASCHF

Assignee(s): (std)**:** KEMPTENER GMBH MASCHF ; MUCK SIEGFRIED

Assignee(s): MUCK SIEGFRIED 8961 WIGGENSBACH DE ; KEMPTENER MASCHINENFABRIK GMBH

Inventor(s): (std): MUCK SIEGFRIED

Inventor(s): MUCK SIEGFRIED 8961 WIGGENSBACH DE

239) Family number: 34404445 (US2008286058A)

Title: BALL ENDMILL

Abstract: A ball endmill having (a) a cylindrical tool body and (b) ball-nosed end cutting edges each of which includes (b-1) a first portion, (b-2) a second portion and (b-3) a third portion. The first portion is defined by a circular arc which is convex in a direction of rotation of the tool body and which has a first radius of curvature as measured in a distal end view perpendicular to the axis. The second portion is defined by a straight line or a circular arc which is convex in the rotation direction and which has a second radius of curvature as measured in the distal end view. The third portion is defined by a circular arc which is convex in the rotation direction and which has a third radius of curvature as measured in the distal end view. The second radius of curvature is larger than the first radius of curvature. The third radius of curvature is smaller than the second radius of curvature.

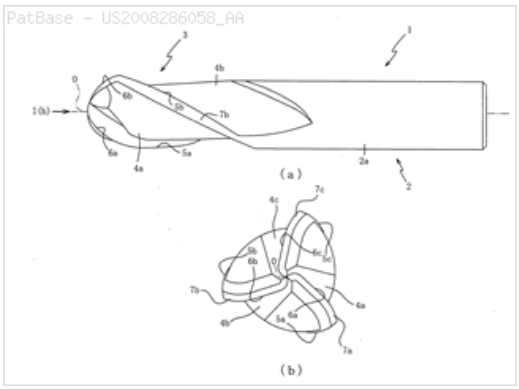
Classifications:

International (IPC 8-9): B23C5/00 B23C5/10 B23C5/12 B26D1/00 (Advanced/Invention); B23B51/02 B23C5/00 B23C5/10 B23C5/12 (Advanced/Non-invention); B23C5/00 B23C5/02 B23C5/10 B26D1/00 (Core/Invention); B23B51/02 (Core/Non-invention)

CPC: Y10T407/19 Y10T407/1946 Y10T407/1948 Y10T407/23 B23C5/1009 B23C2210/084 B23C2210/086 B23C5/1018 B23B31/005 B23C2210/045

European: B23C5/10B L23C210/08D L23C210/08F

US: 407/113 407/113P 407/30 407/53 407/54



Family:

Publication number	Publication date	Application number	Application date
CN100436014 C	20081126	CN200580013981	20051018
CN1972773 A	20070530	CN200580013981	20051018
DE602005018690 D1	20100211	DE200560018690T	20051018
EP1935541 A1	20080625	EP20050795506	20051018
EP1935541 A4	20080924	EP20050795506	20051018
EP1935541 B1	20091230	EP20050795506	20051018
JP2007046132 A1	20090423	JP20070514946T	20051018
JP4407975 B1	20100203	JP20070514946T	20051018
JP4407975 B2	20100203	JP20070514946T	20051018
KR100820948 B1	20080411	KR20067020931	20051018
KR20070054597 A	20070529	KR20067020931	20061009
US2008286058 AA	20081120	US20050578267	20051018
US7618219 BB	20091117	US20050578267	20051018
WO07046132 A1	20070426	WO2005JP19086	20051018

Priority:

WO2005JP19086 20051018 KR20067020931 20061009 WO2005JP19086 20061009

Probable Assignee: OSG CORP

Assignee(s): (std): AOKI WATARU ; HAMATAKE YASUO ; OSAWA JIRO ; OSG CORP

Inventor(s): (std): JIRO OSAWA ; WATARU AOKI ; YASUO HAMATAKE ; WATARU OSAWA JIRO HAMATAKE YAS ; OSAWA JIRO ; HAMATAKE YASUO ; AOKI WATARU

Inventor(s): OSAWA JIRO HAMATAKE YASUO AOKI WATARU

Agent(s): FELDMEIER JUERGEN; MURAMATSU AND ASSOCIATES

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

240) Family number: 13197446 (US5663504A)

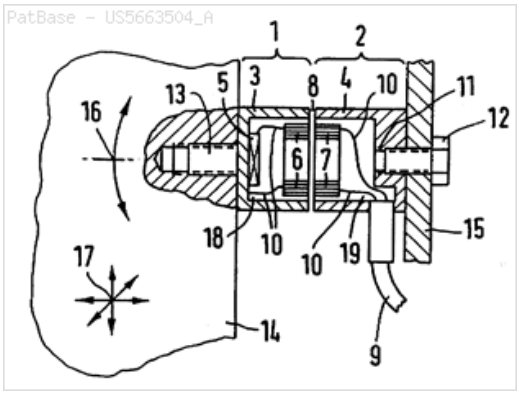
Title: Sensor system

Abstract: PCT No. PCT/EP94/03092 Sec. 371 Date Mar. 14, 1996 Sec. 102(e) Date Mar. 14, 1996 PCT Filed Sep. 15, 1994 PCT Pub. No. WO95/08099 PCT Pub. Date Mar. 23, 1995In a sensor system with a wireless vibration or structure-borne noise sensor device (1), which makes direct use of the vibration energy of its electrodynamic or piezoelectric measuring unit (5) without other components to transmit the vibration energy via a primary coil (6) of a transformer-like pair of coils (6, 7) electrically connected to the measuring unit (5), to the secondary coil (7) of said pair (6, 7) which is located in a receiver (2) independent of the sensor device (1) and separated only by an air gap (8) which conducts the measured and transformed vibration or structure-borne noise measurement signal further, the sensor system is used to monitor the vibration, structure-borne noise and/or sound especially of defined material-removing tools in machine tools or to detect the noise of noise-generating structural units in testing machines or devices. The sensor device (1) is arranged on a traversing and/or rotary machine component (14), e.g., a tool holder, a workpiece holder or a test-specimen support or component holder, in which the receiver device (2) is fitted on a fixed machine component (15). During the actual monitoring process, the primary and secondary coils of the sensor device (1) and the receiver device (2) are opposite each other with the air gap (8) maintained.

Classifications:

International (IPC 8-9): G01H1/00 G01H11/00 G01H11/08 G08C17/00 G08C17/04 (Advanced/Invention)

International (IPC 1-7): B23Q17/09 G01H1/12 G01H11/00 G01H11/08 G01N29/24 G08C17/00 G08C17/04 G12B17/02
CPC: G01H1/003 G01H11/00
European: G01H1/00B G01H11/00
US: 73/1.82 73/1.84 73/182 73/184 73/587 73/660



Family:

Publication number	Publication date	Application number	Application date
DE4432808 A1	19950323	DE19944432808	19940915
DE59405047 D1	19980219	DE19945005047	19940915
EP0719404 A1	19960703	EP19940928360	19940915
EP0719404 B1	19980114	EP19940928360	19940915
JP3315987 B2	20020819	JP19950508997	19940915
JP9502801 T2	19970318	JP19950508997T	19940915
US5663504 A	19970902	US19960615323	19960314
WO9508099 A1	19950323	WO1994EP03092	19940915

Priority:

DE19934331523 19930916 DE19934331534 19930917 DE19944432808 19940915
DE19945005047 19940915 WO1994EP03092 19940915

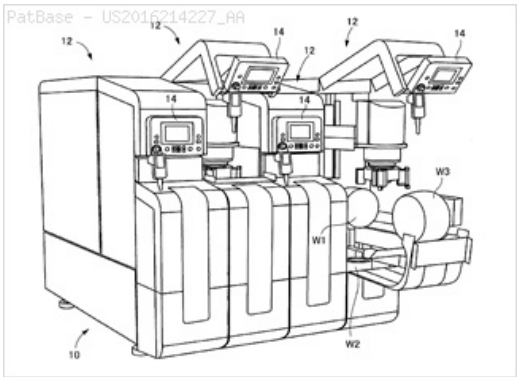
Probable Assignee: KLUFT WERNER
Assignee(s): (std): KLUFT WERNER ; KLUFT WERNER DR ING
Assignee(s): KLUFT WERNER DR ING 52078 AACHEN DE
Inventor(s): (std): KLUFT WERNER ; KLUFT WERNER DR ING
Inventor(s): KLUFT WERNER DR ING 52078 AACHEN DE
Designated states: AT BE CH DE DK ES FR GB GR IE IT JP LI LU MC NL PT SE US

241) Family number: 58735446 (US2016214227A)

Title: MACHINING SYSTEM

Abstract: A machining system with a configuration in which working machines, including a machine tool, are configured to be disposed in a line, and in which multiple working machines perform operations on one work in order, is provided. The machining system includes: a base; and multiple working machine modules which are mounted on the base and are arranged in an arrangement direction, and has a configuration in which each of the multiple working machine modules is capable of being drawn out from the base along a track extending in an intersecting direction intersecting with the arrangement direction.

Classifications:
International (IPC 8-9): B23B11/00 B23B21/00 B23P23/02 B23Q37/00 B23Q39/04 B23Q41/02 B23Q7/00 (Advanced/Invention)
CPC: B23Q7/00 B23Q37/007 B23Q39/04
US: 29/27R



Family:

Publication number	Publication date	Application number	Application date
CN105531079 A	20160427	CN201380079539	20130913
CN105531079 B	20180608	CN201380079539	20130913
JP2015037148 A1	20170302	JP20150536412T	20130913
JP6178856 B1	20170809	JP20150536412T	20130913
US2016214227 AA	20160728	US20130917960	20130913
WO15037148 A1	20150319	WO2013JP74918	20130913

Priority:

CN201380079540 20130913 CN201380079544 20130913 WO2013JP74918 20130913

Probable Assignee: FUJI MACHINE MFG CO LTD
Assignee(s): (std): FUJI MACHINE MFG
Assignee(s): FUJI MACHINE MFG CO ; FUJI MACHINE MFG CO LTD ; FUJI CORP
Inventor(s): (std): MIZUTA KENJI ; TAKEUCHI TADASHI ; NAGATO KAZUYOSHI ; NAGAI OSAMU ; SUZUYAMA SHIGEFUMI ; SAKAI KAZUTOSHI ; KUMAZAKI SHINYA ; FURUKAWA KAZUYA ; KAMIYA ATSUSHI ; YANAGISAKI JUN ;

SUZUKI TOSHIFUMI

Agent(s): CHUBU PATENT OFFICE

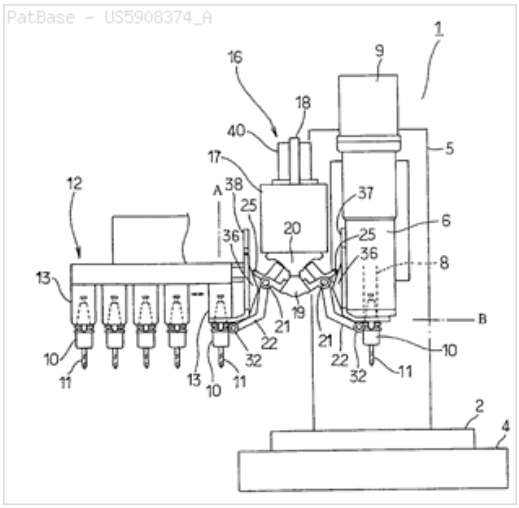
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242) Family number: 11590446 (US5908374A)

Title: TOOL CHANGER FOR MACHINE TOOL

Abstract: A tool changer for a machine tool includes an arm support disposed between a spindle head and a tool magazine to be reciprocally moved along the spindle relative to the spindle, a pair of tool changing arms mounted for rocking motion on support shafts further mounted on the arm support to cross the spindle, respectively, holding mechanisms on one ends of the tool changing arms respectively, and a rotating mechanism for rotating the tool changing arms by 180 degrees about a center shaft parallel with the spindle. Each holding mechanism has a moving pin and a spring for urging the moving pin in a direction of projection of the pin. The moving pins are engaged with a tool attached to the spindle and another tool located at a standby position of the tool magazine when the tool changing arms are rocked about the support shafts so that the tools are detachably held by the holding mechanisms respectively.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 B23Q3/16 (Advanced/Invention); B23Q3/00 B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/155 B23Q3/157
CPC: B23Q3/1552 B23Q3/1574 B23Q3/16 Y10T483/10 Y10T483/1755 Y10T483/1757 Y10T483/176 Y10T483/1762 Y10T483/1764 Y10T483/1767 Y10T483/1769 Y10T483/1771 Y10T483/1781 Y10T483/1783
European: B23Q3/155D B23Q3/157C2B3 B23Q3/16
US: 483/1 483/39 483/40 483/41 483/42 483/43 483/44 483/45 483/46 483/50 483/51



Family:

Publication number	Publication date	Application number	Application date
JP10263971 A2	19981006	JP19970071957	19970325
US5908374 A	19990601	US19980045928	19980323

Priority:

JP19970071957 19970325

Probable Assignee: BROTHER IND LTD

Assignee(s): (std): BROTHER IND LTD

Assignee(s): BROTHER KOGYO KABUSHIKI KAISHA ; BROTHER KOGYO KK

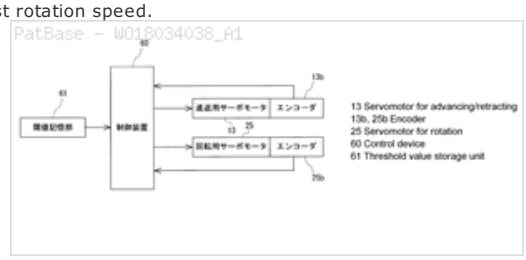
Inventor(s): (std): KATO FUMIHIKO

243) Family number: 68640446 (WO18034038A1)

Title: TOOL EXCHANGE DEVICE

Abstract: This tool exchange device is provided with: a holding member which has a tool exchange arm provided thereto, and which is provided so as to be capable of rotating and capable of advancing and retracting; a rotation mechanism which is provided with a servomotor (25) for rotation, and which rotates the holding member clockwise and anticlockwise around a central axis at a first rotation speed; an advancing/retracting mechanism which is provided with a servomotor (13) for advancing/retracting, and which advances and retracts the holding member in directions along an axial line of a main shaft at a first advancing/retracting speed; and a control device (60) which compares a first threshold value with a first difference, i.e. the difference between a command value for the servomotor (25) for rotation and an output value of an encoder (25b), and, if the first difference is equal to or greater than the first threshold value, sets the rotation speed of the holding member to a second rotation speed slower than the first rotation speed, and, if the first difference is less than the first threshold value, maintains the rotation speed of the holding member at the first rotation speed.

Classifications:
International (IPC 8-9): B23Q15/22 B23Q3/155 B23Q3/157 (Advanced/Invention)
CPC: B23Q3/155 B23Q3/157 B23Q15/22



Family:

Publication number	Publication date	Application number	Application date
CN109641335 A	20190416	CN201780050328	20170525

DE112017004122 T5	20190509	DE201711004122T	20170525
JP2018027587 A2	20180222	JP20160160145	20160817
WO18034038 A1	20180222	WO2017JP19542	20170525

Priority:

JP20160160145 20160817 WO2017JP19542 20170525

Probable Assignee: DMG MORI SEIKI CO LTD

Assignee(s): (std): DMG MORI CO LTD ; DMG MORI SEIKI CO LTD

Assignee(s): DMG MORI CO

Inventor(s): (std): YAMAMOTO KOJI

Agent(s): MURAKAMI SATOSHI

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

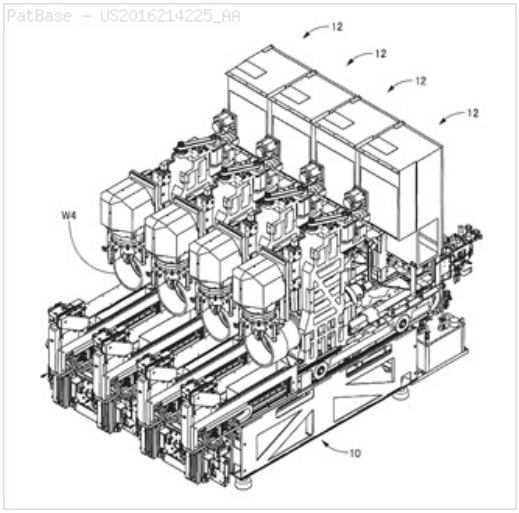
244) Family number: 58735447 (US2016214225A)

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Title: MACHINING SYSTEM

Abstract: A machining system with a configuration in which working machines, including a machine tool such as a lathe, are configured to be disposed in a line and multiple working machines perform operations on one work in order such that practical utility of the machining system is enhanced. The machining system includes a base; and multiple working machine modules which are mounted on the base and are arranged in an arrangement direction, and has a configuration in which each of the multiple working machine modules is capable of being drawn out from the base along a track extending in an intersecting direction intersecting with the arrangement direction.

Classifications:
International (IPC 8-9): B23Q11/00 B23Q11/10 B23Q37/00 B23Q39/04 (Advanced/Invention);
B23P23/00 B23Q41/00 (Advanced/Non-invention)
CPC: B23Q11/0057 B23Q37/007 B23Q39/04 B23Q11/0067 B23P23/00 B23Q41/00 Y10T409/304088 B23Q11/0042 Y02P70/171
US: 82/129



Family:

Publication number	Publication date	Application number	Application date
CN105531081 A	20160427	CN201380079544	20130913
CN105531081 B	20180227	CN201380079544	20130913
JP2015037149 A1	20170302	JP20150536413T	20130913
JP6178857 B1	20170809	JP20150536413T	20130913
US2016214225 AA	20160728	US20130917483	20130913
US9919398 BB	20180320	US20130917483	20130913
WO15037149 A1	20150319	WO2013JP74919	20130913

Priority:

WO2013JP74919 20130913

Probable Assignee: FUJI MACHINE MFG CO LTD

Assignee(s): (std): FUJI MACHINE MFG

Assignee(s): FUJI MACHINE MFG CO ; FUJI MACHINE MFG CO LTD ; FUJI CORP

Inventor(s): (std): SUZUKI TOSHIFUMI ; MIZUTA KENJI

Agent(s): OBLON MCCLELLAND MAIER AND NEUSTADT LLP; CHUBU PATENT OFFICE

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

245) Family number: 58735448 (US2016214226A)

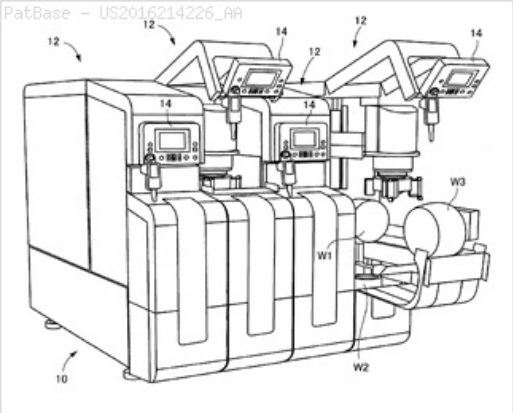
© PatBase

Title: MACHINING SYSTEM

Abstract: A machining system with a configuration in which working machines, including a machine tool, are configured to be disposed in a line, and in which multiple working machines perform operations on one work in order, is provided. The machining system includes: a base; and multiple working machine modules which are mounted on the base and are arranged

in an arrangement direction, and has a configuration in which each of the multiple working machine modules is capable of being drawn out from the base along a track extending in an intersecting direction intersecting with the arrangement direction.

Classifications:
International (IPC 8-9): B23Q11/00 B23Q37/00 B23Q39/00 B23Q39/04 (Advanced/Invention)
CPC: B23Q11/0057 B23Q37/007 B23Q39/04 B23Q37/00 B23Q37/005 Y10T29/5136
US: 82/129



Family:

Publication number	Publication date	Application number	Application date
CN105531080 A	20160427	CN201380079540	20130913
CN105531080 B	20181218	CN201380079540	20130913
JP2015037147 A1	20170302	JP20150536411T	20130913
JP2017209783 A2	20171130	JP20170166024	20170830
JP6203853 B1	20170927	JP20150536411T	20130913
JP6476251 B2	20190227	JP20170166024	20170830
US2016214226 AA	20160728	US20130917742	20130913
US10099334 BB	20181016	US20130917742	20130913
WO15037147 A1	20150319	WO2013JP74917	20130913

Priority:

CN201380079539 20130913 CN201380079544 20130913 WO2013JP74917 20130913
JP20150536411T 20130913 JP20170166024 20170830

Probable Assignee: FUJI CORP

Assignee(s): (std): FUJI CORP ; FUJI MACHINE MFG

Assignee(s): FUJI MACHINE MFG CO ; FUJI MACHINE MFG CO LTD ; FUJI MACH MFG CO LTD

Inventor(s): (std): MIZUTA KENJI ; TAKEUCHI TADASHI ; NAGATO KAZUYOSHI ; NAGAI OSAMU ; SUZUYAMA SHIGEFUMI ; SAKAI KAZUTOSHI ; KUMAZAKI SHINYA ; FURUKAWA KAZUYA ; KAMIYA ATSUSHI ; YANAGISAKI JUN ; SUZUKI TOSHIFUMI ; SUZUYAMA KEIJI

Agent(s): OBLON MCCLELLAND MAIER AND NEUSTADT LLP; CHUBU PATENT OFFICE

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

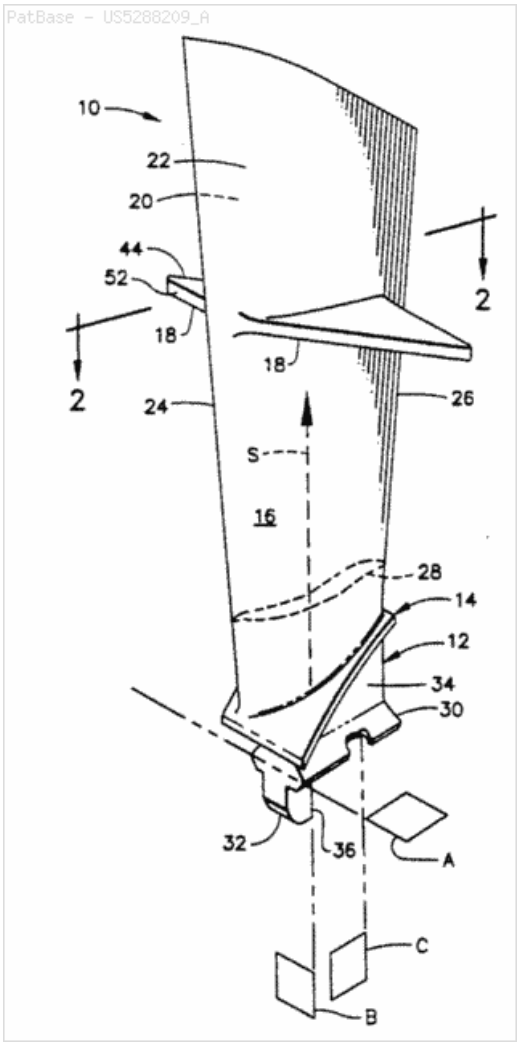
246) Family number: 11460448 (US5288209A)

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Title: AUTOMATIC ADAPTIVE SCULPTURED MACHINING

Abstract: An improved method of adaptive machining is disclosed which affords automatic blending between a machined surface and a complex variable contour forged surface. An adaptive postprocessor generates an adaptive NC part program from a conventional APT file which has the capability to modify the cutter tool path in real time during the machining cycle based on limited surface measurement data. Variable measurement data taken from each workpiece generates a unique toolpath adapted specifically to the contour of that workpiece being processed, obviating the subsequent need for time consuming manual grinding and smoothing operations between machined and forged surfaces.

Classifications:
International (IPC 8-9): F01D5/22 G05B19/401 G05B19/408 (Advanced/Invention);
F01D5/12 G05B19/401 G05B19/408 (Core/Invention)
International (IPC 1-7): F01D5/22 G01B5/20
CPC: F05D2230/10 F01D5/22 G05B19/401 G05B19/4083 G05B2219/36053 G05B2219/50063 Y02P90/265
European: F01D5/22 G05B19/401 G05B19/408A R05B230/10 S05B219/36053 S05B219/50063
US: 318/568.1 364/474.15 364/474.35 416/193.00R 416/193R 416/196R 700/173 700/193



Family:

Publication number	Publication date	Application number	Application date
US5288209 A	19940222	US19910810943	19911219

Priority:

US19910810943 19911219

Probable Assignee: GEN ELECTRIC

Assignee(s): (std): GEN ELECTRIC

Assignee(s): GENERAL ELECTRIC CO ; GENERAL ELECTRIC CO A CORP OF NEW YORK ; GENERAL ELECTRIC COMPANY

Inventor(s): (std): OUELLETTE RANDALL M ; THERRIEN ROGER J

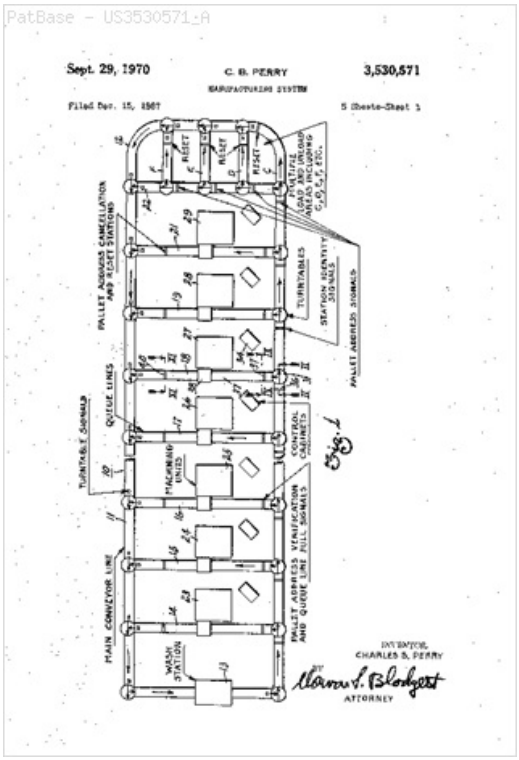
247) Family number: 1324449 (US3530571A)

© PatBase

Title: MANUFACTURING SYSTEM

Abstract: ABSTRACT OF THE DISCLOSURE
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Classifications:
International (IPC 8-9): B23Q39/04 B23Q41/02 B65G47/46 B65G47/68 G05B19/41 G05B19/418 (Advanced/Invention); B23Q39/00 B23Q41/02 B65G47/46 B65G47/68 G05B19/41 G05B19/418 (Core/Invention)
International (IPC 1-7): B23Q39/04 B23Q41/00 B23Q41/02 B23Q7/00 B23Q7/14 B65G47/46
CPC: Y10T29/5124 Y10T29/53061 Y10T29/53543 B23Q41/02 Y02P90/28
European: B23Q41/02
US: 198/349 198/352 198/358 198/465.2 228/3.1 228/7 29/563 29/714 29/823 295/630



Family:

Publication number	Publication date	Application number	Application date
CA937192 A1	19731120	CA19710102457	19710107
CA937192 A2	19731120	CA19710102457	19710107
CA957319 A1	19741105	CA19710181406	19710917
CA957319 A2	19741105	CA19710181406	19710917
DE1814452 A1	19690828	DE19681814452	19681213
FR1599924 A	19700720		19681213
GB1255939 A	19711201	GB19680059171	19681212
JP50031669 B4	19751014	JP19680091644	19681216
NL6817910 A	19690617	NL19680017910	19681213
US3530571 A	19700929	US19670691027	19671215

Priority:

US19670691027 19671215 CA19680037831 19681214 CA19710102457 19710107

Probable Assignee: CINCINNATI MILACRON INC

Assignee(s): (std)**:** CINCINNATI MILACRON INC ; CINCINNATI MILLING MACHINE CO

Assignee(s): CINCINNATI MILLING MACHINE CO THE ; CINCINNATI MILLING MACHINE COMPANY THE ; PERRY CHARLES B ; THE CINCINNATI MILLING MACHINE CO ; THE CINCINNATI MILLING MACHINE COMPANY ; CHARLES B PERRY

Inventor(s): (std)**:** BOSWELL PERRY CHARLES ; CH PERRY ; PERRY CHARLES B

Inventor(s): CHARLES B PERRY ; PERRY CH

248) Family number: 48343452 (US2011044778A)

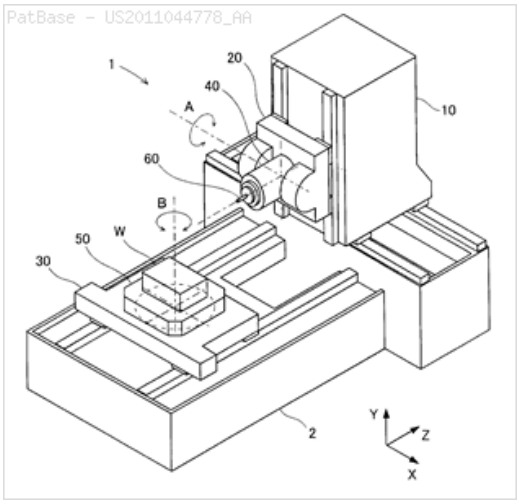
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Title: CONTROLLER FOR MACHINE TOOL AND FIVE-AXIS SIMULTANEOUS CONTROL MACHINE TOOL CONTROLLED THEREBY

Abstract: It is an object of the present invention to provide a controller for a machine tool and a five axis simultaneous control machine tool controlled thereby which can improve the machining accuracy in machining by controlling a driving axis including a linear axis and a pivoting axis. The controller comprises a detecting member 102 detecting a machining position where a pivoting axis is reversed in machining by the machine tool 1 based on the control data, an allowable position error setting member 103 setting an allowable position error DELTA between a commanded machining position P1 and an actual machining position P2, an allowable acceleration deciding member 107 deciding the allowable acceleration about the pivoting axis based on a distance L1, L2 from the machining position of the reversed axis to a center of the pivoting axis and based on the allowable position error DELTA being set, and a controlling member 108 controlling a velocity about the driving axis based on the allowable acceleration.

Classifications:

International (IPC 8-9): B23Q15/12 B23Q15/26 G05B19/18 G05B19/416 G06F19/00 (Advanced/Invention)
CPC: Y10T409/300896 Y10T409/307672 Y10T409/30812 Y10T409/309576 G05B19/416 G05B2219/43021
European: G05B19/416 S05B219/43021
US: 318/569 409/201 409/201S 409/209 409/235 409/80 409/80P 483/16 483/62 700/186



Family:

Publication number	Publication date	Application number	Application date
DE602010024612 D1	20150625	DE201060024612T	20100823
EP2293163 A2	20110309	EP20100173677	20100823
EP2293163 A3	20110803	EP20100173677	20100823
EP2293163 B1	20150513	EP20100173677	20100823
JP2011044081 A2	20110303	JP20090193143	20090824
JP5471159 B2	20140416	JP20090193143	20090824
US2011044778 AA	20110224	US20100853614	20100810
US8818549 BB	20140826	US20100853614	20100810

Priority:

JP20090193143 20090824 EP20100173677 20100823

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP ; SAITO ATSUSHI ; YAMADA YOSHIHIKO

Assignee(s): JTEKT OSAKA SHI CORP

Inventor(s): (std): SAITO ATSUSHI ; YAMADA YOSHIHIKO

Inventor(s): YAMADA YOSHIHIKO OSAKA SHI ; SAITO ATSUSHI OSAKA SHI

Agent(s): TBK; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

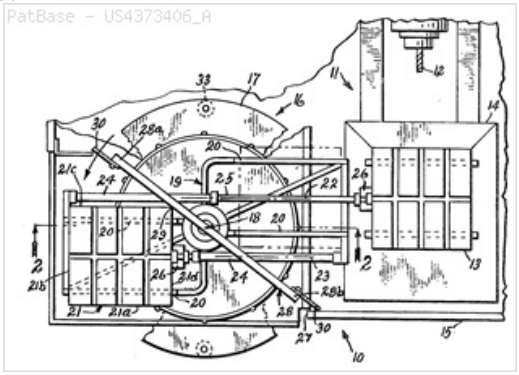
249) Family number: 30853452 (US4373406A)

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Title: FULL ACCESS PALLET SHUTTLE GUARDING

Abstract: A machine tool has a pallet transfer system comprising a rotary deck having a pair of pallets oppositely disposed about a vertical rotary transfer axis, wherein at the transfer position, the pallets are further movable along a horizontal linear transfer axis toward and away from the pallet transfer system. A vertical guard plate is affixed to the rotatable section or deck of the transfer system, and the plane of the guard plate passes through the rotary transfer axis at an oblique angle to the linear transfer axis. The rotatable guard plate interacts with an elastomeric seal at the interface of a guard opening in a stationary guard assembly on a machine tool to substantially confine coolant overspray and the like within the machine guard enclosure. By passing obliquely across the linear transfer axes of the pair of parallel pallets, substantially full access of a stationary pallet lying outside the machine guard enclosure may be had.

Classifications:
International (IPC 8-9): B23Q11/00 B23Q11/08 B23Q7/00 B23Q7/14 F16P3/02 (Advanced/Invention);
B23Q11/00 B23Q11/08 B23Q7/00 B23Q7/14 F16P3/00 (Core/Invention)
International (IPC 1-7): B23Q1/28 B23Q11/00 B23Q11/08 B23Q39/02 B23Q7/00 B23Q7/02 F16B27/00 F16P3/00 F16P3/04
CPC: Y10S408/71 Y10T74/2194 Y10T74/2198 Y10T408/545 Y10T409/30392 F16P3/02 B23Q7/1431 B23Q11/0891
European: B23Q11/08 B23Q7/14K2 F16P3/02
US: 198/346 408/71 408/710 409/134 411/366 411/411 411/412 411/432 411/437 74/613 74/616



Family:

Publication number	Publication date	Application number	Application date
DE3115584 A1	19820325	DE19813115584	19810416
DE3115584 C2	19860717	DE19813115584	19810416
FR2487718 A1	19820205	FR19810008097	19810423
FR2487718 B1	19851108	FR19810008097	19810423
GB2080908 A1	19820210	GB19810023547	19810731
GB2080908 B2	19840815	GB19810023547	19810731
JP1297154 C3	19860120	JP19810054213	19810410

JP57033951 A2	19820224	JP19810054213	19810410
JP60020139 B4	19850520	JP19810054213	19810410
US4373406 A	19830215	US19800174441	19800801
US4432684 A	19840221	US19810286120	19810723

Priority:

GB19800024464 19800725 US19800174441 19800801 GB19810023547 19810731

Probable Assignee: MAGUS GMBH

Assignee(s): (std): CINCINNATI MILACRON CHEM ; CINCINNATI MILACRON CHEM INC ; CINCINNATI MILACRON INC ; CINCINNATI MILACRON IND INC ; ITW LTD

Assignee(s): CINCINNATI MILACRON INC A CORP OF OHIO ; CINCINNATI MILACRON INC EINE GES N D GESETZEN D S ; CINCINNATI MILACRON INC EINE GES N D GESETZEN D STAATES DELAWARE CINCINNATI OHIO US ; CINCINNATI MILACRON INC EINE GES ND GESETZEN D STAATES DELAWARE CINCINNATI OHIO US ; UNOVA IP CORP ; MAGUS GMBH ; MAGUS INTELLECTUAL PROPERTY GMBH ; ITW LIMITED

Inventor(s): (std): BLACKBURN NEIL P ; PALMER JOHN P ; TADEUZU BUIKUTORU PIOTOROSUKII ; TADEUZU UIKUTORU PIOTOROSUKII ; PIOTROWSKI TADEUSZ WIKTOR ; PIOTROWSKI TADEUSZ W

Inventor(s): WIKTOR PIOTROWSKI TADEUSZ ; PIOTROWSKI TADEUSZ WIKTOR CINCINNATI OHIO US ; TADEUSZ WIKTOR PIOTROWSKI

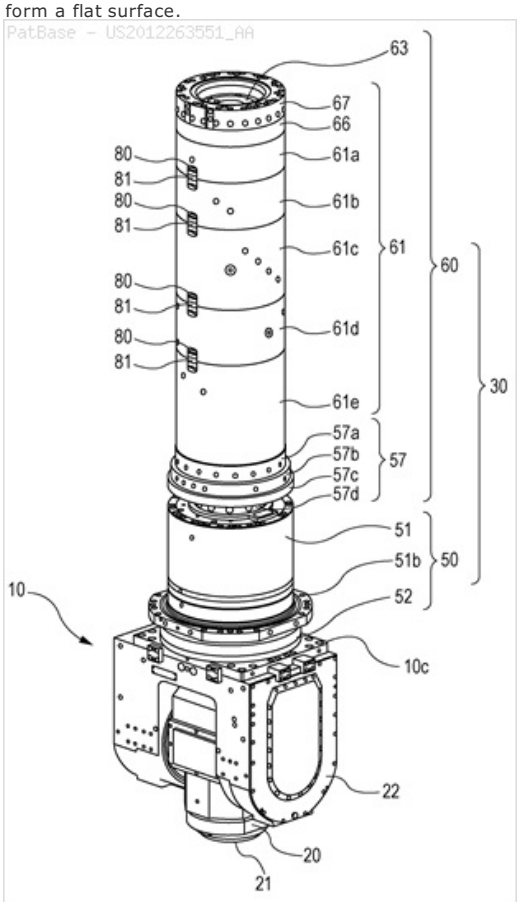
250) Family number: 52133453 (US2012263551A)

© PatBase

Title: ROTARY JOINT DEVICE, METHOD OF MACHINING ROTARY JOINT DEVICE, AND MAIN SHAFT DRIVING APPARATUS FOR MACHINE TOOL INCLUDING ROTARY JOINT DEVICE

Abstract: A rotary joint device includes attachment grooves formed at positions in an outer peripheral surface of an outer cylinder, each attachment groove being formed so as to straddle a pair of adjacent cylindrical blocks and so as to be exposed from the outer peripheral surface of the outer cylinder, each attachment groove having a bottom surface that is machined to form a flat surface in a state in which the cylindrical blocks are combined, and positioning blocks corresponding to the attachment grooves on a one-to-one basis and each having an attachment phase that is uniquely set to a corresponding one of the attachment grooves in the axial direction and in a circumferential direction of the outer cylinder, each positioning block having an attachment surface corresponding to the bottom surface of a corresponding one of the attachment grooves, the attachment surface being machined so as to form a flat surface.

Classifications:
International (IPC 8-9): B23P13/00 B23Q1/25 B23Q1/70 B23Q11/12 B23Q3/14 B23Q5/04 B23Q5/06 B23Q5/10 F16L27/08 F16L27/093 F16L39/04 (Advanced/Invention)
CPC: F16L39/04 Y10T29/49 B23Q5/06 B23Q1/70 F16J15/18 F16L27/08 Y10T409/300672 Y10T409/303976 Y10T409/307672 Y10T409/308456
European: F16L39/04
US: 285/121.3 285/121.5 29/592 409/135 409/201



Family:

Publication number	Publication date	Application number	Application date
CN102729088 A	20121017	CN201210042496	20120222
EP2511582 A1	20121017	EP20120000918	20120213
JP2012225359 A2	20121115	JP20110091141	20110415
JP5789118 B2	20151007	JP20110091141	20110415
KR101552535 B1	20150911	KR20120036153	20120406
KR20120117647 A	20121024	KR20120036153	20120406
TW201240768 A	20121016	TW20120110023	20120323
TWI538770 B	20160621	TW20120110023	20120323
US2012263551 AA	20121018	US20120369877	20120209
US9004830 BB	20150414	US20120369877	20120209

Priority:

JP20110091141 20110415

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std): MINAMIDE MASAYUKI ; TSUDAKOMA IND CO LTD ; URA HIROSHI

Assignee(s): TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA KOGYO KK ; TSUDAKOMA CORP ; TSUDAKOMA IND CO

Inventor(s): (std): URA YUJI ; URA HIROSHI ; MINAMIDE MASAYUKI ; MIDE MASAYUKI ; MASAYUKI MINAMIDE ; HIROSHI URA

Agent(s): SAMSON AND PARTNER; YOSHIDA AND ASSOCIATES LLC

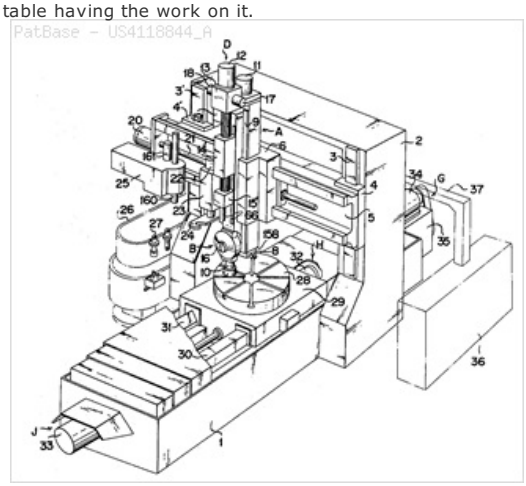
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

251) Family number: 24049453 (US4118844A)

Title: MACHINE TOOL

Abstract: A machine tool comprises a table mounted on a bed and adapted to be moved in the direction of longitudinal axis of the bed, said table being arranged to be driven or rotated, intermittently indexed and controlled of the turning position thereof; vertical columns installed in a plane extending at right angles to the bed and having vertically sliding rails or vertical slides; a cross rail mounted on said vertical slides so as to be slidably moved in the vertical direction; a saddle mounted on said cross rail so as to be slidably moved in the horizontal direction; said saddle being arranged to slidably move the ram means in a direction at right angles to said cross rail; said ram means having a lower end face on which a turning tool can be fixedly mounted; said ram means having in the front face or the side of the lower end thereof a turret head adapted to be rotated and indexed in a plane extending at right angles to said table face, said turret head having a main spindle which is adapted to be rotated or driven and on which a rotary machining tool can be mounted so as to effect facing or milling, boring, drilling and tapping and reaming etc. of a work, said turning tool fixedly mounted on the lower end face of said ram means being adapted to effect turning or cutting of the work by rotating the table having the work on it.

Classifications:
International (IPC 8-9): B23B31/26 B23C1/00 B23C1/14 B23Q1/48 B23Q16/10 B23Q3/12 B23Q3/155 B23Q3/157 (Advanced/Invention); B23B31/02 B23C1/00 B23Q1/25 B23Q16/00 B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23P23/02 B23Q3/12 B23Q3/155 B23Q3/157 B23Q37/00 B23Q39/02
CPC: Y10T29/5107 Y10T29/5114 Y10T409/308232 Y10T409/308344 Y10T409/309464 Y10T483/1767 B23C1/002 B23B31/263 B23C1/14 B23Q1/48 B23Q3/15506 B23Q3/15526 B23Q16/10
European: B23B31/26B1 B23C1/00B B23C1/14 B23Q1/48 B23Q16/10 B23Q3/155B B23Q3/155D2
US: 29/26A 29/27C 409/211 409/213 409/233 483/44



Family:

Publication number	Publication date	Application number	Application date
DE2739087 A1	19780309	DE19772739087	19770830
DE2739087 C2	19870709	DE19772739087	19770830
FR2362703 A1	19780324	FR19770026365	19770830
FR2362703 B1	19840217	FR19770026365	19770830
JP1129999 C3	19830117	JP19760102692	19760830
JP1132690 C3	19830127	JP19760102693	19760830
JP1148776 C3	19830526	JP19760102691	19760830
JP53028868 A2	19780317	JP19760102693	19760830
JP53028869 A2	19780317	JP19760102691	19760830
JP53028870 A2	19780317	JP19760102692	19760830
JP56051052 B4	19811203	JP19760102692	19760830
JP57025340 B4	19820528	JP19760102693	19760830
JP57038373 B4	19820814	JP19760102691	19760830
US4118844 A	19781010	US19770829193	19770830
USRE31288 E	19830628	US19800109261	19800103

Priority:

JP19760102691 19760830 JP19760102692 19760830 JP19760102693 19760830

Probable Assignee: KOMATSU MFG CO LTD

Assignee(s): (std): KOMATSU MFG CO LTD ; KOMATSU SEISAKUSHO KK

Assignee(s): KOMATSU SEISAKUSHO TOKIO TOKYO JP KK ; K K KOMATSU SEISAKUSHO ; KABUSHIKI KAISHA KOMATSU SEISAKUSHO ; KABUSHIKI KAISHA KOMATSU SEISAKUSHO TOKIO TOKYO JP

Inventor(s): (std): TSUKIJI YOSHIHIRO ; MATSUZAKI HIROSHI ; MATSUAZAKI HIROSHI

Inventor(s): TSUKIJI YOSHIHIRO KOMATSU ISHIKAWA JP ; MATSUAZAKI HIROSHI KANAZAWA ISHIKAWA JP

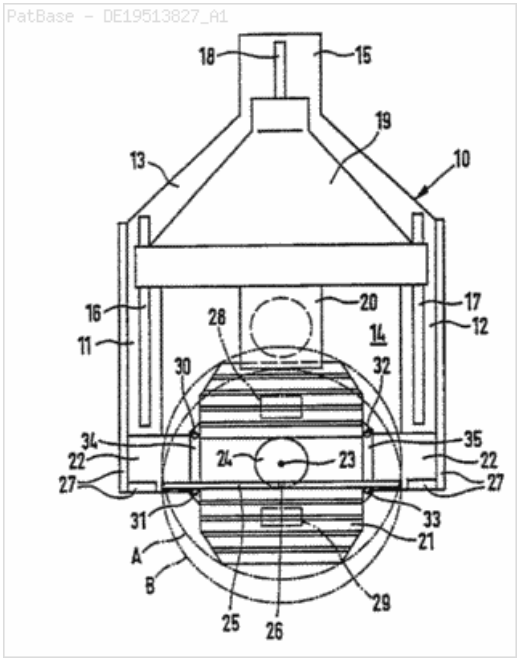
252) Family number: 18000453 (DE19513827A1)

Title: Swivel door securing machine tool working space

Abstract: The door (25) is fitted on a workpiece chuck table (21) rotatable about a central, vertical axis, thus forming two separated regions above the chuck table, while contacting with the latter. The swivel door comprises a central, vertical swivel

axis (26) with machine tool fixed swivel bearings. The door swivel axis is offset to the chuck table swivel axis (23) in the direction away from the working region. The chuck table has at least one carrier (30-33) for the swivel door rotary movement. At least one carrier protrudes from the chuck table plane.

Classifications:
International (IPC 8-9): B23Q1/52 B23Q1/66 B23Q11/08 F16P3/00 (Advanced/Invention);
B23Q1/25 B23Q11/08 F16P3/00 (Core/Invention)
International (IPC 1-7): B23Q11/08 F16P3/00
CPC: B23Q1/52 B23Q1/66 B23Q11/08 F16P3/00
European: B23Q1/52 B23Q1/66 B23Q11/08 F16P3/00



Family:

Publication number	Publication date	Application number	Application date
DE19513827 A1	19961017	DE19951013827	19950412

Priority:

DE19951013827 19950412

Probable Assignee: HERMLE BERTHOLD MASCHF AG

Assignee(s): (std)**:** HERMLE BERTHOLD MASCHF AG

Assignee(s): MASCHINENFABRIK BERTHOLD HERMLE AG ; MASCHINENFABRIK BERTHOLD HERMLE AG 78559 GOSHEIM D ; MASCHINENFABRIK BERTHOLD HERMLE AG 78559 GOSHEIM DE

Inventor(s): (std)**:** BRAUN HANS DIETER

Inventor(s): BRAUN HANS DIETER 78665 FRITTLINGEN DE

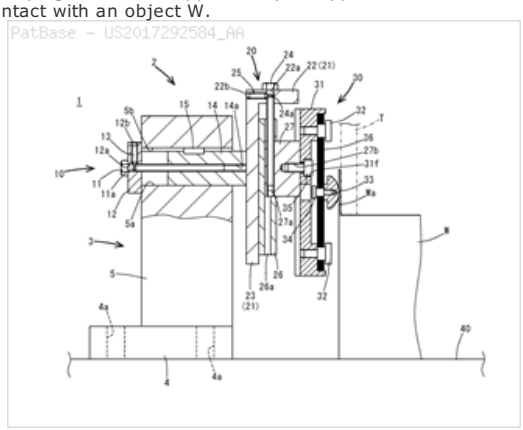
253) Family number: 67172455 (US2017292584A)

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Title: DAMPING APPARATUS

Abstract: A damping apparatus includes a damping unit **30** composed of a plurality of damping plates **36** having plasticity, a holding member **31** holding at least one ends of the damping plates **36** in a manner to allow deflection of the damping plates **36** with the damping plates **36** laminated together, and a contact member **33** provided at a position spaced from a holding position of the holding member **31,** and attached to an outermost one of the damping plates **36,** or extending through and held by the damping plates **36** in such a manner that it can be brought into contact with the outermost one of the damping plates **36** and can be moved in an extending direction thereof. The damping unit **30** is supported by a support mechanism **2** in such a manner that the contact member **33** can be brought into contact with an object W.

Classifications:
International (IPC 8-9): B23Q11/00 B23Q3/06 F16F15/02 F16F15/04 F16F15/12 F16F15/129 F16F7/00 (Advanced/Invention)
CPC: F16F15/129 F16F15/1201 F16F15/1207 F16F7/00 B23Q3/065 B23Q2240/005 B23Q11/0032 F16F15/073
US: 279/123



Family:

Publication number	Publication date	Application number	Application date
DE102017200880 A1	20171012	DE201710200880	20170119
JP2017190794 A2	20171019	JP20160078865	20160411
US2017292584 AA	20171012	US20170407518	20170117

Priority:

JP20160078865 20160411

Probable Assignee: KAWATATEC CORP

Assignee(s): (std): KAWATATEC CORP

Inventor(s): (std): MATSUMOTO TAKUYA ; OURA YASUNORI ; TANAKA TAKASHI ; KURITA YUTAKA ; TANABE HIROTAKA ; HARADA TAKESHI ; KAWATA MASAHIRO ; KAWADA MASAHIRO

Agent(s): MURAKAMI SATOSHI

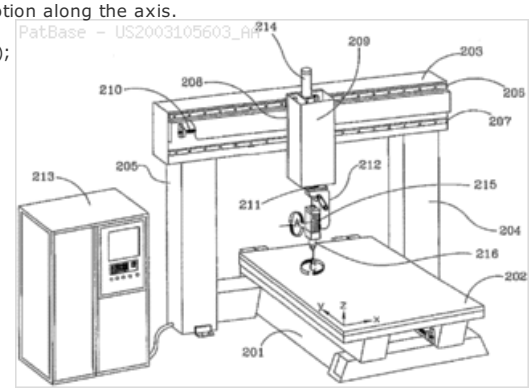
254) Family number: 28631455 (US2003105603A)

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Title: SYSTEM FOR CALIBRATING THE AXES ON A COMPUTER NUMERIC CONTROLLED MACHINING SYSTEM AND METHOD THEREOF

Abstract: A method and system for calibrating a machine capable of automatically calibrating the axes of the machine by comparing an initial calibration state of a particular axis with a subsequent motion of the machine along the same axis. The machine adjusts the motion along such axis based on the angular displacement by modifying the reference data in the computer memory of the machine to accord with the subsequent motion along the axis.

Classifications:
International (IPC 8-9): G05B19/401 G06F19/00 (Advanced/Invention); G05B19/401 G06F19/00 (Core/Invention)
International (IPC 1-7): G06F19/00
CPC: G05B19/401 G05B2219/37043 G05B2219/39032 G05B2219/50353
European: G05B19/401 S05B219/37043 S05B219/39032 S05B219/50353
US: 702/95 702/95P



Family:

Publication number	Publication date	Application number	Application date
US2003105603 AA	20030605	US20010997880	20011130
US6865498 BB	20050308	US20010997880	20011130

Priority:

US20010997880 20011130

Probable Assignee: THERMWOOD CORP

Assignee(s): (std): THERMWOOD CORP

Assignee(s): HARDESTY MICHAEL

Inventor(s): (std): HARDESTY MICHAEL ; HARDESTY MICHAEL P

Agent(s): STEVENS DAVIS MILLER AND MOSHER LLP

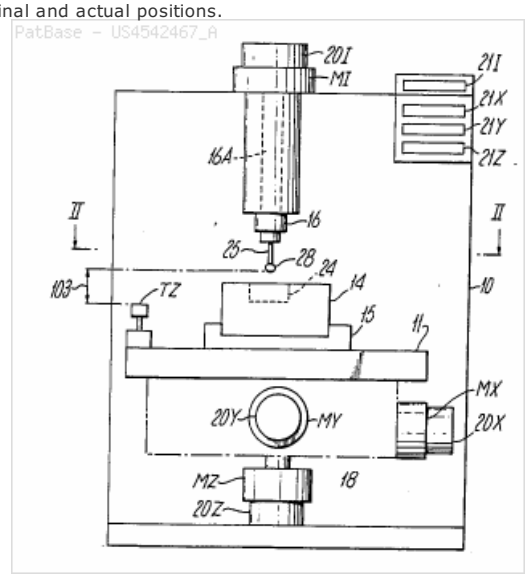
255) Family number: 4865458 (US4542467A)

© PatBase

Title: Method of operating a machine tool with a sensing probe in order to gather positional data for the calculation of tool offset parameters

Abstract: The machine tool is a machining center having an angularly positionable tool spindle, a work table movable relative to the spindle, and a surface-sensing probe mountable on the spindle for measuring dimensions or positions on a work piece situated on the table. The probe senses a surface when the latter lies a small distance ("the probe offset") away from the spindle axis. The method comprises providing on the workpiece a bore 24 defining opposite test surfaces -DX and +DX. The mid-point between the test surfaces has a known nominal position but an unknown actual position. The method further comprises operating the machine in a specified way to measure the test surfaces, the operation including rotating the spindle through 180 DEG between certain of the measuring operations. The measurements are then used for computing the probe offsets and the distance ("the work offset") between said nominal and actual positions.

Classifications:
International (IPC 8-9): G05B19/401 (Advanced/Invention); G05B19/401 (Core/Invention)
International (IPC 1-7): G06F15/00 G06F15/46
CPC: G05B19/4015 G05B2219/37207 G05B2219/39468 G05B2219/49177
European: G05B19/401C S05B219/37207 S05B219/39468 S05B219/49177
US: 318/572 364/474 700/193 700/195 702/168 702/95



Family:

Publication number	Publication date	Application number	Application date
US4542467 A	19850917	US19820421491	19820916
US4636960 A	19870113	US19850758808	19850725

Priority:

US19820421491 19820916 US19850758808 19850725

Probable Assignee: RENISHAW ELECTRICAL GLOUCESTER ST WOTTON UNER EDGE

Assignee(s): (std)**:** RENISHAW ELECTRICAL LTD

Assignee(s): RENISHAW ELECTRICAL GLOUCESTER ST WOTTON UNER EDGE ; RENISHAW ELECTRICAL LIMITED

Inventor(s): (std)**:** MCMURTRY DAVID R

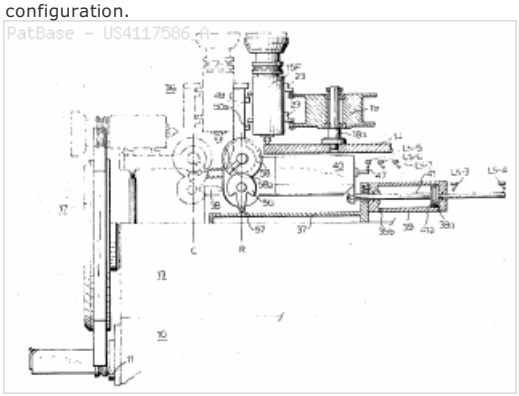
256) Family number: 7023459 (US4117586A)

© PatBase

Title: MACHINE TOOL WITH AUTOMATIC TOOL CHANGER

Abstract: A machine tool with an automatic tool changer having a tool storage magazine accommodating tools having the same shank configuration as that of the first shank, tools having the same configuration as that of the second shank, and a tool adaptor which has the same configuration as the larger of the first shank or second shank and which incorporate the smaller shank sections of the tools of the first shank or second shank configuration.

Classifications:
International (IPC 8-9): B23B31/20 B23Q3/157 (Advanced/Invention); B23B31/20 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: Y10S483/902 B23B31/207 B23Q3/15773 Y10T409/30 Y10T483/1736 Y10T483/176 Y10T483/1767 Y10T483/1864 Y10T483/1891 B23Q3/15724
European: B23B31/20B4 B23Q3/157D
US: 29/568 409/64 483/31 483/41 483/44 483/65 483/68 483/902



Family:

Publication number	Publication date	Application number	Application date
US4117586 A	19781003	US19760675897	19760412

Priority:

US19760675897 19760412

Probable Assignee: HITACHI SEIKI KK

Assignee(s): (std)**:** HITACHI SEIKI CO LTD ; HITACHI SEIKI KK

Assignee(s): HITACHI SEIKI CO

Inventor(s): (std)**:** HIGUCHI ISAO ; IMAI SUSUMU ; MIZUNO TOSHIHIKO ; UCHIDA YOSHIRO ; USUI SHYOICHIRO

257) Family number: 32431460 (US2008061486A)

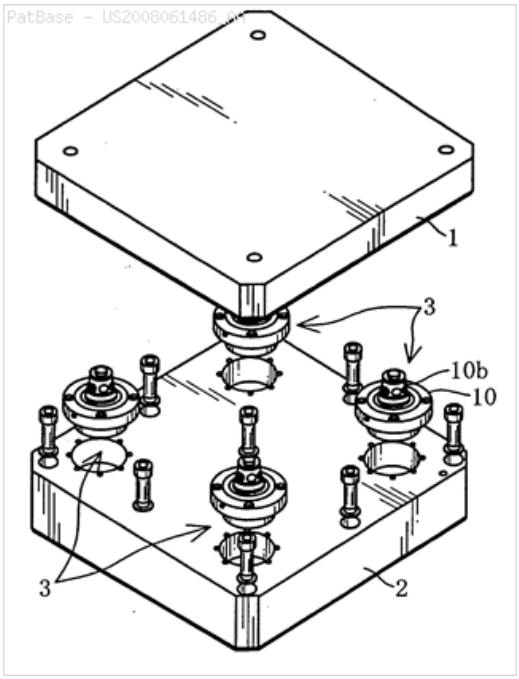
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Title: POSITIONING AND CLAMPING DEVICE AND POSITIONING DEVICE

Abstract: In the positioning and clamping device (3), a positioning mechanism (13) has an annular tapered surface (40) that is formed on the outer periphery of a cylindrical shaft (10 b) for positioning a pallet (1) in the horizontal direction, and has a decreasing diameter toward the axial tip of the cylindrical shaft (10 b), and an annular engaging mechanism (41), which is formed on the inner periphery side portion of an annular engagement member (11), to engage with the annular tapered surface (40), and is elastically deformed in the radial direction, as a result of engagement with the annular tapered surface(40), and the engaging mechanism (41) has a tapered ring portion (50), which makes a face contact with the annular tapered surface (40), and multiple ribs (51) extending outward, radially, from the tapered ring portion (50).

Classifications:
International (IPC 8-9): B21D37/14 B23Q1/00 B23Q3/00 B23Q3/06 B23Q3/14 B23Q3/18 (Advanced/Invention); B23Q3/00 B23Q3/06 B23Q3/18 (Advanced/Non-invention)
International (IPC 1-7): B21D37/14 B23Q3/00 B23Q3/06 B23Q3/18
CPC: B23Q3/183 B23Q1/0081
European: B23Q1/00D B23Q1/00D3 B23Q3/18B
US: 269/309 269/310 269/48.1 269/48.100P

PatBase - US2008061486



Family:

Publication number	Publication date	Application number	Application date
CN1890051 A	20070103	CN200480035626	20040519
CN1890051 B	20120523	CN200480035626	20040519
DE602004030952 D1	20110217	DE200460030952T	20040519
EP1752252 A1	20070214	EP20040745258	20040519
EP1752252 A4	20090408	EP20040745258	20040519
EP1752252 A9	20070509	EP20040745258	20040519
EP1752252 B1	20110105	EP20040745258	20040519
JP2005110671 A1	20080321	JP20060513482T	20040519
JP4584921 B1	20101124	JP20060513482T	20040519
JP4584921 B2	20101124	JP20060513482T	20040519
KR101037112 B1	20110526	KR20067011703	20060614
KR20070012325 A	20070125	KR20067011703	20040519
US2008061486 AA	20080313	US20040596438	20040519
US7819392 BB	20101026	US20040596438	20040519
WO05110671 A1	20051124	WO2004JP06751	20040519

Priority:

EP20040745258 20040519 WO2004JP06751 20040519

Probable Assignee: PASCAL ENGINEERING CORP

Assignee(s): (std): KURODA TAKAYUKI ; MUNECHIKA TAKAYUKI ; PASCAL ENG CORP ; PASCAL ENGINEERING CORPORTAION

Assignee(s): PASCAL ENGINEERING CORP

Inventor(s): (std): KURODA TAKAYUKI ; MUNECHIKA TAKAYUKI ; TAKAYUKI KURODA TAKAYUKI MUNEC ; TAKAYUKI MUNECHIKA ; TAKAYUKI KURODA

Inventor(s): KURODA TAKAYUKI PASCAL ENGINEERING CORPORATION ; MUNECHIKA TAKAYUKI PASCAL ENGINEERING CORPORATION ; KURODA TAKAYUKI MUNECHIKA TAKAYUKI

Agent(s): PRICE NIGEL JOHN KING; OKAMURA TOSHIO; JORDAN AND HAMBURG LLP; JORDAN AND HAMBURG LL

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

258) Family number: 67376462 (WO17188239A1)

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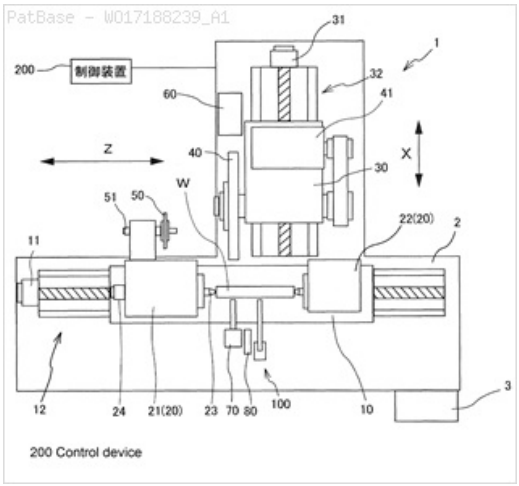
Title: MACHINE TOOL SYSTEM AND SURFACE ROUGHNESS DETECTION METHOD

Abstract: The present invention addresses the problem of providing a machine tool system capable of suitably measuring the shape of a workpiece, providing a machine tool system for suitably calculating the surface roughness of the workpiece and a surface roughness detection method employing the machine tool system, and providing a machine tool system comprising a coolant liquid contamination evaluation device with which a sensor can be provided to a tank main body and which is capable of evaluating the degree of contamination of a coolant liquid. The machine tool system comprises a workpiece support device 20 that rotatably supports a workpiece W, a grinding wheel 40 that serves as a tool for processing the workpiece W, a detection unit 120 that performs non-contact detection of the workpiece W, and a calculation unit 220 that extracts shape information of the workpiece W or calculates the surface roughness of the workpiece W on the basis of a detection result from the detection unit 120.

Classifications:

International (IPC 8-9): B23Q11/00 B23Q11/10 B23Q17/09 B23Q17/20 B23Q17/24 B24B19/12 B24B49/00 B24B49/02 B24B49/04 B24B49/10 B24B49/12 B24B5/04 B24B5/42 B24B51/00 B24B55/12 G01B11/30 G01B21/30 G01N33/18 (Advanced/Invention)

CPC: B23Q11/00 B23Q17/24 B24B49/02 B24B49/12 B24B55/12



Family:

Publication number	Publication date	Application number	Application date
CN109070297 A	20181221	CN201780025440	20170425
DE112017002245 T5	20190228	DE201711002245T	20170425
JP2017200722 A2	20171109	JP20170086849	20170426
JP2017201308 A2	20171109	JP20170086842	20170426
JP2017201309 A2	20171109	JP20170086847	20170426
JP2018024077 A2	20180215	JP20170086850	20170426
JP2018024078 A2	20180215	JP20170086851	20170426
JP2018024079 A2	20180215	JP20170086852	20170426
JP2018024080 A2	20180215	JP20170086854	20170426
WO17188239 A1	20171102	WO2017JP16355	20170425

Priority:

JP20160091859 20160428 JP20160091860 20160428 JP20160091861 20160428
JP20160156934 20160809 JP20160156935 20160809 JP20160156936 20160809
JP20160156937 20160809 WO2017JP16355 20170425 JP20170086842 20170426
JP20170086847 20170426 JP20170086849 20170426 JP20170086850 20170426
JP20170086851 20170426 JP20170086852 20170426 JP20170086854 20170426

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

Assignee(s): N A

Inventor(s): (std)**:** FUKUDA EIJI ; FUKUTA EIJI ; ISHIHARA MITSUHARU ; MORITA HIROSHI

Agent(s): KOBAYASHI OSAMU ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

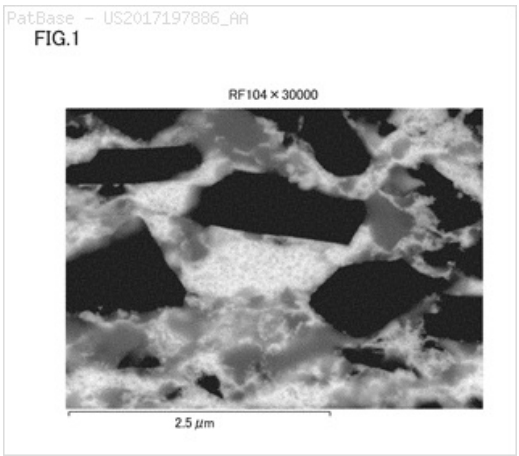
259) Family number: 64287465 (US2017197886A)

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Title: SINTERED COMPACT AND CUTTING TOOL

Abstract: A sintered compact has a first material, a second material, and a third material. The first material is cubic boron nitride. The second material is a compound including zirconium. The third material is an aluminum oxide and the aluminum oxide includes a fine-particle aluminum oxide. The sintered compact has a first region in which not less than 5 volume percent and not more than 50 volume percent of the fine-particle aluminum oxide is dispersed in the second material. On arbitrary straight lines in the first region, an average value of continuous distances occupied by the fine-particle aluminum oxide is not more than 0.08 micro m and a standard deviation of the continuous distances occupied by the fine-particle aluminum oxide is not more than 0.1 micro m.

Classifications:
International (IPC 8-9): B23B27/14 B23B27/20 B23B51/00 B23C5/16 B23C5/20 C04B35/488 C04B35/583 C04B35/5831 C04B35/626 C04B35/63 C04B35/645 (Advanced/Invention); B23B27/14 C04B35/583 (Core/Invention)
CPC: C04B2235/3206 C04B2235/3225 C04B2235/3229 C04B2235/3839 C04B2235/3843 C04B2235/3852 C04B2235/3865 C04B2235/3873 C04B2235/3886 C04B2235/402 C04B2235/5445 C04B2235/5454 B23C5/20 C04B35/4885 C04B35/6303 C04B35/6264 B23B2228/44 B23C2224/04 B23C2226/125 B23C2228/49 C04B2235/656 C04B2235/6567 C04B35/5831 B23B27/148 B23B2224/04 B23B2226/125 C04B35/6261 C04B35/645 C04B2235/3217 C04B2235/3244 C04B2235/386 C04B2235/5436 C01F7/34 C01F7/36 C01G25/02 C01P2002/50 C01P2002/54 C01P2004/64



Family:

Publication number	Publication date	Application number	Application date
CA2955292 AA	20170113	CA20162955292	20160224
CN106795061 A	20170531	CN201680002181	20160224
DE602016006261 D1	20181031	DE201660006261T	20160224
EP3156384 A1	20170419	EP20160802855	20160224
EP3156384 A4	20170809	EP20160802855	20160224
EP3156384 B1	20181003	EP20160802855	20160224
ID201802143 A	20180302	ID2017P0000865	20160224
IN201717001679 A	20170519	IN201717001679	20170116
JP2016194416 A1	20180419	JP20170521711T	20160224
KR20180015602 A	20180213	KR20177002843	20160224
MX2017000970 A1	20170501	MX20170000970	20160224
TH175650 A	20180503	TH20171000667	20160224
US2017197886 AA	20170713	US20160327214	20160224
US9988314 BB	20180605	US20160327214	20160224
WO16194416 A1	20161208	WO2016JP55376	20160224
WO16194416 A9	20170202	WO2016JP55376	20160224

Priority:

JP20150110671 20150529 EP20160802855 20160224 WO2016JP55376 20160224

Probable Assignee: SUMITOMO ELECTRIC HARDMETAL CORP

Assignee(s): (std): SUMITOMO ELECTRIC HARDMETAL CORP ; SUMITOMO ELECTRIC INDUSTRIES ; SUMITOMO ELECTRIC IND

Assignee(s): SUMITOMO ELECTRIC HARDMETAL CORP ITAMI SHI ; SUMITOMO ELECTRIC IND LTD OSAKA SHI ; SUMITOMO ELECTRIC IND LTD ; DANDA MAYU ; KUKINO SATORU ; OKAMURA KATSUMI

Inventor(s): (std): DANDA MAYU ; KATSUMI OKAMURA ; KUKINO SATORU ; MAYU DANDA ; OKAMURA KATSUMI ; SATORU KUKINO

Agent(s): MARKS AND CLERK; GRUENECKER PATENT U RECHTSANWAELTE PARTG MBB; DR BELINDA ROSALINA SH LLM; FUKAMI PATENT OFFICE PC; VENABLE LLP; MICHAEL A; MIGUEL A

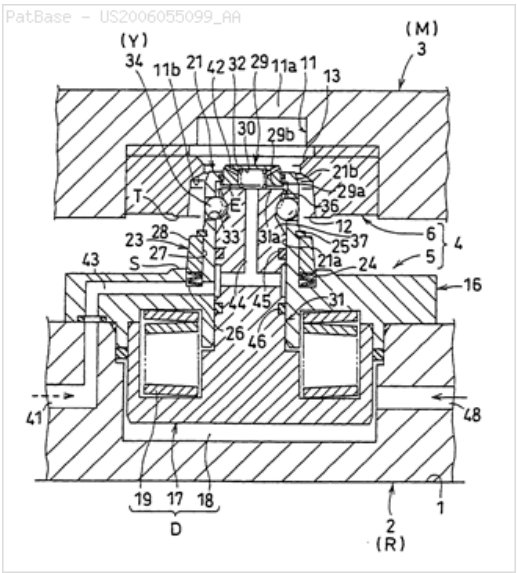
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260) Family number: 30303465 (US2006055099A) © PatBase

Title: CLAMPING DEVICE

Abstract: An annular plug portion (21) projects from a clamp pallet (2). An annular shuttle member (23) is supported by the plug portion (21) to be movable in the vertical direction. A work pallet (3) is provided with a tapered inner peripheral surface (12) which makes an engagement with a tapered outer peripheral surface (28) of the shuttle member (23). A transmission member (29) is inserted into an upper portion of a cylindrical hole (21 a) of the plug portion (21), while a rod (31) is inserted into a lower portion of the cylindrical hole (21 a). When the rod (31) is driven downward for clamping, an output portion (36) of the rod (31) moves the work pallet (3) downward through engaging balls (34) to form a transmission gap (G) between a pushing portion (31 a) of the upper end of the rod (31) and a pressure receiving portion (29 b) of the transmission member (29). When the rod (31) is driven upwards for unclamping, the pushing portion (31 a) pushes upwards the work pallet (3) through the transmission member (29).

Classifications:
International (IPC 8-9): B23Q1/00 B23Q11/00 B23Q3/00 B23Q7/14 (Advanced/Invention);
B23Q1/00 B23Q11/00 B23Q3/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q1/00 B23Q11/00 B23Q3/00 B23Q33/00
CPC: B23Q1/0018 B23Q1/0081
European: B23Q1/00B2 B23Q1/00D B23Q1/00D3 B23Q7/14K
US: 269/309 269/309P



Family:

Publication number	Publication date	Application number	Application date
AT362820 E	20070615	AT20030741253T	20030707
AU2003281813 AA	20040223	AU20030281813	20030707
CN100577349 C	20100106	CN20038018733	20030707
CN1675026 A	20050928	CN20038018733	20030707
DE60313991 D1	20070705	DE20036013991	20030707
DE60313991 D1	20070705	DE20036013991T	20030707
DE60313991 T2	20080124	DE20036013991T	20030707
EP1552901 A1	20050713	EP20030741253	20030707

EP1552901 A4	20050928	EP20030741253	20030707
EP1552901 B1	20070523	EP20030741253	20030707
JP2004012902 A1	20060921	JP20040525779T	20030707
JP4541144 B1	20100908	JP20040525779T	20030707
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TW200402345 A	20040216	TW20030119438	20030716
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US2006055099 AA	20060316	US20050523404	20050203
US7232121 BB	20070619	US20050523404	20050203
WO04012902 A1	20040212	WO2003JP08630	20030707

Priority:

JP20020228447 20020806 WO2003JP08630 20030707

Probable Assignee: KOSMEK LTD

Assignee(s): (std)**:** HARUNA YOSUKE ; KOSMEK KABUSHIKI KAISHA ; KOSMEK KK ; KOSMEK LTD

Assignee(s): KABUSHIKI KAISHA KOSMEK

Inventor(s): (std)**:** HARUNA YOSUKE ; YOSUKE HARUNA

Agent(s): KAJI YOSHIYUKI; SUHARA MAKOTO; BACON AND THOMAS PLLC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

261) Family number: 61061468 (US2017198729A)

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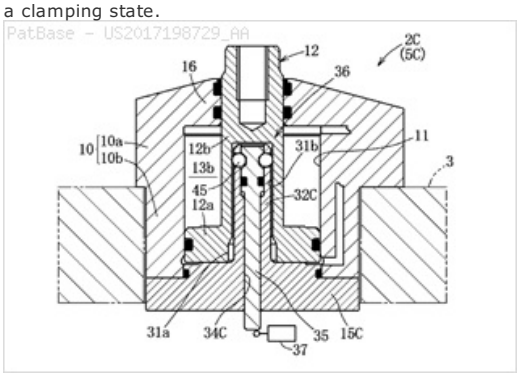
Title: HYDRAULIC CYLINDER AND CLAMP DEVICE

Abstract: A hydraulic cylinder includes a rod insertion hole formed in a piston member, an auxiliary rod provided to a head side end wall member and capable of being inserted into the rod insertion hole, a rod fitting hole formed to pass through the head side end wall member and the auxiliary rod, a movable rod installed in the rod fitting hole and whose end portion toward a head side end wall projects to the exterior, a movement restriction mechanism that prohibits shifting of the movable rod in an unclamping state and permits shifting of the movable rod in a clamping state.

Classifications:

International (IPC 8-9): B23Q17/00 B23Q3/06 B23Q3/08 B25B5/06 F15B15/14 F15B15/20 F15B15/24 F15B15/28 (Advanced/Invention)

CPC: F15B15/28 F15B15/1423 B23Q3/082 F15B15/24 B23Q2703/04 F15B2211/7051 F15B15/2807 F15B15/14 B23Q3/08 B25B5/061



Family:

Publication number	Publication date	Application number	Application date
CN106232999 A	20161214	CN201580021518	20150410
CN106232999 B	20180601	CN201580021518	20150410
EP3153712 A1	20170412	EP20150803701	20150410
EP3153712 A4	20180207	EP20150803701	20150410
JP2015230025 A2	20151221	JP20140115724	20140604
JP6410342 B2	20181024	JP20140115724	20140604
KR20170013874 A	20170207	KR20167033006	20150410
TW201546375 A	20151216	TW20150112233	20150416
TWI647388 B	20190111	TW20150112233	20150416
US2017198729 AA	20170713	US20150315600	20150410
WO15186432 A1	20151210	WO2015JP61226	20150410

Priority:

JP20140115724 20140604 WO2015JP61226 20150410

Probable Assignee: PASCAL ENGINEERING CORP

Assignee(s): (std)**:** PASCAL ENG CORP

Assignee(s): PASCAL ENGINEERING CORP

Inventor(s): (std)**:** KITAURA ICHIRO

Agent(s): ROBERTS MARK PETER; OKAMURA TOSHIO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

262) Family number: 49371468 (EP2354872A1)

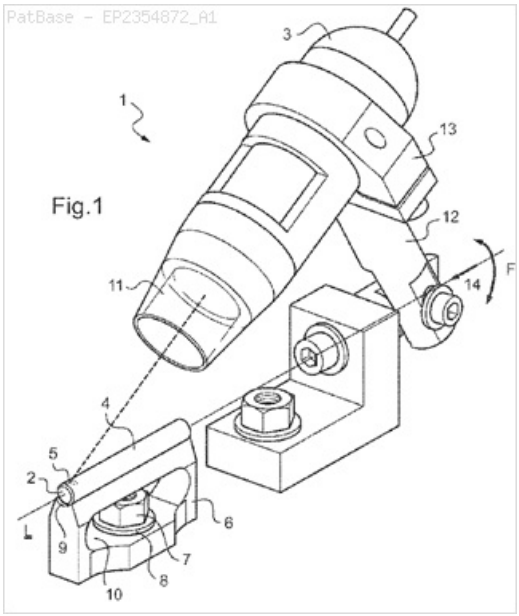
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Title: MACHINE TOOL, METHOD FOR CONTACT MEASURING OF A DIMENSION OF A TOOL MOUNTED IN A SPINDLE OF A

MACHINE TOOL AND COMPENSATION METHOD FOR IMPLEMENTING SAID MEASUREMENT METHOD.

Abstract: The machine-tool has a machining tool for machining a piece to be machined, and a contact measurement device (1) for measuring dimension of the machining tool. The device has a reference element (2) i.e. cylindrical reference rod, covering a coating layer (4) i.e. paint e.g. Prussian blue paint, intended to be locally extracted during impact between the element and the machining tool. The device has a digital optical detector (3) pointing an impact zone (5) between the machining tool and the element for detecting a trace from extraction of the layer, where the detector includes a microscope. Independent claims are also included for the following: (1) a method for performing contact measurement of the dimension of a machining tool mounted in a spindle of the machine-tool (2) a compensation method implementing a contact measurement performing method.

Classifications:
International (IPC 8-9): B23Q15/22 B23Q15/28 G05B19/401 (Advanced/Invention)
CPC: B23Q17/0919 B23Q17/2452 G05B19/401 G05B2219/37335 G05B2219/37383 G05B2219/37405 G05B2219/45149
European: B23Q17/09B6 B23Q17/24J G05B19/401 S05B219/37335 S05B219/37383 S05B219/37405 S05B219/45149



Family:

Publication number	Publication date	Application number	Application date
EP2354872 A1	20110810	EP20110152406	20110127
FR2955513 A1	20110729	FR20100000321	20100128
FR2955513 B1	20120323	FR20100000321	20100128

Priority:
FR20100000321 20100128

Probable Assignee: CT TECH DE L IND DU DECOLLETAGE
Assignee(s): (std): CT TECH DE L IND DU DECOLLETAGE
Assignee(s): CENTRE TECHNIQUE DE L INDUSTRIE DU DECOLLETAGE
Inventor(s): (std): CHATAIN RICHARD
Inventor(s): RICHARD CHATAIN
Agent(s): SOGAN GLORIA; CABINET INNOVINCIA
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

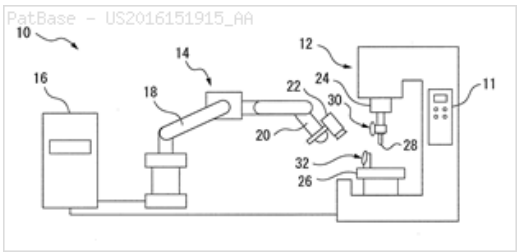
263) Family number: 62525469 (US2016151915A)

© PatBase

Title: COOPERATION SYSTEM HAVING MACHINE TOOL AND ROBOT

Abstract: A cooperation system of a robot and a machine tool, capable of obtaining a coordinate transformation means with high accuracy by a simple configuration, by which a robot coordinate system is transformed to a machine coordinate system. A provisional coordinate system is defined by coordinate values of three calibration markers in a base coordinate system obtained by translating the machine coordinate system, and a coordinate transformation matrix from the provisional coordinate system to the base coordinate system is calculated. The positions of the markers in the robot coordinate system are obtained by capturing the markers by a camera. Based on the three coordinate values in the robot coordinate system, a coordinate transformation matrix from the robot coordinate system to the provisional coordinate system is calculated, and a coordinate transformation matrix from the robot coordinate system to the base coordinate system is calculated based on the above two matrixes.

Classifications:
International (IPC 8-9): B23Q17/24 B25J11/00 B25J13/08 B25J15/00 B25J19/02 B25J9/16 B25J9/22 (Advanced/Invention)
CPC: B25J9/1692 B25J9/1697 Y10S901/02 B23Q17/2409 B25J19/023
US: 700/247 901/6



Family:

Publication number	Publication date	Application number	Application date
CN105643369 A	20160608	CN201510688224	20151021
CN105643369 B	20180410	CN201510688224	20151021
DE102015015094 A1	20160602	DE201510015094	20151120

DE102015015094 B4	20181115	DE201510015094	20151120
JP2016101640 A2	20160602	JP20140242393	20141128
JP6126067 B2	20170510	JP20140242393	20141128
US2016151915 AA	20160602	US20150952062	20151125
US9895810 BB	20180220	US20150952062	20151125

Priority:

JP20140242393 20141128

Probable Assignee: FANUC CORP

Assignee(s): (std)**:** FANUC CORP ; FANUC LTD

Inventor(s): (std)**:** OYAMADA MASAHIRO ; MIZUNO JUN ; NISHI HIROJI ; MIZUNO ATSUSHI ; NISHI KOJI

Agent(s): AOKI ATSUSHI; SHIMADA TETSURO; RATNERPRESTIA

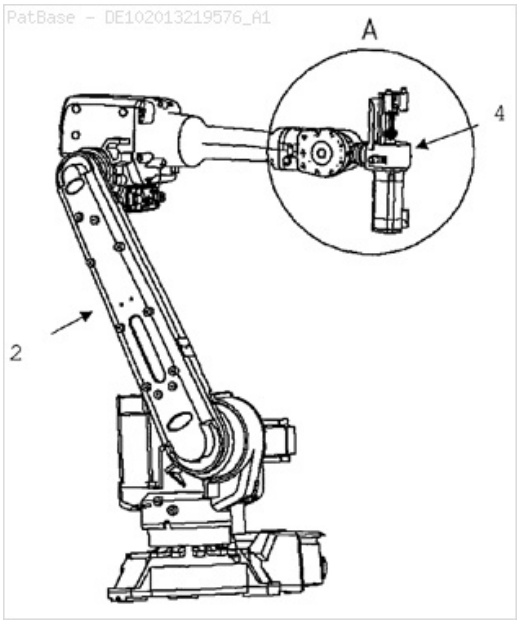
264) Family number: 58860469 (DE102013219576B4)

© PatBase

Title: Entgratwerkzeug zum Entfernen eines Grats von einem Werkstueck

Abstract: Source: DE102013219576B4 [DE] Entgratwerkzeug (8) umfassend eine in einen Antrieb einspannbare Drehachse (8a), zwei in Laengsrichtung an der Drehachse voneinander beabstandet angeordnete und sich quer zu dieser erstreckende Aufspannteller (8c, 8d) mit jeweils aeusseren Umfangsraendern, von denen mindestens einer laengsverschieblich an die Drehachse (8a) angeordnet ist, eine zwischen den Aufspanntellern (8c, 8d) angeordnete Druckfeder zur Realisierung einer definierten Vorspannung zwischen den Aufspanntellern (8c, 8d), sowie mindestens einem sich zwischen den Aufspanntellern (8c, 8d) erstreckenden Seil, DADURCH GEKENNZEICHNET, DASS an den Aufspanntellern (8c, 8d) Umlenkelemente vorgesehen sind, und dass das Seil einstueckig (8b) ausgebildet ist, welches sich um die Umlenkpunkte zwischen den Aufspanntellern (8c, 8d) erstreckt, dass die Umlenkelemente Umlenkrollen (8f) umfassen und dass die Umlenkrollen (8f) Bremsen umfassen oder Lagefixiermittel fuer das Seil (8b) vorgesehen sind.

Classifications:
International (IPC 8-9): B23D79/00 B29C37/02 (Advanced/Invention)
CPC: B23D79/00 B29C37/02



Family:

Publication number	Publication date	Application number	Application date
DE102013219576 A1	20150402	DE201310219576	20130927
DE102013219576 B4	20160324	DE201310219576	20130927

Priority:

DE201310219576 20130927

Probable Assignee: MONTAPLAST GMBH

Assignee(s): (std)**:** MONTAPLAST GMBH

Inventor(s): (std)**:** DICK MARTIN

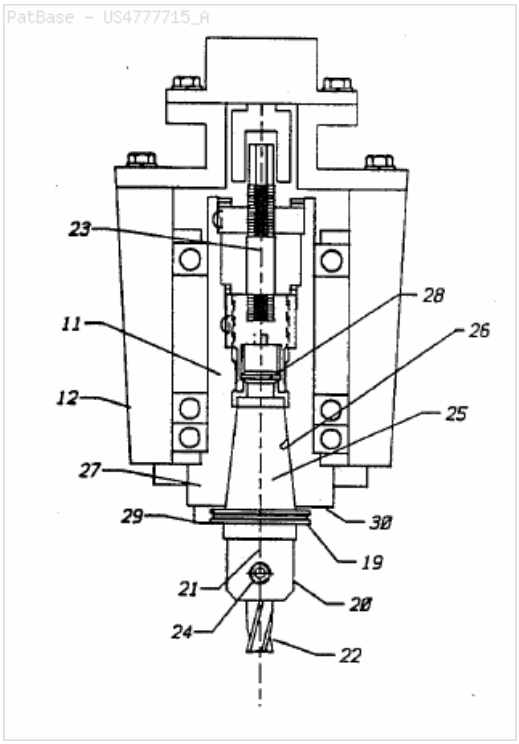
265) Family number: 10343475 (US4777715A)

© PatBase

Title: TOOL SHANK RETENTION MECHANISM WITH MACHINE TOOL THEREFOR

Abstract: A simple, strong and fast acting tool retention subsystem is intended for both original equipment and retrofit applications in machining centers with automatic tool changer systems. A machining center incorporating the invention is described. The invention is compatible with ANSI standards for spindles, tapered tool shanks and knobs, and is configured to eliminate the tool chatter and tool shank taper unseating and release commonly occurring in conventional spring actuated tool retention subsystems when spiral fluted cutters are used. The tool shank is positively jam locked by a rotary bolt actuator means that generates a very high value of axial pre-load tension, comparable to that which was furnished by the very successful historic manual draw-in bolt retention subsystem used in milling machines. A bi-directional free wheeling impact motor drives the rotary bolt actuator means between open and closed positions of a maximally strong collet. Positive seating of the tool shank in the spindle nose taper is assured by the extremely high pre-load tension applied to the knob, which is supplied by the mechanical strain of the steel of the jam locked mechanism and the supporting spindle structure. Thus the tool retention is limited only by the yield strength of the materials and not by the bias of any coil or belleville spring, as is the current practice in the machining center industry.

Classifications:
International (IPC 8-9): B23B31/26 (Advanced/Invention); B23B31/02 (Core/Invention)
International (IPC 1-7): B23C5/26 B23Q3/157
CPC: B23B31/265 B23B31/266 Y10T408/957 Y10T409/309464 Y10T483/1733 Y10T483/1736
European: B23B31/26B2 B23B31/26B3
US: 29/568 408/239A 409/233 483/30 483/31



Family:

Publication number	Publication date	Application number	Application date
US4777715 A	19881018	US19860925941	19861031

Priority:
US19860925941 19861031

Probable Assignee: ROBERTS WILLIAM C
Assignee(s): (std)**:** ROBERTS WILLIAM C
Inventor(s): (std)**:** ROBERTS WILLIAM C

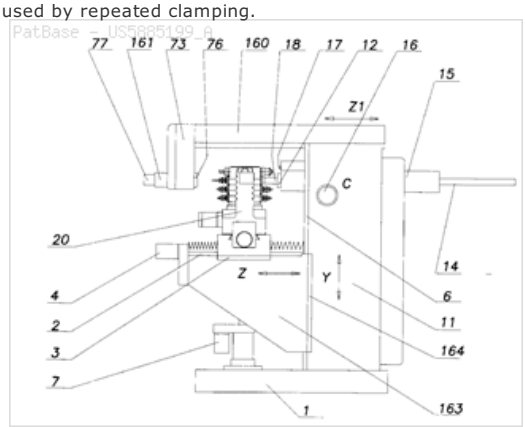
266) Family number: 11102476 (US5885199A)

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Title: COMPACT MACHINING CENTER FOR MULTIFUNCTION

Abstract: PCT No. PCT/CN96/00011 Sec. 371 Date Aug. 5, 1997 Sec. 102(e) Date Aug. 5, 1997 PCT Filed Feb. 6, 1996 PCT Pub. No. WO96/24456 PCT Pub. Date Aug. 15, 1996A multifunction, compact machining center has a work spindle which can rotate at high speed, or controlled by a C axis servo driver, and a frame-shaped tool magazine, which is composed of a standing part and a rotatable part. Arranged on the standing part are enough internal and external turning tools to complete all turning processes on one workpiece. Driven tools are held on the rotatable part to do drilling, boring, milling, gear hobbing, grinding, lapping etc. on the same workpiece at arbitrary angles. Additionally, work units for quenching, laser machining, gear shaping, bevel gear cutting, measuring, loading and unloading can also be employed on the tool magazine. By means of movements of the tool magazine relative to the work spindle in the plane perpendicular to the Z axis, each cutting tool or working unit can be put into the working area of the workpiece sequentially so as to complete all machining, measuring, loading and unloading. This invention replaces several machining centers or an FMS, and advantageously, this compact machining center avoids accuracy loss and waste of time caused by repeated clamping.

Classifications:
International (IPC 8-9): B23F17/00 B23Q3/157 B23Q39/02 B23Q39/04 (Advanced/Invention); B23F17/00 B23Q3/157 B23Q39/00 (Core/Invention)
International (IPC 1-7): B23B11/00 B23B29/24 B23P23/02 B23P25/00 B23Q3/155
CPC: B23Q2039/004 B23Q39/027 B23F17/006 B23Q3/157 B23Q39/04 Y10T29/5114 Y10T29/5154 Y10T82/2587 Y10T483/1705 Y10T483/1707 Y10T483/1736 Y10T483/1873
European: B23F17/00M B23Q3/157 B23Q39/02 B23Q39/02B4D B23Q39/04
US: 29/27C 29/39 483/18 483/19 483/31 483/66 82/159



Family:

Publication number	Publication date	Application number	Application date
CN1072541 C	20011010	CN19951000746	19950206
CN1132675 A	19961009	CN19951000746	19950206
EP0810048 A1	19971203	EP19960902210	19960206
EP0810048 A4	19990120	EP19960902210	19960206
US5885199 A	19990323	US19970875867	19970805
WO9624456 A1	19960815	WO1996CN00011	19960206

Priority:

CN19951000746 19950206 WO1996CN00011 19960206

Probable Assignee: SHAO WENYUAN

Assignee(s): (std): SHAO WENYUAN

Inventor(s): (std): WENYUAN SHAO ; SHAO WENYUAN

Designated states: AT BE CH DE DK ES FR GB GR IE IT JP LI LU MC NL PT SE US

267) Family number: 1605479 (US4135278A)

© PatBase

Title: AUTOMATIC TOOL CHANGING DEVICE FOR A MACHINING CENTER

Abstract: An automatic tool changing device includes a frusto-conically shaped tool holder holding a large number of machining tools and mounted on the forward end of the head of a machining center so as to be vertically movable and rotatable about a non-rotating shaft which is slanted downwardly, whereby by rotating the tool holder, the desired tool can be automatically and sequentially attached to the cutter head spindle of the machining center, used to machine a work and then removed so that the next tool can be attached to the cutter head spindle.

Classifications:

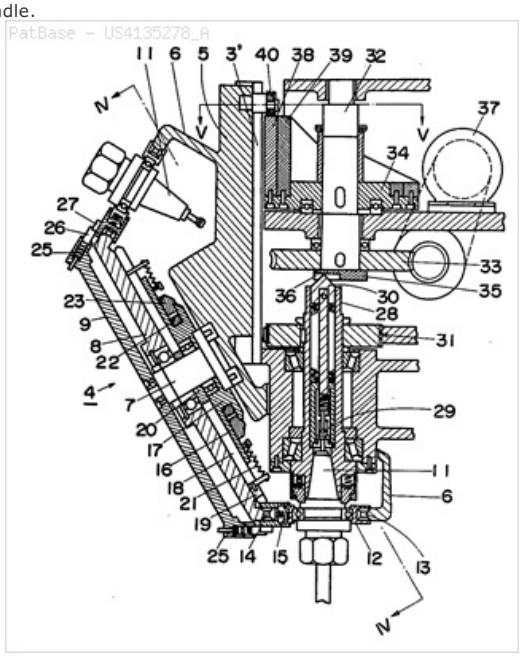
International (IPC 8-9): B23B39/20 B23Q3/157 (Advanced/Invention); B23B39/00 B23Q3/157 (Core/Invention)

International (IPC 1-7): B23Q3/152 B23Q3/155 B23Q3/157

CPC: Y10S483/90 Y10T29/5107 Y10T29/5155 Y10T408/37 Y10T483/1755 Y10T483/179 B23B39/205 B23Q3/15534

European: B23B39/20B

US: 29/26A 29/40 408/35 483/39 483/54 483/900



Family:

Publication number	Publication date	Application number	Application date
DE2733482 A1	19780202	DE19772733482	19770725
DE2733482 C2	19840517	DE19772733482	19770725
ES461015 A1	19780516	ES19770461015	19770726
FR2359682 A1	19780224	FR19770022497	19770722
FR2359682 B1	19820212	FR19770022497	19770722
GB1561415 A	19800220	GB19770028450	19770707
IT1081140 A	19850516	IT19770025974	19770721
JP1037425 C3	19810324	JP19760089327	19760727
JP53014481 A2	19780209	JP19760089327	19760727
JP55027821 B4	19800723	JP19760089327	19760727
US4135278 A	19790123	US19770817529	19770719

Priority:

JP19760089327 19760727

Probable Assignee: KITAMURA K

Assignee(s): (std): KITAMURA K ; KITAMURA KOICHIRO ; KITAMURA KOUICHIROU ; KOICHIRO KITAMURA

Assignee(s): KITAMURA KOICHIRO TAKAOKA JP

Inventor(s): (std): KITAMURA KOICHIRO ; KITAMURA KOUICHIROU

Inventor(s): KITAMURA KOICHIRO TAKAOKA JP

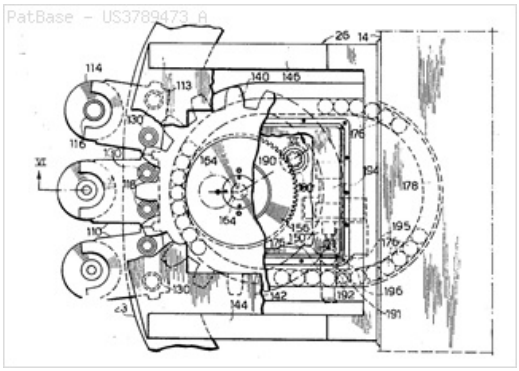
268) Family number: 530479 (US3789473A)

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Title: MACHINE TOOL HAVING AUTOMATIC MEANS FOR TOOL-CHANGE

Abstract: A machining center has a tool magazine in the form of an endless track. The tools are each mounted in an individual carriage, the carriages being packed end-to-end in the track and being drivable along it. A tool-change station is defined by a gap in the track from which one carriage may be removed for insertion of the tool into the machine spindle. A main tool-change incorporates a section of the track which completes the magazine track when this arm is in one position, and an auxiliary or carrier arm completes the track when the main arm is located away from the track. To avoid direct reading of the tools or carriages (which change their order in the magazine as tools are used and replaced) a simulator track is provided along which elements simulating the tools or carriages are driven simultaneously with the drive to the carriages. A reading device reads distinctive indicia on the simulator elements as they pass a reading station, and a signal is generated which governs the movement of the carriages and simulator elements. When a simulator element corresponding to a fresh tool required is read, the drive is stopped with this tool in the correct position for the first stage of tool-change.

Classifications:
International (IPC 8-9): B23Q3/155 (Advanced/Invention); B23Q3/155 (Core/Invention)
International (IPC 1-7): B23Q17/00 B23Q3/155 B23Q3/157
CPC: Y10T483/132 Y10T483/1783 Y10T483/1873 B23Q3/15546 B23Q3/15746
European: B23Q3/155D4
US: 211/1.52 29/56.8 29/568 483/51 483/66 483/8



Family:

Publication number	Publication date	Application number	Application date
DE2154408 A1	19720510	DE19712154408	19711028
FR2111981 A1	19720609	FR19710039072	19711029
FR2111981 B1	19760604	FR19710039072	19711029
GB1362379 A	19740807	GB19710048158	19711015
SU442589 D	19740905	SU19711709807	19711029
SU442589 T	19740905	SU19711709807	19711029
US3789473 A	19740205	US19710189501	19711015

Priority:
IT19700070639 19701031

Probable Assignee: OLIVETTI AND CO SPA

Assignee(s): (std)**:** OLIVETTI AND CO SPA ; INOSTRANTSY ELIO PAGELLA ; INOSTRANNA INZH OLIVETTI END S P A FA ; DZHORDZHIO OLLEARO

Assignee(s): INOSTRANNA FIRMA INZH OLIVETTI END S P A ; INOSTRANNA INZH OLIVETTI END SP A FA ; OLIVETTI C AND C S P A IT ; OLIVETTI SPA ING C ; OLIVETTI ET C SPA ; OLIVETTI ING C SPA

Inventor(s): (std)**:** OLLEARO G ; PAGELLA E

Inventor(s): PAGELLA E IT ; OLLEARO G IT

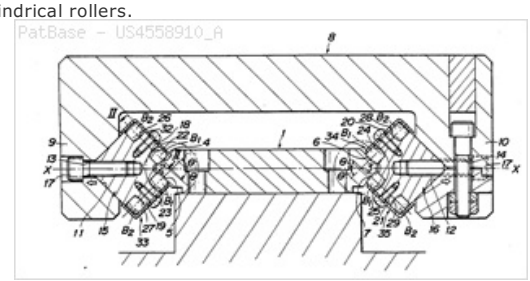
269) Family number: 7838482 (US4558910A)

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Title: Linear slide roller bearing unit

Abstract: A linear slide roller bearing unit for use in, for example, a machining center has a track shaft extending in the longitudinal direction of the linear slide roller bearing unit. The linear slide roller bearing unit further has a movable table constituted by a long block member disposed so as to straddle the track shaft, the movable table having longitudinal V-shaped grooves respectively formed in the opposing inner surfaces of skirt portions thereof. A pair of right and left bearing bodies are each constituted by a long block member of substantially square cross-section which is screwed to the corresponding V-shaped groove in the movable table, each bearing body having a guide ridge projecting from the center of each inner inclined surface portion of the block member. Barrel-shaped rollers are adapted to be recirculated along the loaded roller rolling surfaces and non-loaded roller surfaces of the bearing bodies and to come in contact with the loaded roller rolling surfaces on the track shaft when rolling along the loaded roller rolling surfaces on the bearing bodies. The rollers in the state of serving as loaded rollers are brought into contact with the loaded roller rolling surfaces on the track shaft at a contact angle of about 45 DEG with respect to the horizontal axis passing through both the centers of the right and left ridges of the track shaft. The barrel-shaped rollers may be replaced by cylindrical rollers.

Classifications:
International (IPC 8-9): F16C29/00 F16C29/06 (Advanced/Invention); F16C29/00 F16C29/06 (Core/Invention)
International (IPC 1-7): B23Q1/01 B23Q1/02 B23Q1/18 B23Q1/25 F16C29/04 F16C29/06
CPC: F16C29/0673 F16C29/0626 F16C29/001
European: F16C29/00A F16C29/06 F16C29/06S2R F16C29/06U3R
US: 384/44



Family:

Publication number	Publication date	Application number	Application date
DE3419450 A1	19841213	DE19843419450	19840524
DE3419450 C2	19890831	DE19843419450	19840524
DE3419450 C3	19951109	DE19843419450	19840524
FR2546585 A1	19841130	FR19840008135	19840524
FR2546585 B1	19871120	FR19840008135	19840524
GB2142096 A1	19850109	GB19840013247	19840523
GB2142096 B2	19860723	GB19840013247	19840523
GB8413247 A0	19840627	GB19840013247	19840523
IT1174551 A	19870701	IT19840021115	19840525
IT8421115 A0	19840525	IT19840021115	19840525
JP1120421 A2	19890512	JP19880072360	19880326
JP1578409 C3	19900913	JP19830092015	19830526
JP1828957 C3	19940315	JP19880072360	19880326
JP4027403 B4	19920511	JP19880072360	19880326
JP59219517 A2	19841210	JP19830092015	19830526
JP62020406 B4	19870507	JP19830092015	19830526

JP62063214 A2	19870319	JP19860216848	19860913
KR19840008945 A	19841220	KR19840002633	19840515
KR840008945 A	19841220	KR19840002633	19840515
KR860001680 B1	19861017	KR19840002633	19840515
US4558910 A	19851217	US19840613723	19840524

Priority:

JP19830092015 19830526 JP19860216848 19860913 JP19880072360 19880326

Probable Assignee: THK CO LTD

Assignee(s): (std)**:** TERAMACHI H ; TERAMACHI HIROSHI

Assignee(s): TERAMACHI HIROSHI TOKIO TOKYO JP ; THK CO LTD ; HIROSHI TERAMACHI

Inventor(s): (std)**:** TERAMACHI HIROSHI

Inventor(s): TERAMACHI HIROSHI TOKIO TOKYO JP ; HIROSHI TERAMACHI

270) Family number: 69658483 (US2018126472A)

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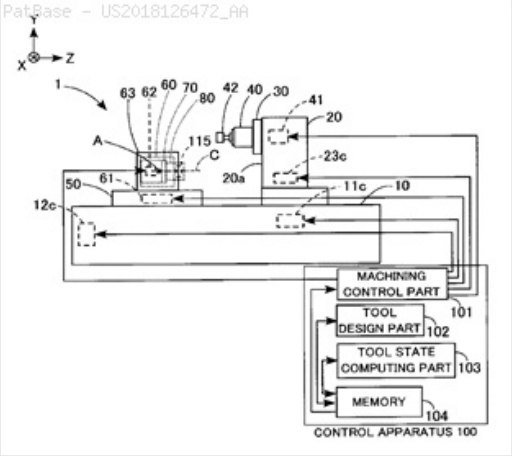
Title: GEAR MACHINING DEVICE AND GEAR MACHINING METHOD

Abstract: To provide a gear machining device and a gear machining method which achieve machining of tooth flanks having different torsion angles with high degree of accuracy. In a gear machining device, a side surface of a tooth of a gear includes a first tooth flank and a second tooth flank having a different torsion angle from the first tooth flank, a cutting blade of a machining tool has a blade traces having a torsion angle determined based on a torsion angle of the second tooth flank and an intersection angle between a rotation axis of a workpiece and a rotation axis of the machining tool so as to allow the second tooth flank to be machined on the pre-machined first tooth flank.

Classifications:

International (IPC 8-9): B23F15/06 B23F17/00 B23F19/00 B23F19/10 B23F21/14 B23F23/00 B23F5/00 B23F5/16 B23F5/20 B23Q15/007 (Advanced/Invention)

CPC: B23F19/005 B23F19/102 B23F23/1237 B23F21/14 B23F17/001 B23F5/00 B23F23/00



Family:

Publication number	Publication date	Application number	Application date
CN108015361 A	20180511	CN201711063747	20171102
DE102017125602 A1	20180509	DE201710125602	20171102
JP2018069435 A2	20180510	JP20160216680	20161104
JP2018079558 A2	20180524	JP20170142178	20170721
US2018126472 AA	20180510	US20170803241	20171103

Priority:

JP20160216679 20161104 JP20160216680 20161104 JP20170142178 20170721

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

Assignee(s): N A

Inventor(s): (std)**:** HIROYUKI NAKANO ; HISASHI OTANI ; KENTO TAKEUCHI ; LIN ZHANG ; NAKANO HIROYUKI ; OTANI HISASHI ; OTANI TAKASHI ; TAKEUCHI KENTO ; ZHANG LIN

271) Family number: 3532485 (US5205806A)

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Title: COMPOSITE-MACHINING MACHINE TOOL

Abstract: In a composite-machining machine tool for carrying out a turning operation and a machining center operation, a B-axis shaft 13, having a tool spindle head 14 mounted on its front end, is rotatably supported by a Y-axis slide 10, and the B-axis shaft 13 can be indexingly rotated by a B-axis servomotor 22. Clamp pistons 26 are provided in opposed relation to a flange portion 25 of a front end portion 13A of the B-axis shaft, and the clamp pistons 26 are pressed against the flange portion 25 to thereby fix the B-axis shaft at an arbitrary rotational angle position. By doing so, a hobbing tool 29 can be fixed in such a manner that the axis of this hobbing tool can be precisely indexed at a desired angular position with respect to a workpiece W, thereby enabling a hobbing operation.

Classifications:

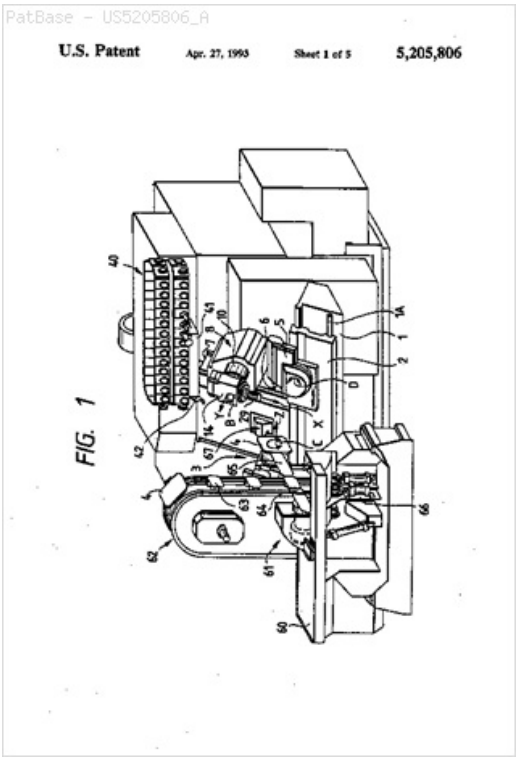
International (IPC 8-9): B23F23/00 B23F23/04 B23F23/12 B23F5/20 B23P23/00 B23Q16/02 G05B19/18 (Advanced/Invention); B23F23/00 B23F5/00 B23P23/00 B23Q16/00 G05B19/18 (Core/Invention)

International (IPC 1-7): B23F5/20 B23P23/00 B23Q1/00 B23Q3/157

CPC: Y10T29/5196 Y10T409/10159 Y10T409/102385 Y10T483/1705 Y10T483/1707 G05B19/186 B23F23/006 B23F23/04 B23F23/12 B23F23/1243 B23Q16/028

European: B23F23/00B B23F23/04 B23F23/12 B23F23/12E10

B23Q16/02L G05B19/18B5
US: 29/33P 409/11 409/16 483/18 483/19



Family:

Publication number	Publication date	Application number	Application date
DE69229754 D1	19990916	DE19926029754	19920220
DE69229754 T2	19991202	DE19926029754T	19920220
EP0500104 A2	19920826	EP19920102853	19920220
EP0500104 A3	19930310	EP19920102853	19920220
EP0500104 B1	19990811	EP19920102853	19920220
JP4269137 A2	19920925	JP19910047623	19910220
US5205806 A	19930427	US19920836910	19920219

Priority:

JP19910047623 19910220

Probable Assignee: TSUGAMI KK
Assignee(s): (std)**:** TSUGAMI KK
Assignee(s): TSUGAMI CORP ; TSUGAMI CORP TOKIO TOKYO
Inventor(s): (std)**:** YOSHIOKA MASAKI ; YAMAZAKI SHINICHI ; ISHIDA KENICHI
Inventor(s): ISHIDA KENICH
Designated states: CH DE FR GB IT LI

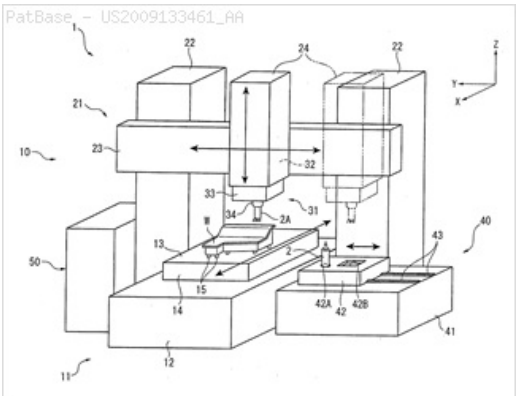
272) Family number: 43305486 (US2009133461A)

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Title: MACHINING METHOD, PROGRAM, MACHINING-PROGRAM GENERATING PROGRAM AND MACHINING APPARATUS OF PRESS DIE

Abstract: A machining method of a press die having a pierce cutter and a secondary relief-clearance area recessed inward relative to a profile of the pierce cutter is provided. A plunge cutting tool having a tool body and at least one edge portion provided on an outer circumference of an end of the tool body is used, the edge portion being protruding from the outer circumference of the tool body and being capable of carving while rotating around an axis of the tool body and moving in an axial direction of the tool body. While rotating the plunge cutting tool with an axis of the tool body being approximately parallel to a surface of the pierce cutter, the plunge cutting tool is relatively moved along the profile of the pierce cutter. The plunge cutting tool is also relatively moved in the axial direction of the tool body along the shape of the pierce cutter and the secondary relief-clearance area in a piercing direction each time the plunge cutting tool is relatively moved by a predetermined pitch.

Classifications:
International (IPC 8-9)**:** B21D28/00 B21D28/34 B21D37/00 B21D37/20 B23C3/00 B23C3/12 B23C9/00 B23Q15/013 G05B19/18 G05B19/4093 G05B19/4097 (Advanced/Invention); B21D28/00 B21D28/34 B21D37/00 B21D37/20 B23C3/00 G05B19/4093 G05B19/4097 (Core/Invention)
CPC: Y10T409/300896 Y10T409/303808 Y10T409/304144 Y10T409/307056 Y10T409/308288 Y10T409/30868 Y10T483/1795 B23C3/00 B23C2220/56 G05B19/4097
European: B23C3/00 G05B19/4097 L23C220/56
US: 409/132 409/132S 409/138 409/138S 409/190 409/212 409/212S 409/219 409/219S 409/80 483/56 483/56S 700/182 700/182S 700/186 700/187 72/325 72/325P 72/340 72/340S 72/419 72/419S



Family:

Publication number	Publication date	Application number	Application date
CN101444811 A	20090603	CN200810176379	20081125
CN101444811 B	20111116	CN200810176379	20081125
JP2009129263 A2	20090611	JP20070304766	20071126
JP5172293 B2	20130327	JP20070304766	20071126
US2009133461 AA	20090528	US20080276441	20081124
US2012224930 AA	20120906	US20120368484	20120208
US8137038 BB	20120320	US20080276441	20081124
US8414231 BB	20130409	US20120368484	20120208

Priority:

JP20070304766 20071126 US20080276441 20081124 US20120368484 20120208

Probable Assignee: TOSHIBA KIKAI KK

Assignee(s): (std): ARGO GRAPHICS INC ; ITOH TAKAMASA ; KATOH KOUICHI ; MIKAMI YOSHIAKI ; MIYAZAWA NORIHIRO ; SHINOHARA HIROFUMI ; TOSHIBA MACHINE CO LTD

Assignee(s): TOSHIBA MACHINE CO ; TOSHIBA MACH CO LTD ; TOSHIBA KIKAI KK ; TOSHIBA KIKAI KABUSHIKI KAISHA

Inventor(s): (std): MIKAMI YOSHIAKI ; KATOH KOUICHI ; ITOH TAKAMASA ; SHINOHARA HIROFUMI ; MIYAZAWA NORIHIRO ; ITO TAKAMASA ; MIKAMI SUMITERU ; KATO KOICHI ; KOUICHI KATOH ; YOSHIAKI MIKAMI ; TAKAMASA ITOH ; NORIHIRO MIYAZAWA ; HIROFUMI SHINOHARA

Agent(s): DLA PIPER LLP US; DLA PIPER LLP

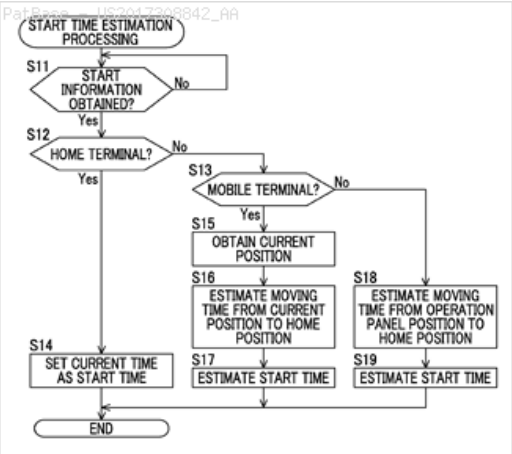
273) Family number: 67317489 (US2017308842A)

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Title: WORK INSTRUCTION SYSTEM

Abstract: A work instruction system for a facility including processing machines is configured to provide work instructions on the processing machines to workers. The work instruction system includes a process plan storage section configured to store a process plan that defines a performing sequence regarding processing performed by the processing machines and work on the processing machines performed by the workers; a next work candidate extraction section configured to extract next work candidates for the workers based on current states of the processing machines and the process plan; a capacity database configured to store work capacity of each worker with regard to each work type; and a next work determination section configured to determine next work for a specified worker from among the next work candidates, based on the work capacity stored in the capacity database.

Classifications:
International (IPC 8-9): G05B19/418 G06Q10/06 G06Q50/04 (Advanced/Invention)
CPC: G06Q10/063112 G06Q10/06398 G05B19/41865 G05B2219/32252 Y02P90/30 Y02P90/12



Family:

Publication number	Publication date	Application number	Application date
CN107315393 A	20171103	CN201710281315	20170426
DE102017108710 A1	20171026	DE201710108710	20170424
JP2017199150 A2	20171102	JP20160088502	20160426
JP2017199152 A2	20171102	JP20160088504	20160426
JP2017199153 A2	20171102	JP20160088505	20160426
US2017308842 AA	20171026	US20170496118	20170425

Priority:

JP20160088502 20160426 JP20160088504 20160426 JP20160088505 20160426

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP

Assignee(s): N A

Inventor(s): (std): AONO TOSHIO ; TSUZUKI TOSHIYUKI

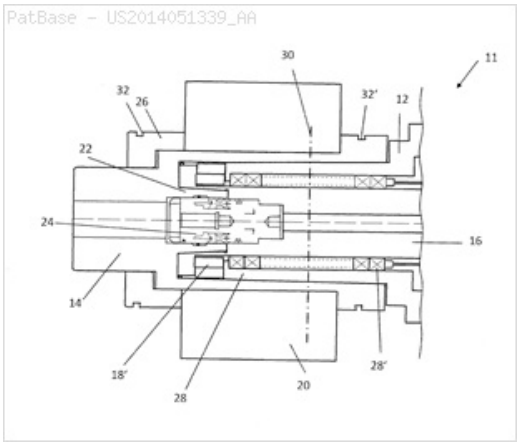
274) Family number: 55799492 (US2014051339A)

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Title: TOOL ARRANGEMENT

Abstract: A tool arrangement for a rotary machining tool, for example a grinding disk, has a spindle rotatably accommodated in a housing via a bearing set, onto which spindle a tool holder including a tool mandrel can be clamped for fixing the tool. The tool holder with the tool can be clamped onto the spindle such that the at least one front bearing of the bearing set as well as the set center of the bearing set are enclosed by the tool mandrel and/or the tool.

Classifications:
International (IPC 8-9): B23B19/02 B23B31/00 B23B31/02 B23F23/00 B23F23/12 B23Q3/12 B23Q3/14 B24B41/04 B24B45/00 (Advanced/Invention)
CPC: B23Q3/12 B23F23/1237
US: 1/1 451/294



Family:

Publication number	Publication date	Application number	Application date
CN103624335 A	20140312	CN201310364615	20130820
DE102012018358 A1	20140220	DE201210018358	20120917
EP2700466 A2	20140226	EP20130003643	20130719
EP2700466 A3	20150715	EP20130003643	20130719
JP2014037051 A2	20140227	JP20130170743	20130820
US2014051339 AA	20140220	US20130968966	20130816
US9346142 BB	20160524	US20130968966	20130816

Priority:

DE201210016514 20120820 DE201210018358 20120917

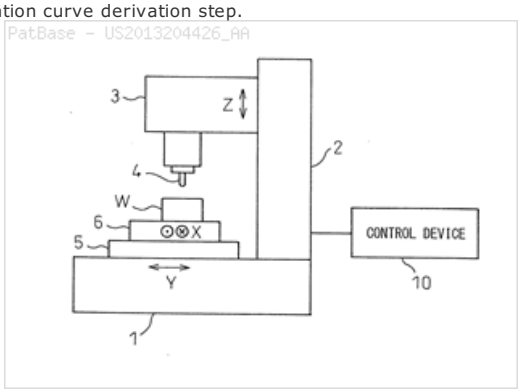
Probable Assignee: LIEBHERR VERZAHNTECHNIK GMBH
Assignee(s): (std): LIEBHERR VERZAHNTECH GMBH
Assignee(s): LIEBHERR VERZAHNTECHNIK GMBH
Inventor(s): (std): PLESSING MATTHIAS ; MATTHIAS PLESSING
Agent(s): LAUFHUETTE DIETER; MAEDA AND PARTNERS; CROWELL AND MORING LLP
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

275) Family number: 51042494 (US2013204426A)

Title: TOOL PATH GENERATION METHOD AND APPARATUS

Abstract: A method including a bend angle calculation step of calculating a bend angle theta at each connecting point of a broken line which is obtained by successively connecting a predetermined plurality of machining points P1 to P3 by line segments, an approximation curve derivation step of deriving an approximation curve L5 closer to the connecting point the larger the bend angle theta calculated by the bend angle calculation step, and a tool path generation step of generating a tool path PA7 along the approximation curve L5 derived by the approximation curve derivation step.

Classifications:
International (IPC 8-9): B23Q15/00 B23Q15/013 G05B19/18 G05B19/4093 G05B19/41 G05B19/4103 G05B19/42 (Advanced/Invention)
CPC: G05B19/182 G05B19/41 G05B2219/35018 G05B19/4103 G05B2219/34145
US: 1/1 700/190



Family:

Publication number	Publication date	Application number	Application date
CN103189809 A	20130703	CN201080069778	20101025
CN103189809 B	20151125	CN201080069778	20101025
EP2634658 A1	20130904	EP20100858943	20101025
EP2634658 A4	20161207	EP20100858943	20101025
JP2012056554 A1	20140320	JP20120540592T	20101025
JP5615377 B1	20141029	JP20120540592T	20101025
KR101538729 B1	20150722	KR20137010176	20101025
KR20130095762 A	20130828	KR20137010176	20101025
US2013204426 AA	20130808	US20100880173	20101025
US9244456 BB	20160126	US20100880173	20101025
WO12056554 A1	20120503	WO2010JP69243	20101025

Priority:

WO2010JP69243 20101025

Probable Assignee: MAKINO MILLING MACHINE CO LTD

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Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std): KOMORI TAKASHI ; TANUMA MASASHI ; YOSHIMURA TAKAHIRO

Agent(s): THUM BERNHARD; AOKI ATSUSHI; SHIMADA TETSURO; PAUL AND PAUL; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

276) Family number: 68877498 (EP3292932B1)

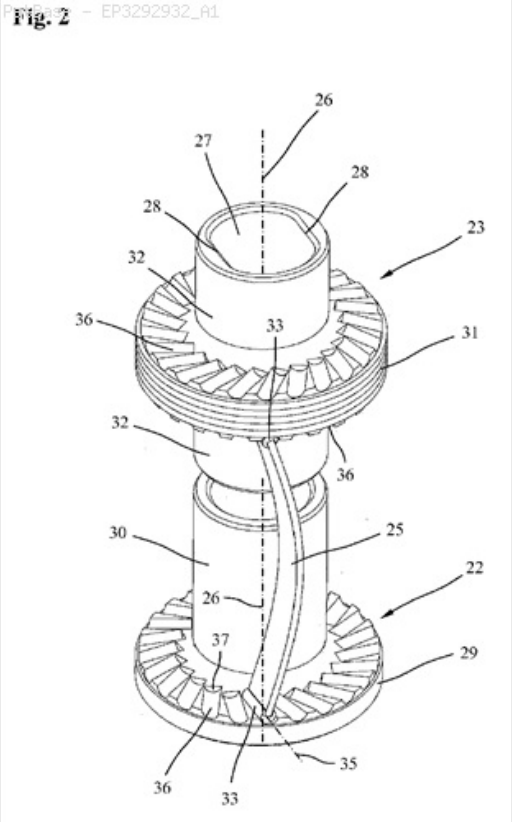
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Title: SPRING ARRANGEMENT FOR GENERATING THE DRAW-IN FORCE OF A TENSIONING DEVICE AND TENSIONING DEVICE WITH SUCH A SPRING ARRANGEMENT ENSEMBLE A RESSORT PERMETTANT DE GENERER LA FORCE DE SERRAGE D'UN DISPOSITIF DE SERRAGE ET DISPOSITIF DE SERRAGE POURVU D'UN TE

Abstract: Source: EP3292932A1 [DE] Die Erfindung betrifft eine Federanordnung (17) zur Erzeugung der Einzugskraft einer Spannvorrichtung mit mehreren in Axialrichtung voneinander beabstandeten Auflageeinrichtungen (22, 23, 24), zwischen denen mehrere im Umfangsrichtung voneinander beabstandete Biegestaebe (25) aus einem Faserverbundwerkstoff angeordnet sind. Die Enden der Biegestaebe (25) sind ueber jeweils ein an den Auflageeinrichtungen (22, 23, 24) schwenkbar gelagertes Zwischenstueck (33) gelenkig mit den Auflageeinrichtungen (22, 23, 24) verbunden.

Machine translation: The invention relates to a spring assembly (17) for the generation of the pull-in force of a tensioning device having a plurality of axially spaced support devices (22, 23, 24, 24), between which a plurality of circumferentially spaced bending rods (25) is made of a fiber composite material. Bending The ends of the rods (25) are via respective to the support devices (22, 23, 24, 24) pivotally mounted intermediate piece (33) are connected in an articulated manner to the support devices (22, 23, 24, 24).

Classifications:
International (IPC 8-9): B23B31/24 B23B31/26 B23Q3/12 (Advanced/Invention)
CPC: B23B31/265 B23B2260/136



Family:

Publication number	Publication date	Application number	Application date
DE102016117083 A1	20180315	DE201610117083	20160912
EP3292932 A1	20180314	EP20170181602	20170717
EP3292932 B1	20190515	EP20170181602	20170717

Priority:

DE201610117083 20160912

Probable Assignee: OTT JAKOB SPANNTECHNIK GMBH

Assignee(s): (std): OTT JAKOB SPANNTECHNIK GMBH

Inventor(s): (std): GREIF JOSEF ; MOHR PETER ; REISACHER BARTHOLOMAEUS JUN ; REISACHER JUN BARTHOLOMAEUS

Inventor(s): REISACHER JUN

Agent(s): CHARRIER RAPP AND LIEBAU

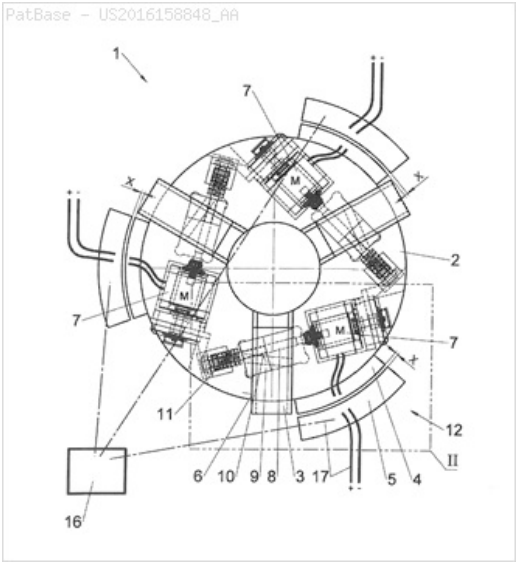
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

277) Family number: 62548500 (US2016158848A)

Title: CHUCK

Abstract: In a chuck (1) for supporting rotationally symmetrical workpieces (2) that are to be machined using a machine tool, consisting of a chuck body (3) that has at least three guideways (5) worked into its end face running in the direction of the longitudinal axis (4) of the chuck (3), at least three clamping jaws (6) that are inserted individually into each of the guideways (5) in a movable arrangement and a driving means (12) in a driving connection with the clamping jaws (6) directly or via intermediate elements (8, 11), each of the clamping jaws (6) of the chuck (1) should be adjustable during machining. This is achieved in that the driving means are configured as an electric motor (12), that each clamping jaw (6) has an electric motor (12) allocated to it, that each electric motor (12) is arranged inside the chuck body (3) and that, when the chuck (1) is stationary, the electric motors (12) are electrically connected to a power source (15) by means of a plug-and-socket connection (16) and electrical cables (14) and/or when the chuck (1) is rotating or at a standstill each is connected to the power source via an induction device (21, 22, 23).

Classifications:
International (IPC 8-9): B23B31/167 B23B31/28 B23B31/36 B23Q1/00 B23Q1/52 B23Q3/06 B23Q5/00 G01P3/00 H01F38/14 H01F38/18 H02J5/00 H02J50/00 H02J7/02 H02J7/04 H02P29/00 H04B5/00 (Advanced/Invention)
CPC: B23B31/28 B23Q3/06 H02J5/005 B23B2260/062 B23B2270/022 G01P3/00 H02J7/025 H02J7/042 H04B5/0037 B23B31/16045 B23Q1/0009 B23Q1/0045 B23Q5/00 H02J50/00 B23Q1/522 B23B31/101 H02J50/10
US: 279/121 279/135 307/104 320/108 73/493



Family:

Publication number	Publication date	Application number	Application date
DE502014002764 D1	20170406	DE201450002764T	20141204
DE502015000926 D1	20170608	DE201550000926T	20150609
EP3028804 A1	20160608	EP20140196366	20141204
EP3028804 B1	20170222	EP20140196366	20141204
EP3059036 A1	20160824	EP20150171103	20150609
EP3059036 B1	20170426	EP20150171103	20150609
ES2628245 T3	20170802	ES20150171103T	20150609
JP2016107395 A2	20160620	JP20150161810	20150819
JP2016144857 A2	20160812	JP20150236622	20151203
KR20160067784 A	20160614	KR20150171760	20151203
US2016158848 AA	20160609	US20150937079	20151110
US2016164305 AA	20160609	US20150958589	20151203

Priority:

EP20140196366 20141204 EP20150171103 20150609 JP20150161810 20150819
KR20150171760 20151203 JP20150236622 20151203

Probable Assignee: SMW AUTOBLOK SPANNSYSTEME GMBH

Assignee(s): (std)**:** SMW AUTOBLOK SPANNSYSTEME GMBH

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Agent(s): MEISSNER BOLTE PATENTANWAELTE RECHTSANWAELTE PARTNERSCHAFT MBB; ENGELHARDT AND ENGELHARDT PATENTANWAELTE; ZECH STEFAN MARKUS; ENGELHARDT AND ENGELHARDT; BOTELLA ANTONIO

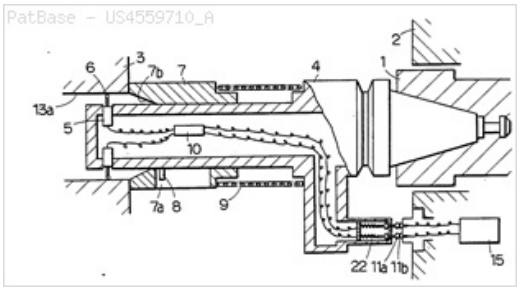
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

278) Family number: 4924507 (US4559710A)

Title: Method of checking pallets or articles to be worked by automatically measuring average diameter of hole and apparatus for practicing same

Abstract: The magnitude of a gap between each of three points on the inside circumferential surface of a reference hole of a reference hole block mounted on a pallet or each of three points on the inside circumferential surface of a hole of an article to be worked prior to working and the body of an apparatus for measuring a diameter of hole is detected by means of each of three displacement detecting elements mounted on the body of the apparatus for measuring the diameter of a hole, an average diameter of a hole to be measured being calculated by means of an operational amplifier circuit, and a pallet or an article to be worked being distinguished on the basis of the calculated value.

Classifications:
International (IPC 8-9): B23Q17/20 (Advanced/Invention)
International (IPC 1-7): B23Q17/00 G01B7/12
CPC: G01B7/13
European: G01B7/13
US: 33/143L 33/147K 33/178E 33/544.6 33/783



Family:

Publication number	Publication date	Application number	Application date
JP60085853 A2	19850515	JP19830192247	19831013
US4559710 A	19851224	US19840659756	19841011

Priority:

JP19830192247 19831013

Probable Assignee: OSAKA KIKO CO LTD

Assignee(s): (std)**:** OSAKA KIKO CO LTD ; OSAKA KIKO KABUSHIKI KAISHA

Assignee(s): OSAKA KIKO KK ; OOSAKA KIKOU KK

Inventor(s): (std)**:** KODA SEIDO ; KOUDA SEIDOU

279) Family number: 10806510 (US5998320A)

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Title: ALUMINUM NITRIDE SINTERED BODY, METAL INCLUDING MEMBER, ELECTROSTATIC CHUCK, METHOD OF PRODUCING ALUMINUM NITRIDE SINTERED BODY, AND METHOD OF PRODUCING METAL INCLUDING MEMBER

Abstract: An aluminum nitride sintered body has characteristics such that an amount of total metal elements other than aluminum is smaller than 100 ppm, and a volume resistivity at room temperature is greater than 1.0x109 OMEGA xcm and is smaller than 1.0x1013 OMEGA xcm. A metal including member has such a construction that a metal member is embedded in the aluminum nitride sintered body mentioned above. An electrostatic chuck is made by the metal including member mentioned above. In the metal including member mentioned above in which the metal member is embedded in the aluminum nitride sintered body mentioned above, a volume resistivity thereof can be controlled without adding a low resistance material in aluminum nitride.

Classifications:

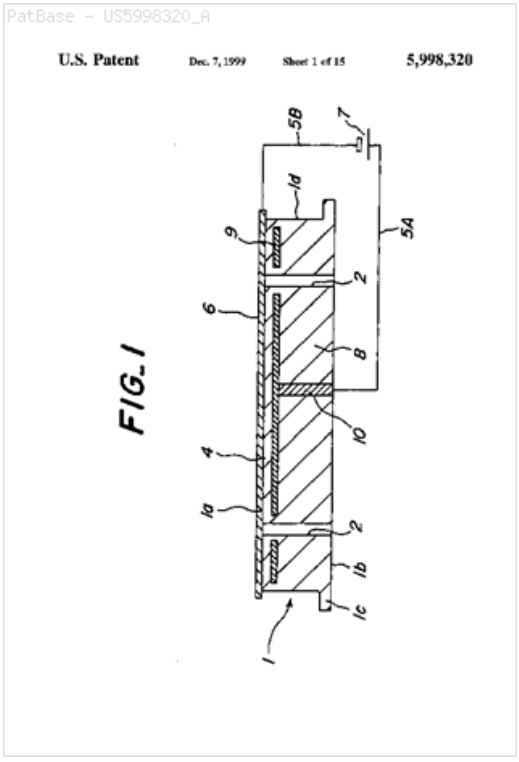
International (IPC 8-9)**:** B23Q3/15 C04B35/581 C04B35/582 C04B35/626 C04B35/74 C04B37/02 H01L21/683 (Advanced/Invention); C04B35/581 (Advanced/Non-invention); C04B35/626 (Core/Invention)

International (IPC 1-7)**:** B23Q3/15 B28B1/30 B32B15/00 B32B9/00 C04B35/581 C04B35/626 C04B35/74 C22C21/00 H01L21/68

CPC: C04B2237/366 C04B2237/40 C04B2237/402 C04B2237/403 C04B2237/404 C04B2237/408 C04B2237/62 C04B2237/704 C04B2237/706 C04B35/581 C04B37/021 Y10T279/23 Y10T428/22 Y10T428/31678

European: C04B35/581 C04B37/02B

US: 264/642 269/13 279/128 428/457 428/67 428/698 428/699 501/153 501/98.4



Family:

Publication number	Publication date	Application number	Application date
DE69611964 D1	20010412	DE19966011964	19961101
DE69611964 T2	20010816	DE19966011964T	19961101
EP0771772 A2	19970507	EP19960307948	19961101
EP0771772 A3	19971008	EP19960307948	19961101
EP0771772 B1	20010307	EP19960307948	19961101
JP10072260 A2	19980317	JP19960293129	19961016
JP3670416 B2	20050713	JP19960293129	19961016
KR100227758 B1	19991101	KR19960051299	19961031
KR19980031739 A	19980725	KR19960051299	19961031
TW403730 B	20000901	TW19960113086	19961024
US5998320 A	19991207	US19960744774	19961101

US6174583 BA	20010116	US19990391381	19990908

Priority:

JP19950285011 19951101 JP19960176263 19960705 JP19960293129 19961016
US19960744774 19961101 US19990391381 19990908

Probable Assignee: NGK INSULATORS LTD

Assignee(s): (std): NGK INSULATORS LTD

Inventor(s): (std): BESSHO HIROKI ; BESSHO YUKI ; YAMADA NAOHITO ; MORI YUKIMASA ; KOBAYASHI HIROMICHI

Agent(s): SUGIMURA KOSAKU

Designated states: DE FR GB

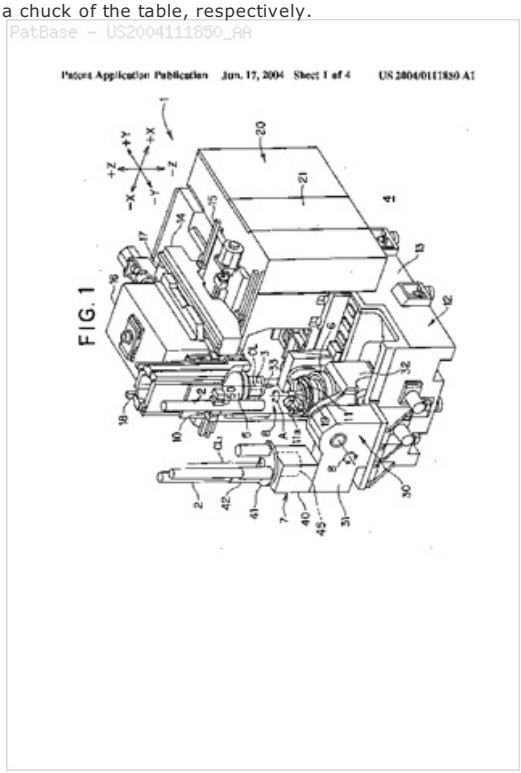
280) Family number: 30657513 (US2004111850A)

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Title: VERTICAL MACHINING CENTER

Abstract: In a vertical machining center, a spindle head is movable in three mutually transverse axes directions relative to a workpiece and a table is arranged below. A vertical stocker is disposed in the vicinity of a machining area and stocks the bar workpiece in a vertical direction. A hand portion which grips and releases the bar workpiece is provided on the spindle head. The spindle head moves between the stocker and the table so that the hand portion transfers the bar workpiece and performs putting and removing the bar workpiece to the stocker and a chuck of the table, respectively.

Classifications:
International (IPC 8-9): B23P17/00 B23Q7/04
B23Q7/10 (Advanced/Invention);
B23P17/00 B23Q7/04 B23Q7/10 (Core/Invention)
International (IPC 1-7): B23P17/00 B23Q7/04 B23Q7/10
CPC: Y10T29/5114 Y10T82/2511 Y10T82/2516 Y10T409/30532
B23Q7/045
European: B23Q7/04D
US: 29/27 29/270C 29/27C 409/159 82/122 82/125



Family:

Publication number	Publication date	Application number	Application date
JP2004160599 A2	20040610	JP20020329630	20021113
US2004111850 AA	20040617	US20030690826	20031023
US7013543 BB	20060321	US20030690826	20031023

Priority:

JP20020329630 20021113

Probable Assignee: MORI SEIKI HITECH CO LTD

Assignee(s): (std): FUJIWARA RYUICHI ; IWABUCHI NAOKI ; KIMURA HAJIME ; MORI SEIKI HITECH CO LTD

Assignee(s): MORI SEIKI HITECH CO

Inventor(s): (std): FUJIWARA RYUICHI ; IWABUCHI NAOKI ; KIMURA HAJIME

Agent(s): ARMSTRONG KRATZ QUINTOS HANSON AND BROOKS LLP

281) Family number: 62829514 (US2018065181A)

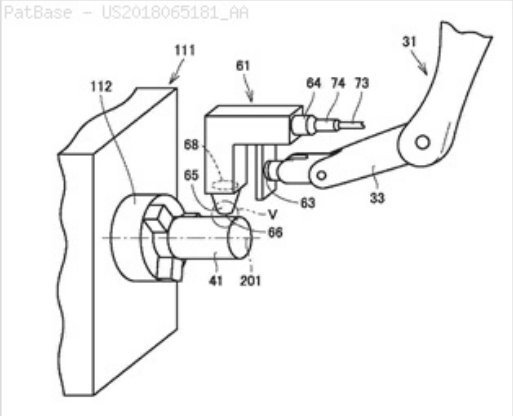
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Title: WORKPIECE PROCESSING METHOD

Abstract: A workpiece processing method is a method for successively processing a plurality of workpieces including a first workpiece and a second workpiece in a single machining area. The workpiece processing method includes: performing additive manufacturing on the second workpiece in the machining area; and performing subtractive manufacturing on the first workpiece in the machining area while keeping on standby the second workpiece on which additive manufacturing is performed. In this way, the workpiece processing method with improved productivity is provided.

Classifications:
International (IPC 8-9): B22F3/105 B22F3/16 B23B1/00 B23B11/00
B23B15/00 B23B3/30 B23K15/00 B23K26/342 B28B1/32 B29C67/00
B33Y10/00 (Advanced/Invention)
CPC: B23K26/0093 B23K26/144 B23P15/00 B23P23/04 B22F3/105

B22F3/16 B23K26/342 B28B1/32 B33Y10/00 B23P23/06 B29C64/106 B29C64/30 B33Y40/00 B22F3/1055 B22F3/162 B23B1/00 B23B3/30 B23B11/00 B22F2003/247 Y02P10/295



Family:

Publication number	Publication date	Application number	Application date
CN107427928 A	20171201	CN201680016613	20160307
DE112016001311 T5	20171221	DE201611001311T	20160307
JP2016175152 A2	20161006	JP20150057180	20150320
JP5937248 B1	20160622	JP20150057180	20150320
US2018065181 AA	20180308	US20160559149	20160307
WO16152478 A1	20160929	WO2016JP56951	20160307

Priority:

JP20150057180 20150320 WO2016JP56951 20160307

Probable Assignee: DMG MORI SEIKI CO LTD

Assignee(s): (std)**:** DMG MORI CO LTD ; DMG MORI SEIKI CO LTD

Assignee(s): DMG MORI CO

Inventor(s): (std)**:** MORI MASAHIKO ; MEZAWA YUHEI ; FUJISHIMA MAKOTO ; SAKAI SHIGETSUGU ; TAKASHIMA SHIGEYUKI ; SAKAI SHIGEJI

Agent(s): FUKAMI PATENT OFFICE PC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

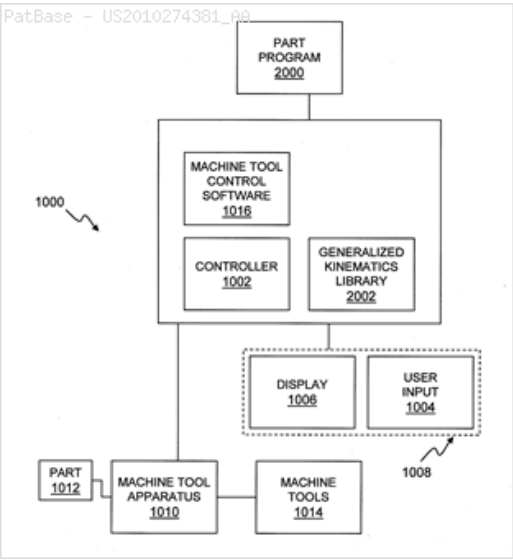
282) Family number: 47451514 (US2010274381A)

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Title: UNIVERSAL CONVERSATIONAL PROGRAMMING FOR MACHINE TOOL SYSTEMS

Abstract: A method is disclosed for controlling movement of machine tool systems by providing a conversational programming interface that permits a user to create a universal program for execution by various machine tool systems for machining a part, each system having at least four movable axes. The user defines program blocks including geometry definitions which are independent of any axis kinematics configuration. A first tool path relative to a first Cartesian coordinate system is generated for forming the geometry, then mapped to a second Cartesian coordinate system corresponding to the part. The mapped path is transformed to a third Cartesian coordinate system corresponding to an orientation and location of the part relative to an axis kinematics configuration of a current machine tool system. The transformed path is processed to generate positions for the movable axes of the current system.

Classifications:
International (IPC 8-9)**:** G05B19/19 G05B19/409 G05B19/4097 (Advanced/Invention)
CPC: G05B2219/35097 G05B2219/35098 G05B19/4097 G05B2219/49017 G05B2219/49029
European: G05B19/4097 S05B219/35097 S05B219/35098
US: 1/1 700/181 700/181P 700/194 700/194S



Family:

Publication number	Publication date	Application number	Application date
US2010274381 AA	20101028	US20100765352	20100422
US9459616 BB	20161004	US20100765352	20100422

Priority:

US20070833971 20070803 US20090171794P 20090422 US20090171827P 20090422
US20090171839P 20090422 US20090171963P 20090423 US20090172044P 20090423
US20090172066P 20090423 US20100765352 20100422

Probable Assignee: HURCO CO INC

Assignee(s): (std): GRAY PAUL J ; HURCO CO INC ; SZABO KARL

Assignee(s): HURCO COMPANIES INC

Inventor(s): (std): GRAY PAUL J ; SZABO KARL

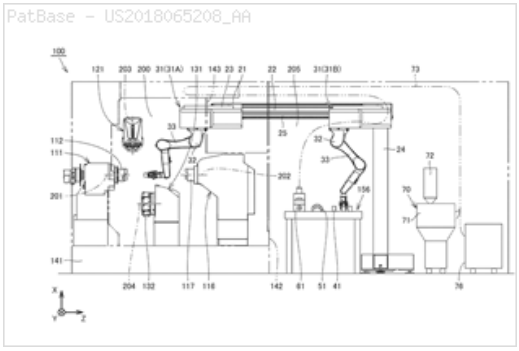
Agent(s): BAKER AND DANIELS LLP; FAEGRE BAKER DANIELS LLP

283) Family number: 62829515 (US2018065208A)

Title: MANUFACTURING MACHINE

Abstract: A manufacturing machine is capable of subtractive manufacturing and additive manufacturing for a workpiece. The manufacturing machine includes: a first headstock and a second headstock disposed in a machining area and configured to hold a workpiece; a tool spindle and a lower tool rest disposed in the machining area and configured to hold a tool to be used for subtractive manufacturing for the workpiece: an additive manufacturing head configured to discharge a material during additive manufacturing for the workpiece a workpiece gripper configured to grip the workpiece during transportation of the workpiece into and out of the machining area; and a robot arm on which the additive manufacturing head and the workpiece gripper are mountable. Accordingly, the manufacturing machine improving the productivity in the simple and easy manner is provided.

Classifications:
International (IPC 8-9): B22F3/105 B22F3/16 B23B15/00 B23B3/22 B23K26/08 B23K26/14 B23K26/144 B23K26/21 B23K26/342 B23P23/02 B23P23/04 B23Q7/04 B25J15/04 B28B1/32 B29C67/00 B33Y30/00 B33Y40/00 (Advanced/Invention)
CPC: B23B3/22 B23P23/04 B23Q7/04 B29C67/00 B23K26/0093 B25J15/0019 B25J15/0253 B25J15/0491 B23K26/0884 B33Y40/00 B23K26/1464 B23K26/342 B23K26/144 B33Y30/00 B29C64/106 B33Y10/00 B22F3/1055 B22F3/162 B22F2003/1056 C04B35/64 C04B2235/6026 C04B2235/665 Y02P10/295



Family:

Publication number	Publication date	Application number	Application date
CN107427972 A	20171201	CN201680016611	20160307
CN107427972 B	20190517	CN201680016611	20160307
DE112016001314 T5	20171228	DE201611001314T	20160307
JP2016175153 A2	20161006	JP20150057181	20150320
JP5937249 B1	20160622	JP20150057181	20150320
US2018065208 AA	20180308	US20160559161	20160307
WO16152475 A1	20160929	WO2016JP56948	20160307

Priority:

JP20150057181 20150320 WO2016JP56948 20160307

Probable Assignee: DMG MORI SEIKI CO LTD

Assignee(s): (std): DMG MORI CO LTD ; DMG MORI SEIKI CO LTD

Assignee(s): DMG MORI CO

Inventor(s): (std): MORI MASAHIKO ; MEZAWA YUHEI ; FUJISHIMA MAKOTO ; SAKAI SHIGETSUGU ; TAKASHIMA SHIGEYUKI ; SAKAI SHIGEJI

Agent(s): FUKAMI PATENT OFFICE PC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

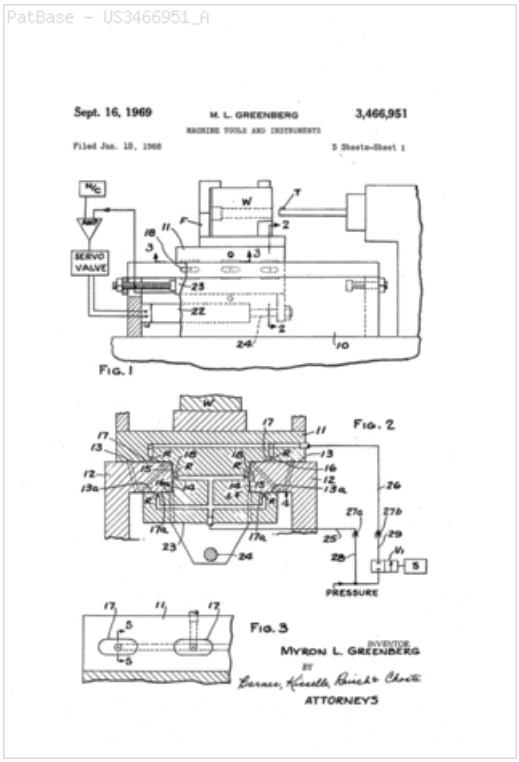
284) Family number: 881516 (US3466951A)

Title: MACHINE TOOLS AND INSTRUMENTS

Abstract: ABSTRACT OF THE DISCLOSURE
The machine tool and instrument shown herein comprises a first and second member which have complemen-tary surfaces, some of which are provided with presure pads and restrictors to which fluid under pressure is supplied. The surfaces are oppositely disposed so that when fluid is supplied to the pressure pads, the second member is maintained in spaced stable relation to the first member so that it can be readily moved with respect to the first member. After the second member is located, means are provided for interrupting or varying the flow of fluid to some of said pressure pads so that the pressure due to the remainder of the pressure pads urges the second member into fixed clamped relation with respect to said first member. Pressurized surfaces in other directions, such as the journal or lateral guides remain energized so that accuracy in transverse directions is not lost. The invention is shown as applied to a rotary table, slide and spindle. This invention relates to machine tools and instruments and particularly to supports for workpieces or other articles to be operated upon for machining, inspecting, assembling and the like. B

Classifications:
International (IPC 8-9): B23Q1/28 B23Q1/38 B23Q11/12 F16C29/02 F16C32/06 (Advanced/Invention);
B23Q1/26 B23Q11/12 F16C29/00 F16C32/06 (Core/Invention)
International (IPC 1-7): B23B39/00 B23B39/04 B23D7/08

CPC: B23Q11/124 B23Q1/28 B23Q1/38 F16C29/025 F16C32/0651 Y10T408/561 Y10T409/305656 F16C2322/39
European: B23Q1/28 B23Q1/38 B23Q11/12B6 F16C29/02H F16C32/06L4D
US: 384/12 408/87 409/165 77/1



Family:

Publication number	Publication date	Application number	Application date
US3466951 A	19690916	US19680698032	19680115

Priority:
US19680698032 19680115

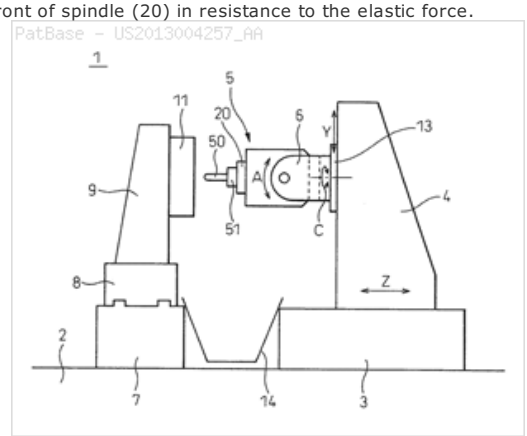
Probable Assignee: BABCOCK AND WILCOX CO
Assignee(s): (std)**:** BABCOCK AND WILCOX CO
Assignee(s): BABCOCK AND WILCOX CO THE ; ACME PRECISION PRODUCTS INC
Inventor(s): (std)**:** GREENBERG MYRON L
Inventor(s): MYRON L GREENBERG

285) Family number: 49705517 (US2013004257A)

Title: SPINDLE DEVICE OF A MACHINE TOOL

Abstract: Disclosed is a spindle device (5) for a machine tool such that draw bar (22) is inserted into spindle (20) which is rotatably supported in housing (12), and draw bar (22) is biased to a rear of spindle (20) by an elastic force of disc springs (23), resulting in tool holder (51) being clamped to spindle (20). Spindle device (5) is equipped with unclamping device (60) that comprises piston (63) which is provided in annular space (55) between spindle (20) and draw bar (22), and which, by means of fluid pressure, causes draw bar (22) to move toward the front of spindle (20) in resistance to the elastic force.

Classifications:
International (IPC 8-9): B23B19/02 B23B31/117 B23B31/26 B23B31/30 F16C31/00 (Advanced/Invention)
CPC: B23B31/30 B23B31/265 B23B2231/50 Y10T409/307672 Y10T409/309464 B23B2260/008 F16C31/04 F16C2322/39
European: B23B31/26B2
US: 1/1 409/201 409/233



Family:

Publication number	Publication date	Application number	Application date
CN102802847 A	20121128	CN201080065531	20100330
CN102802847 B	20141015	CN201080065531	20100330
EP2554301 A1	20130206	EP20100848969	20100330
EP2554301 A4	20140507	EP20100848969	20100330
EP2554301 B1	20190508	EP20100848969	20100330
JP2011121793 A1	20130704	JP20120508007T	20100330
JP5562410 B1	20140730	JP20120508007T	20100330
US2013004257 AA	20130103	US20100634297	20100330

US9120159 BB	20150901	US20100634297	20100330
WO11121793 A1	20111006	WO2010JP56114	20100330

Priority:

WO2010JP56114 20100330

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std)**:** MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE ; SUZUKI NOBUHARU

Assignee(s): MAKINO MILLING MACHINE CO., LTD. ; MAKINO MILLING MACHINE CO

Inventor(s): (std)**:** SUZUKI NOBUHARU ; NOBUHARU SUZUKI

Agent(s): Thum Bernhard; THUM BERNHARD; AOKI ATSUSHI; SHIMADA TETSURO; PAUL AND PAUL; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

286) Family number: 72369519 (US2018354047A)

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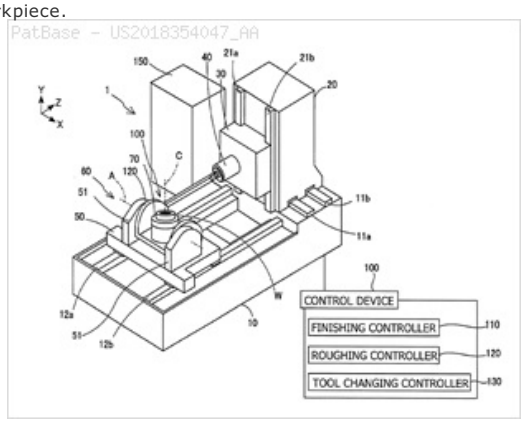
Title: GEAR MACHINING METHOD AND GEAR MACHINING DEVICE

Abstract: A gear machining method includes: roughing a workpiece while causing a cylindrical hob cutter to rotate in synchronization with a rotation of the workpiece such that a cutting allowance remains; and finishing by cutting off the cutting allowance remaining on the workpiece on which the roughing has been performed during the roughing to form a desired gear shape by feeding a skiving cutter relatively to the workpiece in the rotation axis direction of the workpiece while causing the skiving cutter to rotate in synchronization with the rotation of the workpiece.

Classifications:

International (IPC 8-9): B23F19/10 B23F21/16 B23F5/00 B23F5/16 B23F5/22 B23P15/14 B23P23/02 (Advanced/Invention)

CPC: B23F19/104 B23F21/16 B23P15/14 B23P23/02 B23F5/163



Family:

Publication number	Publication date	Application number	Application date
CN108994552 A	20181214	CN201810579302	20180607
DE102018113323 A1	20181213	DE201810113323	20180605
JP2018202565 A2	20181227	JP20170112275	20170607
US2018354047 AA	20181213	US20180996650	20180604

Priority:

JP20170112275 20170607

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

Assignee(s): N A

Inventor(s): (std)**:** HIDEAKI UNO ; MINORU SATO ; SATO MINORU ; UNO HIDEAKI

287) Family number: 74169521 (US2019126358A)

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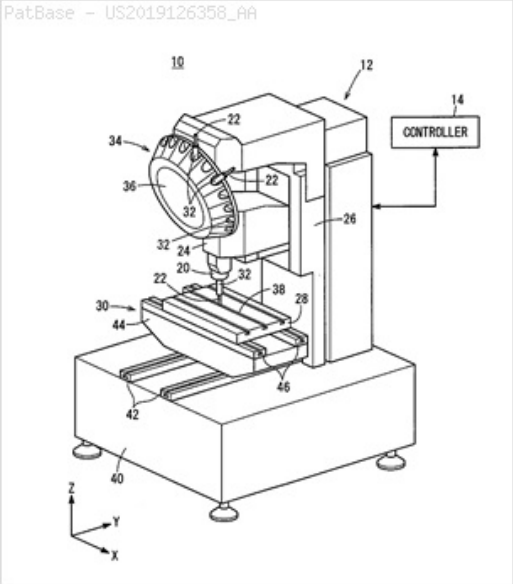
Title: MACHINE TOOL AND PLASTIC FORMING METHOD

Abstract: A machine tool provided with a tool spindle and a work table for supporting a workpiece for plastic forming on a workpiece with a tool attached to the tool spindle. The partially curved tool is has a moving mechanism to move the tool spindle relative to the workpiece, a spindle rotating motor to turn the tool spindle relative to the workpiece, a movement control unit to control the moving mechanism to move the tool along the workpiece while pressing a curved portion on the surface to be machined, and a turn control unit to control the spindle rotating motor to orient a normal line of the curved portion toward the surface of the workpiece at a reference position taken as a reference.

Classifications:

International (IPC 8-9): B21D19/00 B23B29/04 B23B39/10 B23Q11/00 B23Q15/14 B23Q3/157 B23Q5/04 B23Q5/22 B23Q5/28 B24B27/00 B24B39/04 B24B41/00 B24B41/04 B24B45/00 B24B47/20 G05B19/402 (Advanced/Invention)

CPC: B23B39/10 B23B29/04 B21D19/005 B24B39/04 B24B39/00



Family:

Publication number	Publication date	Application number	Application date
CN109746745 A	20190514	CN201811294110	20181101
DE102018126893 A1	20190502	DE201810126893	20181029
KR20190049591 A	20190509	KR20180131677	20181031
US2019126358 AA	20190502	US20180175025	20181030

Priority:

JP20170211896 20171101

Probable Assignee: FANUC CORP

Assignee(s): (std)**:** FANUC CORP ; FANUC LTD

Inventor(s): (std)**:** FUJII TAKAAKI

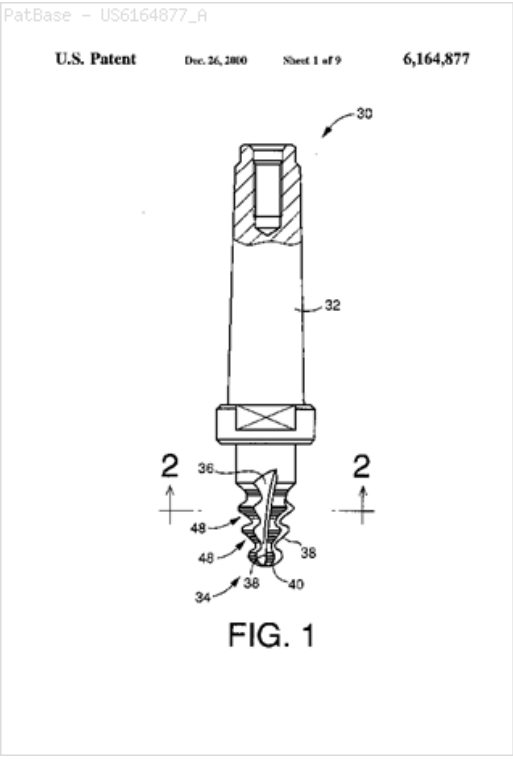
288) Family number: 29244525 (US6164877A)

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Title: FORMED ROTARY CUTTING TOOL HAVING VARYING DIAMETER AND CONSTANT CLEARANCE ANGLE, AND METHOD OF FORMING GROOVE BY USING THE SAME

Abstract: A formed rotary cutting tool including; a generally cylindrical body portion having (a) a plurality of flutes which are formed in the body portion to generally axially extend and which are located around the axis so as to be angularly spaced apart from each other, and (b) cutting edges which cooperate with each other to have a diameter that changes in the axial direction, so that the body portion has a desired configuration. The tool is rotated about the axis to form a groove whose configuration corresponds to the desired configuration, in a solid workpiece. Each of the cutting edges is defined by an intersection of a rake face and a flank face which has a predetermined clearance angle that is constant in the axial direction, irrespective of the change of the diameter.

Classifications:
International (IPC 8-9): B23C5/02 B23C5/10 B23C5/12 (Advanced/Invention); B23G7/00 (Advanced/Non-invention); B23C5/02 B23C5/10 (Core/Invention)
International (IPC 1-7): B23B27/06 B23C5/02 B23C5/10 B23G7/00
CPC: Y10T82/10 Y10T82/149 Y10T407/1962 Y10T407/1964 B23C5/02 B23C5/10 B23C2220/36 B23C2220/366 B23C2220/60
European: B23C5/02 B23C5/10 L23C220/36 L23C220/36T L23C220/60
US: 407/61 407/62 82/1.11 82/13



Family:

Publication number	Publication date	Application number	Application date
DE19911927 A1	19991007	DE19991011927	19990317
DE19911927 B4	20081120	DE19991011927	19990317
JP11267916 A2	19991005	JP19980072461	19980320
JP3065020 B2	20000712	JP19980072461	19980320
KR100290518 B1	20010515	KR19990009321	19990319
KR19990078052 A	19991025	KR19990009321	19990319
US6164877 A	20001226	US19990264705	19990309

Priority:

JP19980072461 19980320 KR19990009321 19990319

Probable Assignee: OSG CORP

Assignee(s): (std): OSG CORP

Assignee(s): OSG CORP TOYOKAWA ; OSG CORPORATION

Inventor(s): (std): KAMATA SATORU ; TAKEBE NAOKI ; TATEBE NAOMI

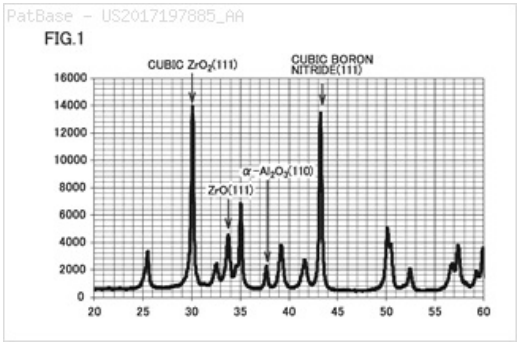
289) Family number: 64287526 (US2017197885A)

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Title: SINTERED COMPACT AND CUTTING TOOL

Abstract: A sintered compact according to the present invention includes: a first material that is cubic boron nitride; a second material that is an oxide of zirconium; and a third material that is an oxide of aluminum, the second material including cubic ZrO_2 and ZrO, the third material including a-Al_2O_3, and the sintered compact satisfying the following relation: $0.9?I_{zro2}(111)/I_{al}(110)?30$; and $0.3?I_{zro}(111)/I_{al}(110)?3$, where $I_{al}(110)$, $I_{zro2}(111)$, and $I_{zro}(111)$ respectively represent X-ray diffraction intensities of a (110) plane of the a-Al_2O_3, a (111) plane of the cubic ZrO_2, and a (111) plane of the ZrO.

Classifications:
International (IPC 8-9): B23B27/14 B23B27/20 B23B51/00 B23C5/16 B23C5/20 C04B35/48 C04B35/488 C04B35/583 C04B35/5831 C04B35/5835 C04B35/626 C04B35/63 C04B35/645 (Advanced/Invention); B23B27/14 B23B27/20 B23C5/16 C04B35/48 C04B35/583 (Core/Invention)
CPC: B23B27/20 B23C5/16 C04B35/5831 B23B27/148 B23C5/20 C04B35/4885 C04B35/6303 C04B35/6264 C04B35/6261 C04B35/645 B23B2224/04 B23B2226/125 B23C2224/04 B23C2226/125 B23C2228/49 C04B2235/386 C04B2235/3244 C04B2235/3217 C04B2235/5436 B23B27/14 C04B2235/3206 C04B2235/3225 C04B2235/3229 C04B35/62675 C04B35/62685 C04B2235/3246 C04B2235/3839 C04B2235/3865 C04B2235/3873 C04B2235/3886 C04B2235/402 C04B2235/441 C04B2235/444 C04B2235/5445 C04B2235/80



Family:

Publication number	Publication date	Application number	Application date
CA2954661 AA	20170106	CA20162954661	20160126
CN106715360 A	20170524	CN201680002170	20160126
EP3153485 A1	20170412	EP20160802837	20160126
EP3153485 A4	20180404	EP20160802837	20160126
ID201802024 A	20180302	ID2017P0000867	20160126
IN201717000108 A	20170407	IN201717000108	20170102
JP2016194398 A1	20180322	JP20170501349T	20160126
KR20180015603 A	20180213	KR20177002884	20160126
MX2017001061 A1	20170509	MX20170001061	20160126
TH175649 A	20180503	TH20171000666	20160126
US2017197885 AA	20170713	US20160324182	20160126
US9856175 BB	20180102	US20160324182	20160126
WO16194398 A1	20161208	WO2016JP52127	20160126

Priority:

JP20150110670 20150529 WO2016JP52127 20160126

Probable Assignee: SUMITOMO ELECTRIC HARDMETAL CORP

Assignee(s): (std): SUMITOMO ELECTRIC HARDMETAL CORP ; SUMITOMO ELECTRIC INDUSTRIES ; SUMITOMO ELECTRIC IND

Assignee(s): SUMITOMO ELECTRIC IND LTD ; DANDA MAYU ; KUKINO SATORU ; OKAMURA KATSUMI

Inventor(s): (std): DANDA MAYU ; OKAMURA KATSUMI ; KUKINO SATORU ; MAYU DANDA ; KATSUMI OKAMURA ; SATORU KUKINO

Agent(s): MARKS AND CLERK; GRUENECKER PATENT U RECHTSANWAELTE PARTG MBB; DR BELINDA ROSALINA SH LLM; FUKAMI PATENT OFFICE PC; VENABLE LLP; MICHAEL A; MIGUEL A

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

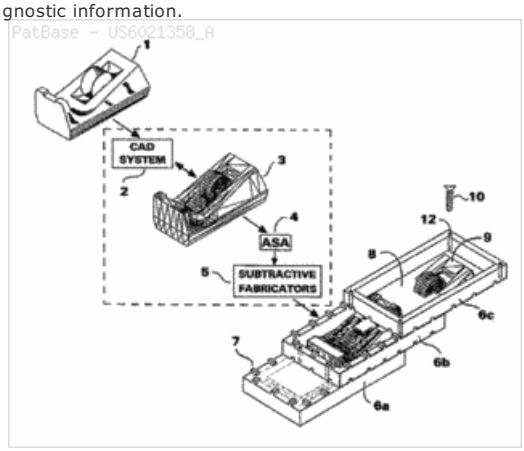
290) Family number: 12039530 (US6021358A)

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Title: THREE DIMENSIONAL MODEL AND MOLD MAKING METHOD USING THICK-SLICE SUBTRACTIVE FABRICATION

Abstract: A method of rapid prototyping which can utilize existing subtractive fabrication devices for the purpose of forming complex three-dimensional objects from a computer model. The method extends the capability of existing milling machines and other subtractive devices thereby allowing them to create objects of greater complexity than would normally be possible. Complex objects are subdivided by a computer control program into optimal machinable layers having a uniform outer geometry which permits simplified alignment and fixturing and wherein portions of the object are temporarily suspended by integrally machined support membranes. A minimum number of layers are required and these layers will have substantial thickness as compared with those of conventional additive fabricators. Surfaces of the models will be smooth and require little or no hand finishing. Methods for creating various types of molds from the models are described and a visualization and verification aid is provided for the operator, together with various diagnostic information.

Classifications:
International (IPC 8-9): G05B19/4093 (Advanced/Invention); G05B19/4093 (Core/Invention)
International (IPC 1-7): G06F19/00 G06G7/66
CPC: Y02P90/265 G05B2219/35287 G05B2219/49008 B33Y50/00 G06F19/00 G05B19/40937 G06F17/50
European: G05B19/4093M S05B219/35287 S05B219/49008
US: 700/118 700/163 700/95 700/96 700/98



Family:

Publication number	Publication date	Application number	Application date
US6021358 A	20000201	US19960716557	19960918

Priority:
US19960716557 19960918

Probable Assignee: SACHS GEORGE A
Assignee(s): (std): SACHS GEORGE A
Inventor(s): (std): SACHS GEORGE A

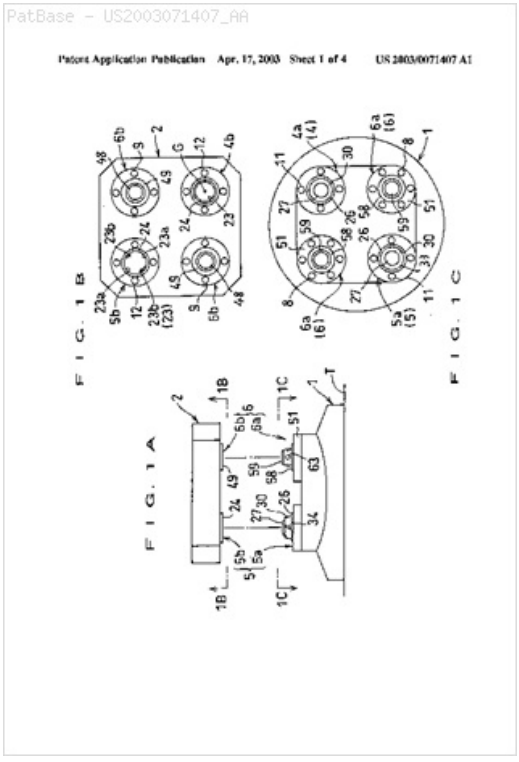
291) Family number: 28421531 (US2003071407A)

© PatBase

Title: CLAMPING APPARATUS

Abstract: Two positioning devices (4, 5) are horizontally spaced apart from two clamping devices (6, 6) at a predetermined interval. Each of the positioning devices (4, 5) includes a positioning hole (23) provided by opening a work pallet (2), a plug portion (27) projecting from a clamp pallet (1), and an intermediate member (30) vertically movably supported by the plug portion (27). The intermediate member (30) is urged upwards by a coned disk spring (31) and has a tapered surface (33) which makes a tapering engagement with the positioning hole (23). The clamping device (6) fixes the work pallet (2) to the clamp pallet (1).

Classifications:
International (IPC 8-9): B23Q1/00 B23Q16/00 B23Q3/00 B23Q3/06 B23Q3/18 B23Q7/14 (Advanced/Invention); B23Q1/00 B23Q16/00 B23Q3/00 B23Q3/06 B23Q3/18 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q1/00 B23Q16/00 B23Q3/00 B23Q3/06 B23Q3/18 B23Q7/14
CPC: Y10S269/90 B23Q16/00 B23Q1/0081
European: B23Q1/00D B23Q1/00D3 B23Q16/00 B23Q7/14K
US: 269/309 269/309P 269/310 269/900



Family:

Publication number	Publication date	Application number	Application date
CN1411952 A	20030423	CN20021046821	20021011
EP1302278 A1	20030416	EP20020020345	20020912

JP2003181730 A2	20030702	JP20020229801	20020807
KR20030030855 A	20030418	KR20020056347	20020917
TW582322 Y	20040401	TW20030215505U	20021004
US2003071407 AA	20030417	US20020269429	20021011
US6641127 BB	20031104	US20020269429	20021011

Priority:

JP20010314972 20011012 JP20020229801 20020807

Probable Assignee: KOSMEK KK

Assignee(s): (std)**:** KOSMEK KK ; KOSMEK LTD ; KOSMEKU K K ; KOSMER KK

Assignee(s): KOSMEKU KK ; K USHIKI KAISHA KOSMEK AB ; KABUSHIKI KAISHA KOSMEK ; KABUSHIKI KAISHA KOSMER

Inventor(s): (std)**:** HARUNA YOSUKE ; YOSUKE HARUNA

Designated states: BG DE FR GB IT

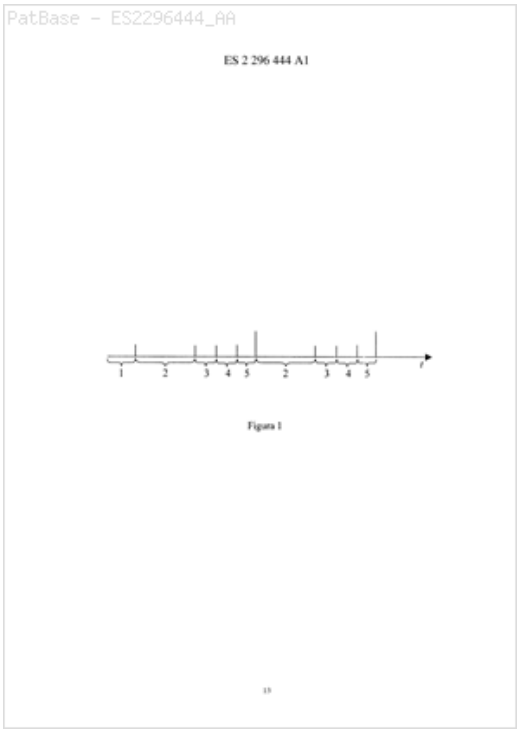
292) Family number: 41727531 (ES2296444B)

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Title: METODO DE CONTROL PARA MAQUINA CON CONTROL NUMERICO

Abstract: Source: ES2296444B [ES] Metodo de control para maquina con control numerico. El metodo de control para maquina con control numerico contempla los siguientes pasos: - Se miden y se registran las variables del proceso de mecanizado en al menos parte de la trayectoria de trabajo. - Se calculan y se registran las propiedades del proceso de mecanizado en al menos parte de la trayectoria de trabajo. - Se comparan las propiedades del proceso de mecanizado medidas con valores definidos previamente. - Se continua con la ejecucion de la operacion de mecanizado sin cambio alguno de los parametros del proceso de mecanizado si las propiedades medidas se encuentran dentro de los limites establecidos por los valores definidos previamente. - Se cambia automaticamente los parametros del proceso de mecanizado, por tanto, se cambia automaticamente el programa si las propiedades medidas se encuentran fuera de los limites establecidos por los valores definidos previamente.

Classifications:
International (IPC 8-9): B23Q15/00 G05B19/416 (Advanced/Invention); B23Q15/00 G05B19/416 (Core/Invention)
CPC: B23Q15/00 G05B19/416
European: B23Q15/00 G05B19/416



Family:

Publication number	Publication date	Application number	Application date
ES2296444 AA	20080416	ES20050001007	20050426
ES2296444 BA	20090316	ES20050001007	20050426

Priority:

ES20050001007 20050426

Probable Assignee: CONSEJO SUPERIOR INVESTIGACION

Assignee(s): (std)**:** CONSEJO SUPERIOR INVESTIGACION

Assignee(s): CONSEJO SUPERIOR INVESTIG CIENTIFICAS

Inventor(s): (std)**:** ALIQUE LOPEZ JOSE RAMON ; ROS TORRECILLAS SALVADOR ; RAMIREZ ROJAS ADRIANA C ; ARMADA RODRIGUEZ MANUEL ANGEL ; AKINFIEV TEODOR

Inventor(s): JOSE RAMON ALIQUE LOPEZ ; MANUEL ANGEL ARMADA RODRIGUEZ ; SALVADOR ROS TORRECILLAS ; TEODOR AKINFIEV ; ADRIANA C RAMIREZ ROJAS

293) Family number: 17570532 (DE8714508U1)

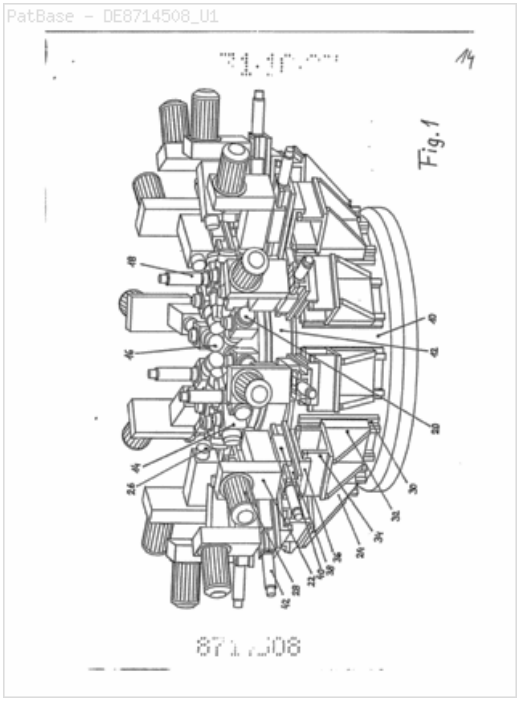
© PatBase

Abstract: Source: DE8714508U1 [DE] (Claim 1) 1. Rundschalttisch-Bearbeitungszentrum mit einem Rund- schalttisch, der

auf seinem Umfang mehrere in glei- chem gegenseitigen Winkelabstand angeordnete Werk- stueck-Spanneinheiten traegt, und mit mehreren in der Teilung den Werkstueck-Spanneinheiten zugeordneten, motorisch angetriebenen Werkzeug-Spindeleinheiten, dadurch gekennzeichnet, dass zumindest eine der Werk- zeug-Spindel. inheiten (22) mittels einer Arbeitsein- heit (24) in drei Achsen verschiebbar angeordnet ist und dass zumindest eine der Werkstueck-Spanneinheiten (14) motorisch rotierend antreibbar und in ihrer Drehwinkelstellung positioniert arretierbar ist.

Machine translation: (Claim 1) 1 Rotary table machining center with a rotary indexing table, which carries on its periphery, several arranged in same-chem mutual angular distance from the workpiece clamping units, and several in the division of the workpiece clamping units assigned, motor-driven tool spindle units, wherein at least one of the tool spindle. Units of (22) labor income by one unit (24) slidably disposed in three axes, and that at least one of the workpiece clamping units (14) rotatably driven by motor and positioned in its angular position is locked.

Classifications:
International (IPC 8-9): B23Q1/54 B23Q39/04 (Advanced/Invention); B23Q1/25 B23Q39/00 (Core/Invention)
International (IPC 1-7): B23Q39/04
CPC: B23Q1/5412 B23Q39/044
European: B23Q1/54A1 B23Q39/04B1



Family:

Publication number	Publication date	Application number	Application date
DE8714508 U1	19880204	DE19870014508U	19871031

Priority:
DE19870014508U 19871031

Probable Assignee: BRAUNGART PRAEZISIONSMASCHINEN GMBH 7730 VILLINGEN SCHWENNINGEN DE

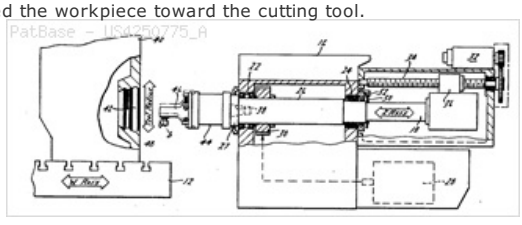
Assignee(s): BRAUNGART PRAEZISIONSMASCHINEN GMBH 7730 VILLINGEN ; BRAUNGART PRAEZISIONSMASCHINEN GMBH 7730 VILLINGEN SCHWENNINGEN DE

294) Family number: 24048539 (US4250775A)

Title: MACHINE TOOL AND METHOD

Abstract: The present invention relates generally to numerically controlled contour machining, and particularly to an apparatus and method for performing such operations on a "bar-type" horizontal boring mill using the spindle bar to vary the cutting radius of the rotating cutting tool and the machine table to feed the workpiece toward the cutting tool.

Classifications:
International (IPC 8-9): B23B29/034 B23B39/02 B23G3/04 G05B19/18 (Advanced/Invention); B23B29/00 B23B39/00 B23G3/00 G05B19/18 (Core/Invention)
International (IPC 1-7): B23B3/00 B23B35/00 B23B41/00 B23G1/32
CPC: B23B29/03446 B23B39/02 B23G3/04 G05B19/182 G05B2219/50293 Y10T82/10 Y10T82/12 Y10T82/2502
European: B23B29/034N4 B23B39/02 B23G3/04 G05B19/18B S05B219/50293
US: 82/1.11 82/1.2 82/118 82/1C



Family:

Publication number	Publication date	Application number	Application date
DE2853488 A1	19800207	DE19782853488	19781212
US4250775 A	19810217	US19790069583	19790824
USRE32211 E	19860722	US19850698748	19850206

Priority:
US19780927564 19780724 US19790069583 19790824 US19850698748 19850206

Probable Assignee: DEVLIEG BULLARD II INC

Assignee(s): (std)**:** DEVLIEG MACHINE CO

Assignee(s): DEVLIEG BULLARD INC ; DEVLIEG INC ; BANCBOSTON FINANCIAL CO ; DEVLIEG MACHINE CO LTD ; BANC ONE PARTNERS CORP ; DEVLIEG LYONS INTEGRATED SYSTEMS INC ; CIT GROUP BUSINESS CREDIT INC ; DEVLIEG BULLARD II INC ; BANCBOSTON FINANCIAL CO A MA BUSINESS TRUST ;

DEVLIEG INC A CORP OF MI ; DEVLIEG MACHINE CO LTD A CO OF ENGLAND ; STANWICK IND ; PNC CAPITAL CORP ; SHAWMUT BANK CONNECTICUT NA ; PENBERTHY INC ; STANWICH IND ; LASALLE BUSINESS CREDIT INC ; DEVLIEG MACHINE COMPANY ; PNC CAPITAL CORP A DE CORP ; STANWICH IND INC ; LASALLE BUSINESS CREDIT INC AGENT AS ; STANWICK IND INC A CORP OF DE ; ALLIED CAPITAL A MD CORP CORP ; ALLIED CAPITAL CORP ; ALLIED INVESTMENT CORP ; ALLIED INVESTMENT II A MD CORP ATTENTION KAY K LEE ; ALLIED INVESTMENT II A MD CORP ATTENTION KAY K LEE PARALEGAL CORP ; BANC ONE PARTNERS A TX CORP CORP

Inventor(s): (std): ORTLIEB ROBERT MARCEL ; ORTLIEB ROBERT M ; JERUE RICHARD A

Inventor(s): A JERUE RICHARD ; MARCEL ORTLIEB ROBERT

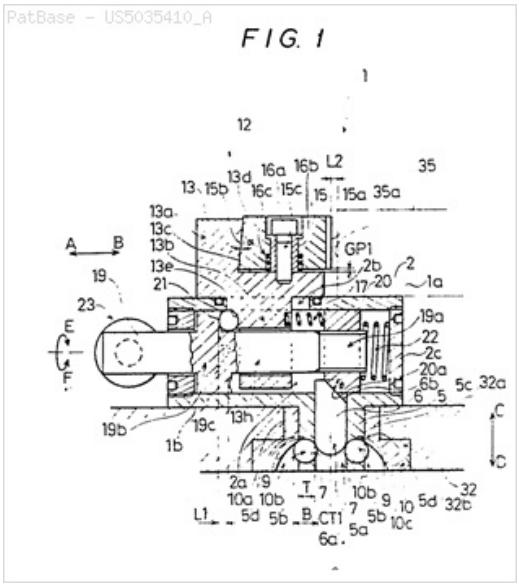
295) Family number: 5455542 (US5035410A)

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Title: Jig and jig arrangement

Abstract: A jig has a main body. The main body is provided with a rotatable engaging shaft. The engaging shaft is provided with a main body fixing portion actuator and a workpiece clamping portion actuator. The main body fixing portion actuator is provided with a main body fixing portion drivable by the main body fixing portion actuator. The workpiece clamping portion actuator is provided with a workpiece clamping portion drivable forward and backward by the workpiece clamping portion actuator. When the engaging shaft is rotated, attachment and detachment of the main body and clamping of a workpiece can be performed.

Classifications:
International (IPC 8-9): B23Q3/06 B25B1/08 B25B1/24 B25B5/00 B25B5/08 (Advanced/Invention);
B23Q3/06 B25B1/00 B25B5/00 (Core/Invention)
International (IPC 1-7): B23Q3/02 B23Q3/06 B25B1/20
CPC: B25B1/08 B25B1/2473 B25B1/2484 B25B1/2489 B25B5/006 B25B5/08
European: B25B1/08 B25B1/24B6 B25B1/24C B25B1/24D B25B5/00C B25B5/08
US: 269/136 269/309



Family:

Publication number	Publication date	Application number	Application date
DE4005052 A1	19900913	DE19904005052	19900216
GB2228694 A1	19900905	GB19900003629	19900216
GB2228694 B2	19930915	GB19900003629	19900216
GB9003629 A0	19900411	GB19900003629	19900216
JP2218531 A2	19900831	JP19890037836	19890217
JP3043126 A2	19910225	JP19890176487	19890707
US5035410 A	19910730	US19900481560	19900220

Priority:

JP19890037836 19890217 JP19890076487 19890707 JP19890176487 19890707

Probable Assignee: IMAO SEISAKUSHO KK

Assignee(s): (std): IMAO CORP ; IMAO KOOPOREISHON KABUSHIKI KA ; IMAO KOOPOREISHON KK ; IMAO SEISAKUSHO KK ; YAMAZAKI MAZAK CORP

Assignee(s): YAMAZAKI MAZAK KK ; YAMAZAKI MAZAK KABUSHIKI KAISHA ; KABUSHIKI KAISHA IMAO KOOPOREISHON

Inventor(s): (std): SATO KANJI ; SAIKI TORU ; GOTO KUNIO ; MATSUBARA MASUO ; WADA HIROSHI ; SHIMIZU NORIHIKO

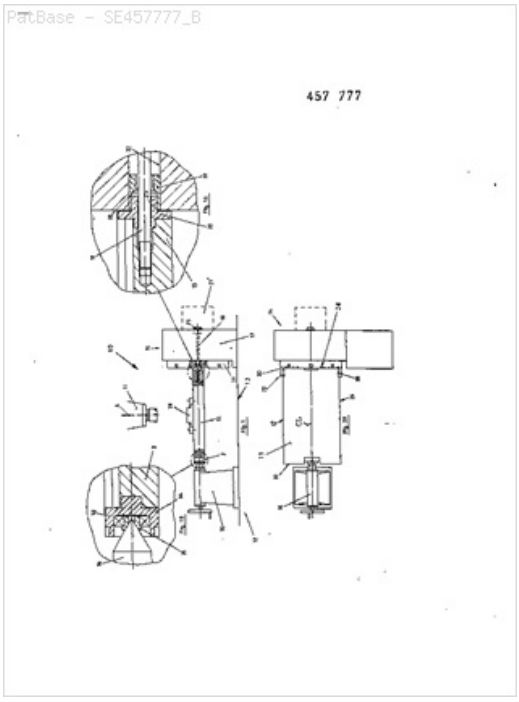
Inventor(s): KANJI SATO ; TORU SAIKI ; NORIHIKO SHIMIZU ; MASUO MATSUBARA ; HIROSHI WADA ; KUNIO GOTO ; GOTO KUNIO MINO GIFU JP ; SATO KANJI CHIBA JP ; SAIKI TORU INUYAMA AICHI JP ; WADA HIROSHI GIFU JP

296) Family number: 2704547 (SE457777B)

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Title: FIXTURE FOR WORKPIECE IN MULTI-OPERATION VERTICAL SPINDLE MACHINE

Abstract: The pallet (15) and table body (14) incorporate central and peripheral guides permitting pallet exchange with good repeat accuracy during a short period.
Classifications:
International (IPC 8-9): B23Q3/02 (Advanced/Invention);
B23Q3/02 (Core/Invention)
International (IPC 1-7): B23Q3/02
CPC: B23Q3/02
European: B23Q3/02



Family:

Publication number	Publication date	Application number	Application date
SE457777 B	19890130	SE19870002303	19870603
SE457777 C	19890525	SE19870002303	19870603
SE8702303 A	19881204	SE19870002303D	19870603
SE8702303 A0	19870603	SE19870002303	19870603
SE8702303 L	19881204	SE19870002303	19870603

Priority:

SE19870002303 19870603

Probable Assignee: SANDVIK AB

Assignee(s): (std)**:** SANDVIK AB

Inventor(s): (std)**:** BAECKSTROEM N O ; BECKSTROM N O

Inventor(s): N O BAECKSTROEM ; N O BECKSTROM

297) Family number: 42573548 (US2010329807A)

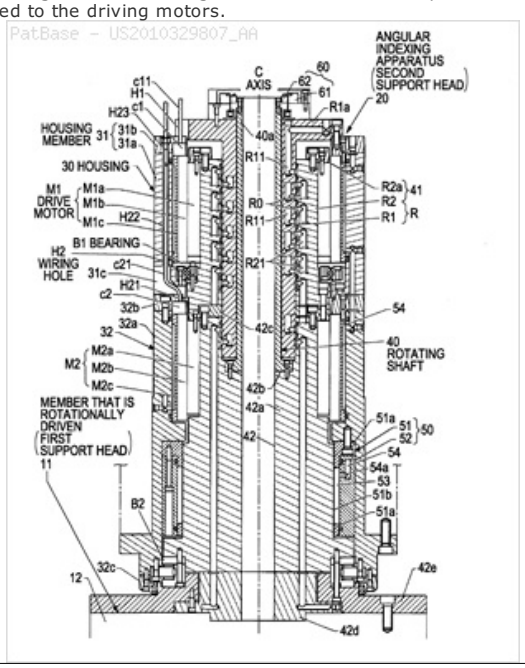
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Title: ANGULAR INDEXING APPARATUS FOR MACHINE TOOL

Abstract: An angular indexing apparatus for a machine tool includes a rotating shaft to which a rotationally driven member is secured; a housing, surrounding the outer periphery of the rotating shaft and mounted to and removed from the body of the machine tool; bearings disposed between the housing and the rotating shaft, and driving means disposed between the housing and the rotating shaft and rotating the rotating shaft to index an angular position. The driving means includes drive motors, each including a motor rotor and a motor stator concentrically disposed around the rotating shaft in the housing. The housing has wiring holes in a thick-walled internal portion of an outer cylinder surrounding the outer periphery of the rotating shaft. The wiring holes are provided along an axial direction of the rotating shaft. The wiring holes receive at least upstream portions in entire lengths in a drawing-out direction of cables connected to the driving motors.

Classifications:

International (IPC 8-9): B23C1/00 B23Q1/00 B23Q1/52 B23Q1/54 B23Q1/70 B23Q16/02 B23Q16/06 B23Q3/00 B23Q5/10 H02K11/00 H02K7/20 (Advanced/Invention);
B23Q1/00 B23Q1/25 B23Q3/00 (Core/Invention)
CPC: B23Q2210/004 B23Q16/102 B23Q1/0009 B23Q1/70
European: B23Q1/00B B23Q1/70 B23Q16/10C
US: 310/112 310/71 310/71S 409/201 409/230 409/231 409/231P



Family:

Publication number	Publication date	Application number	Application date
AT552941 E	20120415	AT20080752631T	20080513
CN101652223 A	20100217	CN200880007847	20080513
CN101652223 B	20111026	CN200880007847	20080513
DE602008014831 D1	20120606	DE200860014831T	20080513
EP2145721 A1	20100120	EP20080752631	20080513
EP2145721 A4	20110427	EP20080752631	20080513
EP2145721 B1	20120411	EP20080752631	20080513
JP2008279580 A2	20081120	JP20070128316	20070514
JP5057843 B2	20121024	JP20070128316	20070514
KR20100016258 A	20100212	KR20097023148	20080513
TW200900194 A	20090101	TW20080115652	20080429
US2010329807 AA	20101230	US20080598978	20080513
US8519587 BB	20130827	US20080598978	20080513
WO08143053 A1	20081127	WO2008JP58751	20080513

Priority:

JP20070128316 20070514 EP20080752631 20080513 WO2008JP58751 20080513

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std): TATSUDA YOSHINORI ; TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH ; TSUDAKOMA KOGYO KABUSHIKIKAISHA

Assignee(s): TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KABUSHIKIKAISHA JP ; TSUDAKOMA KOGYO KANAZAWA KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA CORP

Inventor(s): (std): TATSUDA YOSHINORI ; YOSHINORI TATSUDA ; TATSUTA YOSHINORI

Agent(s): SAMSON AND PARTNER PATENTANWAELTE; SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

298) Family number: 42573551 (US2010207496A)

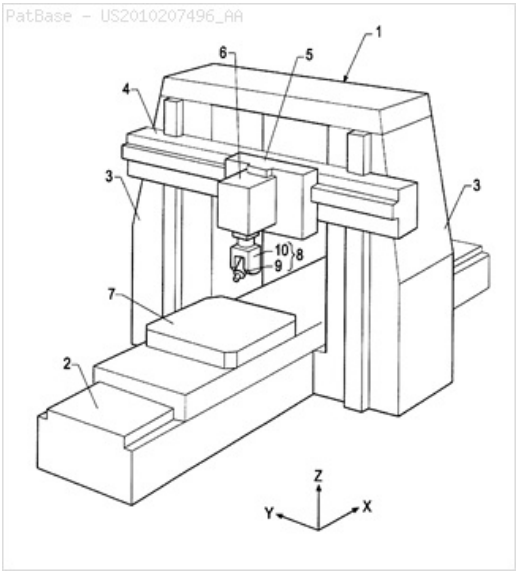
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Title: ANGULAR INDEXING APPARATUS FOR MACHINE TOOL

Abstract: An angular indexing apparatus for a machine tool includes a rotating shaft, to which a rotationally driven member is secured; a housing, which surrounds the outer periphery of the rotating shaft and which is mounted to and removed from the body of the machine tool; bearings disposed between the housing and the rotating shaft; and driving means, disposed between the housing and the rotating shaft, and rotating the rotating shaft to index an angular position. The driving means includes drive motors, each having a motor rotor and a motor stator concentrically disposed around the rotating shaft in the housing. The drive motors are disposed in series and separated from each other in an axial direction of the rotating shaft. At least one of the housing and the rotating shaft is such that portions thereof are connected to each other so as to be capable of being divided from each other in the axial direction of the rotating shaft. The housing and the rotating shaft are made to correspond to the plurality of drive motors respectively, to connect portions thereof so as to be capable of being divided from each other.

Classifications:

International (IPC 8-9): B23Q1/52 B23Q1/70 B23Q16/02 B23Q16/06 B23Q5/04 B23Q5/20 H02K7/14 (Advanced/Invention); B23Q1/00 B23Q1/25 B23Q5/00 H02K7/14 (Core/Invention)
CPC: B23Q2210/004 B23Q2220/006 B23Q16/102 Y10T409/307672 B23Q1/70
European: B23Q1/70 B23Q16/10C
US: 310/67.00RP 310/67R 409/201 409/201S



Family:

Publication number	Publication date	Application number	Application date
CN101616769 A	20091230	CN200880002702	20080513
CN101616769 B	20120711	CN200880002702	20080513
DE602008016793 D1	20120823	DE200860016793T	20080513
EP2145725 A1	20100120	EP20080752632	20080513
EP2145725 A4	20110427	EP20080752632	20080513
EP2145725 B1	20120627	EP20080752632	20080513
JP2008279581 A2	20081120	JP20070128327	20070514

JP5057844 B2	20121024	JP20070128327	20070514
KR20100016257 A	20100212	KR20097023144	20080513
TW200848201 A	20081216	TW20080115653	20080429
US2010207496 AA	20100819	US20080598981	20080513
WO08143054 A1	20081127	WO2008JP58752	20080513

Priority:

JP20070128327 20070514 EP20080752632 20080513 WO2008JP58752 20080513

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std): TATSUDA YOSHINORI ; TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH ; TSUDAKOMA KOGYO KABUSHIKIKAISHA

Assignee(s): TSUDAKOMA KOGYO KANAZAWA SHI KK ; TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA CORP

Inventor(s): (std): TATSUDA YOSHINORI ; TATSUTA YOSHINORI ; YOSHINORI TATSUDA

Agent(s): SAMSON AND PARTNER PATENTANWAELTE; SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

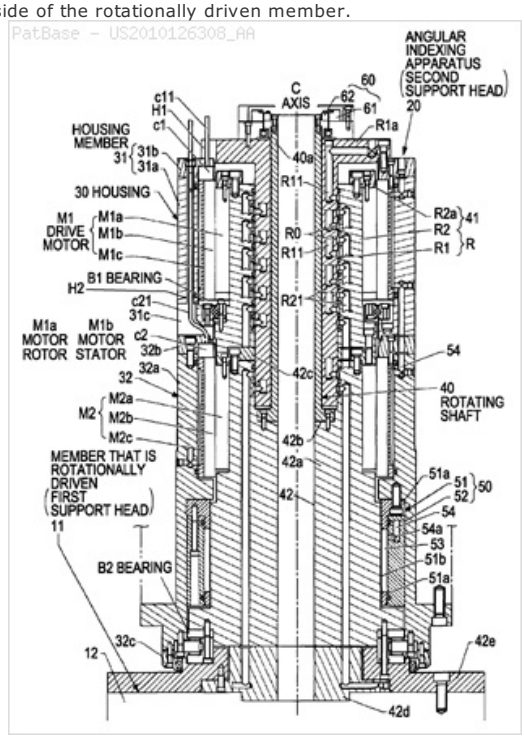
299) Family number: 42573552 (US2010126308A)

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Title: ANGULAR INDEXING APPARATUS FOR MACHINE TOOL

Abstract: An angular indexing apparatus for a machine tool includes a rotating shaft, to which a rotationally driven member is secured; a removable housing surrounding the outer periphery of the rotating shaft; bearings disposed between the housing and the rotating shaft and separated from each other in the axial direction of the rotating shaft; and driving means, provided between the housing and the rotating shaft, rotating the rotating shaft to index an angular position. The driving means uses drive motors, each including a motor rotor and a motor stator disposed concentrically around the rotating shaft, and separated from each other in the axial direction of the rotating shaft. A multiple-row roller bearing capable of supporting an axial load and a radial load is used for the bearing closest to the side of the rotationally driven member.

Classifications:
International (IPC 8-9): B23Q1/52 B23Q1/70 B23Q16/00 B23Q16/02 B23Q16/06 B23Q5/20 (Advanced/Invention); B23Q1/00 B23Q1/25 B23Q16/00 (Core/Invention)
CPC: B23Q2210/004 B23Q2220/006 B23Q16/025 B23Q1/5406 Y10T74/1471 B23Q1/70
European: B23Q1/54A B23Q1/70 B23Q16/02C3
US: 74/825 74/825P



Family:

Publication number	Publication date	Application number	Application date
AT555874 E	20120515	AT20080752633T	20080513
CN101657294 A	20100224	CN200880007825	20080513
CN101657294 B	20120725	CN200880007825	20080513
DE602008015379 D1	20120628	DE200860015379T	20080513
EP2145722 A1	20100120	EP20080752633	20080513
EP2145722 A4	20110420	EP20080752633	20080513
EP2145722 B1	20120502	EP20080752633	20080513
JP2008279582 A2	20081120	JP20070128331	20070514
JP5057845 B2	20121024	JP20070128331	20070514
KR101278091 B1	20130624	KR20097023149	20080513
KR20100016259 A	20100212	KR20097023149	20080513
TW200848200 A	20081216	TW20080115650	20080429
US2010126308 AA	20100527	US20080599012	20080513
WO08143055 A1	20081127	WO2008JP58753	20080513

Priority:

JP20070128331 20070514 EP20080752633 20080513 WO2008JP58753 20080513

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std): TSUDAKOMA IND CO LTD ; TSUDAKOMA IND CO LTD JP ; TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TATSUDA YOSHINORI

Assignee(s): TSUDAKOMA CORP ; TSUDAKOMA IND CO ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KANAZAWA KK

Inventor(s): (std): TATSUDA YOSHINORI ; TATSUTA YOSHINORI ; YOSHINORI TATSUTA

Agent(s): SAMSON AND PARTNER PATENTANWAELTE; SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

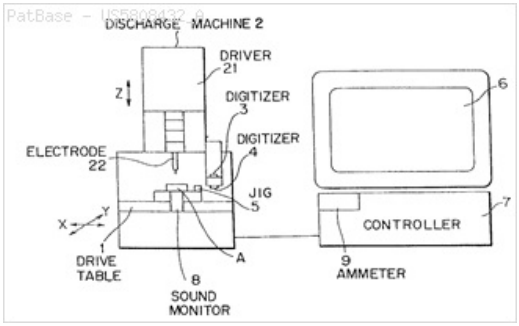
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

300) Family number: 11149557 (US5808432A)

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Title: METHOD OF AND APPARATUS FOR FINELY MACHINING A WORKPIECE WITH NUMERICAL CONTROL HAVING A COMPUTER-AIDED SIMULATED FUNCTION

Abstract: A machining program is prepared based on design data obtained by CAD and machining conditions stored in advance in a data base, while machining status information is obtained from a machining site. Based on the machining program and the machining status information, a machining status is simulated in order to subsequently prepare machining commands required for appropriate NC control.



Classifications:
International (IPC 8-9): B23H7/20 B23Q15/00 B23Q17/00 G05B19/4068 G05B19/4069 G05B19/4097 G05B19/416 G05B19/418 (Advanced/Invention); B23Q15/00 (Advanced/Non-invention); B23H7/00 B23Q15/00 B23Q17/00 G05B19/406 G05B19/4097 G05B19/416 G05B19/418 (Core/Invention)
International (IPC 1-7): B23H7/20 B23Q15/00 B23Q17/00 G05B17/00 G05B19/18 G05B19/4068 G05B19/4069 G05B19/4097 G06F19/00
CPC: Y02P90/22 Y02P90/26 Y02P90/265 G05B19/4069 G05B19/4097 G05B19/4163 G05B19/41875 G05B2219/32153 G05B2219/32182 G05B2219/32215 G05B2219/32216 G05B2219/33002 G05B2219/33301 G05B2219/33317 G05B2219/33325 G05B2219/34381 G05B2219/35291 G05B2219/37212 G05B2219/37337 G05B2219/37365 G05B2219/37567 G05B2219/45159 G05B2219/45214 G05B2219/45221 G05B2219/49338 G05B2219/50087 G05B2219/50309
European: G05B19/4069 G05B19/4097 G05B19/416A G05B19/418Q S05B219/32153 S05B219/32182 S05B219/32215 S05B219/32216 S05B219/33002 S05B219/33301 S05B219/33317 S05B219/33325 S05B219/34381 S05B219/35291 S05B219/37212 S05B219/37337 S05B219/37365 S05B219/37567 S05B219/45159 S05B219/45214 S05B219/45221 S05B219/49338 S05B219/50087 S05B219/50309
US: 318/561 318/563 318/565 318/568.24 318/569 364/474.15 364/474.17 364/474.19 364/474.21 700/173 700/175 700/177 700/179

Family:

Publication number	Publication date	Application number	Application date
CN1122018 A	19960508	CN19951000667	19950311
DE69508297 D1	19990422	DE19956008297	19950308
DE69508297 T2	19991111	DE19956008297T	19950308
EP0671677 A1	19950913	EP19950103307	19950308
EP0671677 B1	19990317	EP19950103307	19950308
JP3257327 B2	20020218	JP19950048440	19950308
JP7302108 A2	19951114	JP19950048440	19950308
KR100201020 B1	19990615	KR19950004550	19950307
KR19950026598 A	19951016	KR19950004550	19950307
US5808432 A	19980915	US19970788842	19970127

Priority:

JP19940041237 19940311 JP19950048440 19950308 US19950401897 19950310 US19970788842 19970127

Probable Assignee: MATSUSHITA ELECTRIC IND CO LTD

Assignee(s): (std): MATSUSHITA ELECTRIC IND CO LTD

Assignee(s): MATSUSHITA ELECTRIC INDUSTRIAL CO ; MATSUSHITA ELECTRIC INDUSTRIAL CO LTD ; MATSUSHITA ELECTRIC INDUSTRIAL CO LTD KADOMA OSAKA ; MATSUSHITA ELECTRIC INDUSTRIAL CO LTD KADOMA OSAKA JP

Inventor(s): (std): INOUE TAKAO ; MASAKI TAKESHI ; MURO MASAHIRO ; YOSIOKA TAIZIRO ; YOSHIOKA TAIJIRO ; MURO SHINKO ; MASAKI KEN ; IUE TAKAO

Inventor(s): TAKAO IUE ; TAIJIRO YOSHIOKA ; KEN MASAKI ; YOSIOKA TAIZIRO KITAKATSURAGI GUN NARA KEN JP ; MURO MASAHIRO TOYONAKA SHI OSAKA FU JP ; MASAKI TAKESHI HIRAKATA SHI OSAKA FU JP ; INOUE TAKAO HIRAKATA SHI OSAKA FU JP

Designated states: CH DE FR GB LI

301) Family number: 2185558 (US4473937A)

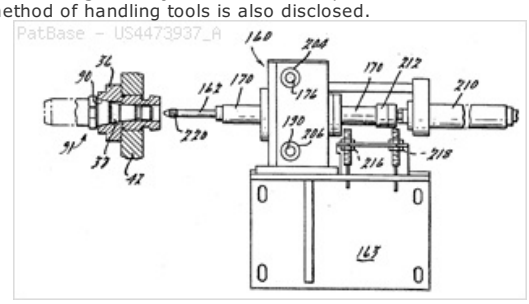
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Title: SYSTEM FOR AUTOMATIC FINE ADJUSTMENT OF TOOLS

Abstract: A novel machining center having a plurality of tools, including adjustable tools incorporating an externally accessible rotatable socket for fine-adjusting the tool bit thereon; a tool drive for actuating each tool; a storage device for storing a plurality of tools, at least one of which is one of the adjustable tools, the storage device being operable to move the tools between first and second positions; an automatic tool changer for transporting a tool in both directions between said

first position and the tool drive; a powered wrench engagable with said socket on an adjustable tool disposed in said second position; a numerical controller for controlling the operations of said machining center; and a technique for inputing to the control means information as to the identity of a given adjustable tool requiring adjustment and the amount of adjustment desired, said powered wrench being actuatable to engage said socket of said given adjustable tool in response to said information when the given tool is in said second position. A novel method of handling tools is also disclosed.

Classifications:
International (IPC 8-9): B23B29/034 B23B39/00 G05B19/18 (Advanced/Invention); B23B29/00 B23B39/00 G05B19/18 (Core/Invention)
International (IPC 1-7): B23B29/034 B23B39/00 B23Q15/22 B23Q3/155 B23Q3/157 G05B11/00
CPC: Y10T29/5105 Y10T408/37 Y10T483/10 Y10T483/12 Y10T483/132 Y10T483/15 Y10T483/1736 B23B29/03435 B23B29/03457 G05B19/182 G05B2219/50291
European: B23B29/034N3 B23B29/034N5 G05B19/18B S05B219/50291
US: 29/26R 29/568 408/35 483/1 483/13 483/31 483/4 483/8



Family:

Publication number	Publication date	Application number	Application date
DE3332306 A1	19840308	DE19833332306	19830907
GB2128507 A1	19840502	GB19830023813	19830906
GB2128507 B2	19861119	GB19830023813	19830906
GB8323813 A0	19831005	GB19830023813	19830906
IN159952 A	19870613	IN1983CA01089	19830906
JP59064210 A2	19840412	JP19830164918	19830907
US4473937 A	19841002	US19820415662	19820907

Priority:

US19820415662 19820907

Probable Assignee: DEVLIEG BULLARD II INC

Assignee(s): (std)**:** DE VLIEG MACHINE CO ; DEVLIEG MACHINE CO ; VLIEG MACHINE CO DE ; DEFURIIGU MACHINE CO ; VLIEG MACHINE COMPANY DE

Assignee(s): DEVLIEG MACHINE COMPANY ; DEVLIEG MACHINE CO A CORP ; LASALLE BUSINESS CREDIT INC AGENT AS ; PNC CAPITAL CORP A DE CORP ; STANDWICH IND INC A CORP OF DE ; STANWICH IND INC A DELAWARE CORP ; CABOT SAFETY INTERMEDIATE CORP ; BANCBOSTON FINANCIAL CO A MA BUSINESS TRUST ; CHRYSLER CAPITAL A CORP OF DE CORP ; STANDWICH IND ; STANWICH IND ; PNC CAPITAL CORP ; SHAWMUT BANK CONNECTICUT NA ; LASALLE BUSINESS CREDIT INC ; ALLIED CAPITAL A MD CORP CORP ; ALLIED CAPITAL CORP ; ALLIED INVESTMENT CORP ; ALLIED INVESTMENT II A MD CORP ATTENTION KAY K LEE ; ALLIED INVESTMENT II A MD CORP ATTENTION KAY K LEE PARALEGAL CORP ; BANC ONE PARTNERS A TX CORP CORP ; CHRYSLER CAPITAL CORP ; BANCBOSTON FINANCIAL CO ; BANC ONE PARTNERS CORP ; DEVLIEG BULLARD INC ; CIT GROUP BUSINESS CREDIT INC ; DEVLIEG BULLARD II INC ; DE VLIEG MACHINE COMPANY

Inventor(s): (std)**:** ORTLIEB ROBERT M ; ORTLIEB ROBERT MARCEL ; ROBAATO MAASERU OOTORIIBU

Inventor(s): ROBERT MARCEL ORTLIEB ; MARCEL ORTLIEB ROBERT

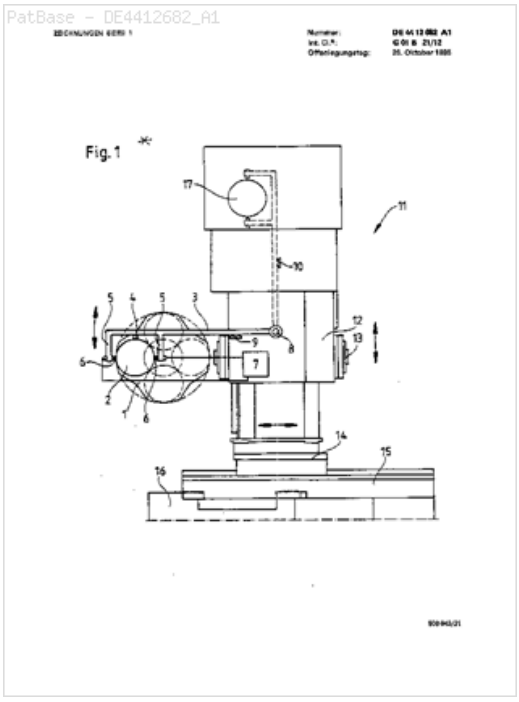
302) Family number: 11683558 (DE4412682A1)

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Title: Eccentrically rotating workpiece measuring device

Abstract: The device has a sensing arm (3) with measurement sensors (6) on one end which engage the workpiece (2) and follow the rotation. The other end (8) of the sensing arm is guided to follow the motion of the workpiece at least in one plane.A measurement transducer (7) works in conjunction with the measurement sensors. The guided end of the sensing arm can be freely guided on an approximately vertical linkage or within a linear guide. Alternatively, it can be positively guided in a plane.

Classifications:
International (IPC 8-9): B23Q17/20 G01B5/00 (Advanced/Invention); B23Q17/20 G01B5/00 (Core/Invention)
International (IPC 1-7): B23B25/06 B23Q17/20 G01B21/12 G01B5/08
CPC: B23Q17/20 G01B5/003
European: B23Q17/20 G01B5/00K



Family:

Publication number	Publication date	Application number	Application date
DE4412682 A1	19951026	DE19944412682	19940413
DE4412682 C2	19980903	DE19944412682	19940413

Priority:

DE19944412682 19940413

Probable Assignee: DOERRIES SCHARMANN AG

Assignee(s): (std): DOERRIES SCHARMANN AG ; DOERRIES SCHARMANN AG I K ; DOERRIES SCHARMANN I K AG

Assignee(s): DOERRIES SCHARMANN AG I K 41236 MOENCHENGLADBACH D ; DOERRIES SCHARMANN AG I K 41236 MOENCHENGLADBACH DE ; DOERRIES SCHARMANN AG 41236 MOENCHENGLADBACH DE

Inventor(s): (std): SCHWEEN AXEL DR ; WARMBOLD MANFRED

Inventor(s): WARMBOLD MANFRED 30827 GARBSEN DE ; SCHWEEN AXEL DR 39261 ZERBST DE

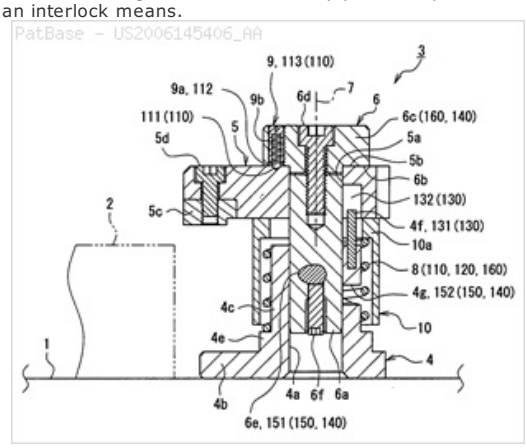
303) Family number: 32559560 (US2006145406A)

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Title: CLAMP DEVICE

Abstract: To provide a clamp device capable of simply clamping an object to and removing it from a support base. In the clamp device, a body, a pressing member for pressing a workpiece, and a rotary member are allowed to rotate relative to each other. The pressing member rotates between a first rotary position not facing the workpiece and a second rotary position facing the workpiece. In the second rotary position, the pressing member is also movable between a press releasing position and a pressing position. Here, when the rotary member is rotated from one rotary position to a middle rotary position, the pressing member, while being held in the press releasing position by a holding means, is rotated by a contact means from the first rotary position to the second rotary position as the rotary member rotates. Next, when the rotary member is rotated to another rotary position, the pressing member, while remaining in the second rotary position by the rotary range restricting means, is moved to the pressing position by an interlock means.

Classifications:
International (IPC 8-9): B23Q3/06 B25B1/08 B25B5/04 B25B5/06 B25B5/08 F16B2/12 F16B2/18 (Advanced/Invention);
B23Q3/06 B25B1/00 B25B5/00 (Core/Invention)
International (IPC 1-7): B23Q3/06 F16B2/12 F16B2/18
CPC: B23Q3/06 B25B5/04 B25B5/062 B25B5/08
European: B23Q3/06 B25B5/04 B25B5/06B1 B25B5/08
US: 269/233



Family:

Publication number	Publication date	Application number	Application date
EP1616660 A1	20060118	EP20040726783	20040409
EP1616660 A4	20080611	EP20040726783	20040409
JP2004314222 A2	20041111	JP20030110049	20030415
US2006145406 AA	20060706	US20050553173	20051014
WO04091851 A1	20041028	WO2004JP05124	20040409

Priority:

JP20030110049 20030415 WO2004JP05124 20040409

Probable Assignee: IMAO CORP KK

Assignee(s): (std): IMAO CORP ; IWATA KAZUHIDE

Assignee(s): IMAO CORP KK

Inventor(s): (std): IWATA KAZUHIDE

Agent(s): JORDAN AND HAMBURG LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

304) Family number: 54724560 (DE102012101979B4)

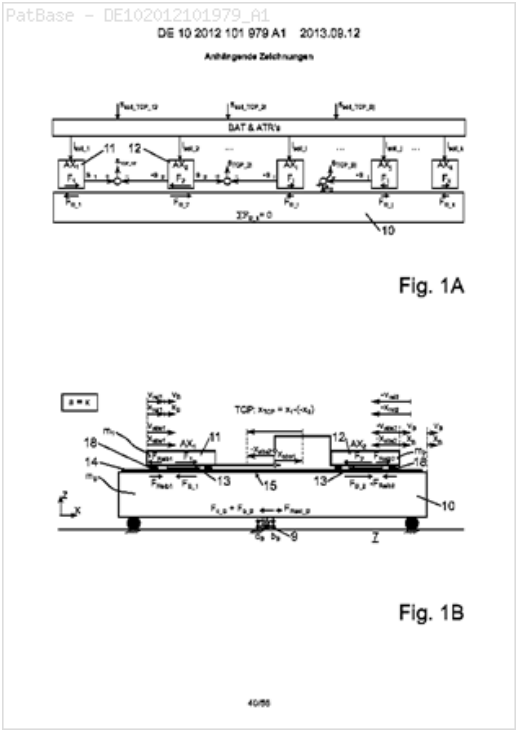
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Title: VERFAHREN UND VORRICHTUNG ZUR ERZEUGUNG EINER RELATIVBEWEGUNG

Abstract: Source: DE102012101979B4 [DE] Verfahren zur Erzeugung einer Relativbewegung zwischen zwei oder mehr relativ zueinander und relativ gegenueber einer Basis (10, 20, 30, 40, 50, 60) beweglichen Elementen (11, 12, 21, 22, 31, 32, 41, 42, 51, 52, 61, 62), wobei die Relativbewegung zwischen den beweglichen Elementen (11, 12, 21, 22, 31, 32, 41, 42, 51, 52, 61, 62) zugleich Nutzbewegung ist, dadurch gekennzeichnet, dass die Relativbewegung zwischen den beweglichen Elementen (11, 12, 21, 22, 31, 32, 41, 42, 51, 52, 61, 62) entsprechend einem Faktor zur Bewegungsaufteilung aus den Relativbewegungen der beweglichen Elemente (11, 12, 21, 22, 31, 32, 41, 42, 51, 52, 61, 62) gegenueber der Basis (10, 20, 30, 40, 50, 60) und/ oder gegenueber einem vorgelagerten beweglichen Element (11, 12, 21, 22, 31, 32, 41, 42, 51, 52, 61, 62) zusammengesetzt wird, wobei sich in die Basis (10, 20, 30, 40, 50, 60) oder in das vorgelagerte bewegliche Element (11, 12, 21, 22, 31, 32, 41, 42, 51, 52, 61, 62) uebertragene Antriebsreaktionskraefte (FB), welche in Folge der entsprechend der

Massen der beweglichen Elemente (11, 12, 21, 22, 31, 32, 41, 42, 51, 52, 61, 62) angepassten Bewegungsvorgaben im Wesentlichen in ihrem Verlauf ueber der Zeit im Betrag im Wesentlichen identisch sind, in der Basis (10, 20, 30, 40, 50, 60) aufheben.

Classifications:
International (IPC 8-9): B23K26/08 B23Q15/00 B23Q23/00 B23Q5/00 B25J9/18 G05B19/402 G05B19/404 G05B19/416 (Advanced/Invention)
CPC: B23K26/08 B23Q11/0032 B23K15/002 B23K15/08 B23K26/03 B23K26/032 B23K26/36 G05B19/404 G05B2219/41191 G05B2219/49176 Y02P90/265



Family:

Publication number	Publication date	Application number	Application date
DE102012101979 A1	20130912	DE201210101979	20120308
DE102012101979 B4	20180215	DE201210101979	20120308

Priority:

DE201210101979 20120308

Probable Assignee: UNIV DRESDEN TECH

Assignee(s): (std)**:** TECHNISCHE UNIV DRESDEN ; UNIV DRESDEN TECH

Inventor(s): (std)**:** GROSMANN KNUT ; GROSSMANN KNUT ; MERX MARCEL ; MUELLER JENS

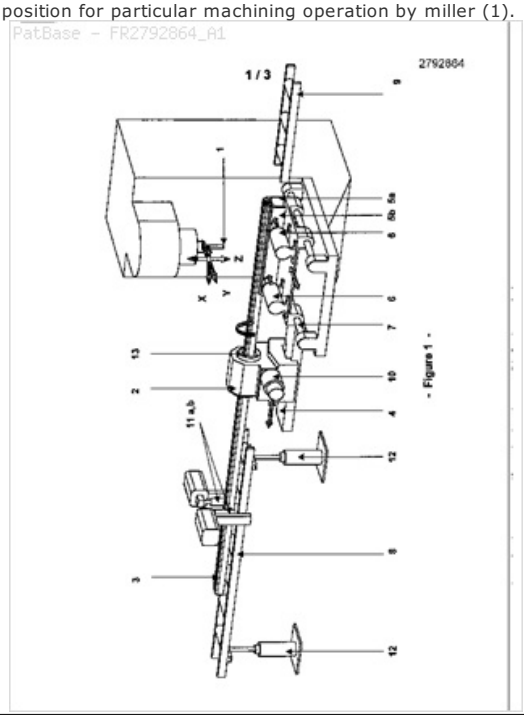
305) Family number: 13435566 (FR2792864A)

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Title: Feeding and machining equipment for producing finished pieces from continuous bar, comprises incoming conveyor, motorized headstock for advancing and rotating the bar, vice and milling facility

Abstract: Bar (3) is advanced by conveyor (8) and guided by sensor contacts (11a, 11b). Bar is progressed and rotated as required for machining by headstock (2) which is motorized (10) and able to move along platform (4). Vice (5a, 5b), with detachable jaw pieces able to accommodate bar profile, holds bar in position for particular machining operation by miller (1).

Classifications:
International (IPC 8-9): B23B41/00 B23C3/00 B23Q1/48 B23Q7/02 B23Q7/04 B23Q7/05 (Advanced/Invention); B23B41/00 B23C3/00 B23Q1/25 B23Q7/02 B23Q7/04 B23Q7/05 (Core/Invention)
International (IPC 1-7): B23C9/00 B23Q7/04 B23Q7/05
CPC: B23B41/003 B23C3/002 B23Q1/48 B23Q7/02 B23Q7/04 B23Q7/05
European: B23B41/00C B23C3/00B B23Q1/48 B23Q7/02 B23Q7/04 B23Q7/05



Family:

Publication number	Publication date	Application number	Application date
FR2792864 A1	20001103	FR19990005346	19990428
FR2792864 B1	20010608	FR19990005346	19990428

Priority:

FR19990005346 19990428

Probable Assignee: PIOCH MICHEL

Assignee(s): (std)**:** PIOCH MICHEL

Inventor(s): (std)**:** PIOCH MICHEL

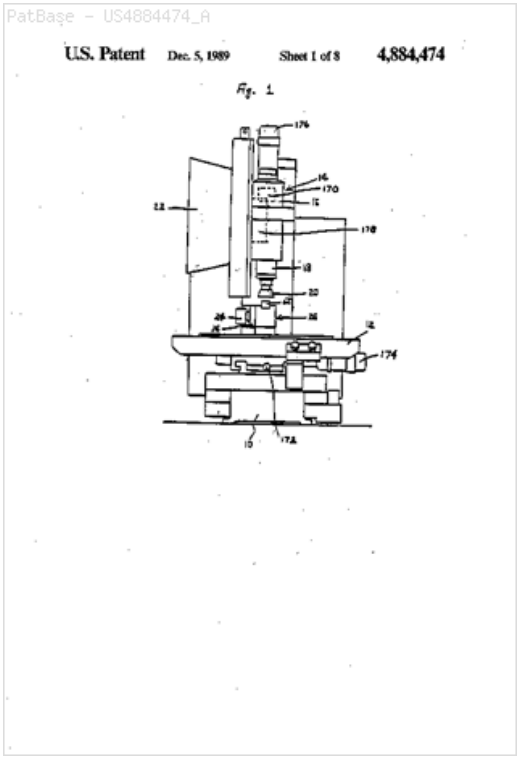
306) Family number: 4453569 (US4884474A)

© PatBase

Title: DEVICE FOR INDEXING

Abstract: In a device for indexing a work attached to a cutting device of a machine center, the device for indexing comprises an indexing plate connected to a driving shaft of an indexing table and held by a stopper on the normal position on a base, a push bar interlocking operatively with an extra action other than the normal action of a tool to move linearly relative to the base, an actuating member for rotating the indexing plate by engaging the push bar operatively. The device is so constructed to disengage a stoppage of the indexing plate by the stopper and rotate the indexing at fixed angles with the aid of the actuating member when indexing a work.

Classifications:
International (IPC 8-9): B23Q16/02 B23Q16/06 (Advanced/Invention); B23Q16/00 (Core/Invention)
International (IPC 1-7): B23B29/24 B23Q16/02 B23Q16/06
CPC: Y10T74/14 Y10T74/1424 Y10T74/1453 Y10T74/1494 B23Q16/06
European: B23Q16/06
US: 74/813L 74/813R 74/817 74/822



Family:

Publication number	Publication date	Application number	Application date
DE3768369 D1	19910411	DE19873768369	19870604
EP0256628 A1	19880224	EP19870304968	19870604
EP0256628 B1	19910306	EP19870304968	19870604
JP1749034 C3	19930408	JP19860182338	19860802
JP4036822 B4	19920617	JP19860182338	19860802
JP63039752 A2	19880220	JP19860182338	19860802
US4884474 A	19891205	US19870057340	19870602
US4991463 A	19910212	US19890385280	19890725

Priority:

JP19860182338 19860802 US19870057340 19870602

Probable Assignee: KAWATA CHUCK MFG CO

Assignee(s): (std)**:** KAWADA TEKKO KK ; KAWATA CHUCK MANUFACTURING CO ; KAWATA CHUCK MFG CO ; KAWATA CHUCK MFG CO LTD

Assignee(s): KAWATA CHUCK MFG CO LTD KYOTO JP ; KAWATA CHUCK MFG CO LTD 40 KOAZA HONMACHI AZA SYUCHI TANBACHO FUNAIGUN KYOTO JAPAN A CORP OF JAPAN ; KAWATA CHUCK MFG ; KAWATA CHUCK MANUFACTURING CO LTD ; KAWADA TETSUKO KK

Inventor(s): (std)**:** KAWADA YASUYUKI ; KAWATA YASUYUKI

Inventor(s): KAWATA YASUYUKI TANBACHO FUNAIGUN KYOTO JP

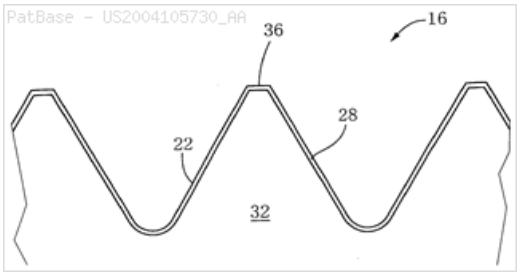
Designated states: DE FR GB IT

307) Family number: 30619570 (US2004105730A)

Title: ROTARY CUTTING TOOL HAVING MAIN BODY PARTIALLY COATED WITH HARD COATING

Abstract: A rotary cutting tool including a cylindrical main body which is partially coated with a hard coating, so as to include a coated portion and a non-coated portion that is not coated with the hard coating. The cylindrical main body has: (a) at least one flute each of which extends from an axially distal end of the main body portion to an axially proximal end of the main body portion, and (b) at least one land each of which is provided by a peripheral portion of the cylindrical main body not cut away by the flute or flutes. The coated portion is provided by at least an outer circumferential surface of each land, while the non-coated portion is provided by at least a rear-side portion of a flute surface of each flute as viewed in the predetermined rotating direction.

Classifications:
International (IPC 8-9): B23G5/06 (Advanced/Invention); B23G5/00 (Core/Invention)
International (IPC 1-7): B23B51/06 B23C5/00 B23G5/06 B23G5/18 B23P15/52
CPC: Y10T408/9048 B23G5/06 B23G2200/26
European: B23G5/06 L23G200/26
US: 408/222 408/222P



Family:

Publication number	Publication date	Application number	Application date
DE10331327 A1	20040609	DE20031031327	20030710
JP2004174698 A2	20040624	JP20020347076	20021129
JP3834544 B2	20061018	JP20020347076	20021129
US2004105730 AA	20040603	US20030462762	20030617

Priority:
JP20020347076 20021129

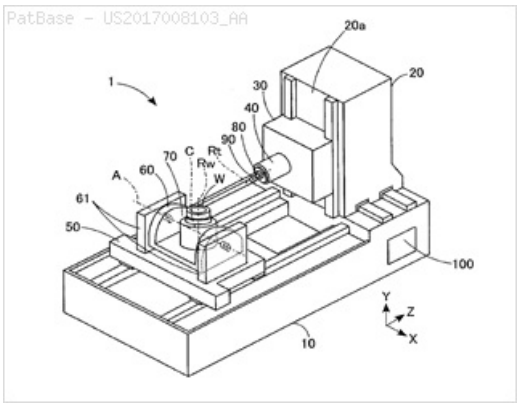
Probable Assignee: OSG CORP
Assignee(s): (std): OSG CORP
Assignee(s): OSG CORP TOYOKAWA
Inventor(s): (std): NAKAJIMA TAKAYUKI

308) Family number: 64626574 (US2017008103A)

Title: GEAR MACHINING APPARATUS

Abstract: A gear machining apparatus includes a machining tool having a plurality of protruding tool edges on an outer periphery of the machining tool, and driving apparatuses that form a tooth on a work piece by rotating the machining tool around a central axis thereof, rotating the work piece W around a central axis thereof, and moving the machining tool relative to the work piece. Radial outer faces of the protruding tool edges form multiple steps that are parallel to the central axis of the machining tool such that the diameter of the machining tool increases in a stepwise manner from a tool leading end toward a tool base end of the machining tool.

Classifications:
International (IPC 8-9): B23F21/06 B23F21/10 B23F21/12 B23F5/16 B23F5/20 (Advanced/Invention)
CPC: B23F5/202 B23F21/122 B23F5/16 B23F5/163 B23F5/205 Y10T409/105088 Y10T409/105247 Y10T409/105565 Y10T409/105724 Y10T409/107632
US: 409/35



Family:

Publication number	Publication date	Application number	Application date
CN106334840 A	20170118	CN201610532338	20160707
DE102016112360 A1	20170112	DE201610112360	20160706
JP2017019034 A2	20170126	JP20150137636	20150709
US2017008103 AA	20170112	US20160202957	20160706
US9919371 BB	20180320	US20160202957	20160706

Priority:
JP20150137636 20150709

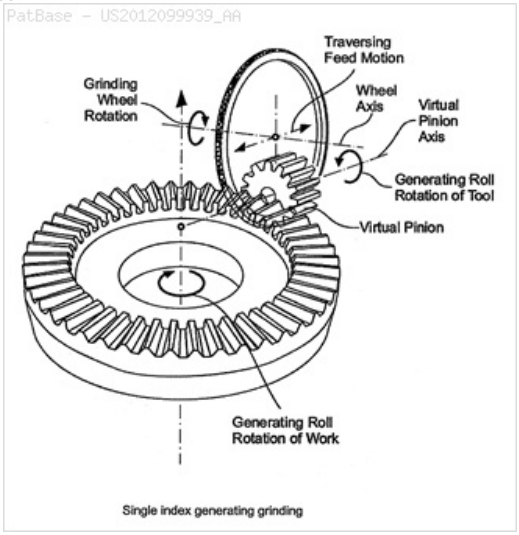
Probable Assignee: JTEKT CORP
Assignee(s): (std): JTEKT CORP
Assignee(s): N A
Inventor(s): (std): OTANI HISASHI ; NAKANO HIROYUKI ; NATSUDA KAZUKI ; OTANI TAKASHI ; KAZUKI NATSUDA ; HISASHI OTANI ; HIROYUKI NAKANO
Agent(s): OBLON MCCLELLAND MAIER AND NEUSTADT LLP

309) Family number: 48263577 (US2012099939A)

Title: METHOD AND TOOL FOR MANUFACTURING FACE GEARS

Abstract: A cutter disk having cutting blades oriented on its circumference with the cutting edges of the blades oriented perpendicular to the axis of rotation of the cutter disk thereby representing a plane which can be oriented to a work piece (e.g. face gear) under an angle equal to the pressure angle of the mating face gear set's pinion, and, which can be rotated around a virtual pinion axis to generate a tooth flank on the work piece.

Classifications:
International (IPC 8-9): B23F1/02 B23F1/06 B23F15/06 B23F21/16 B23F23/00 B23F5/02 B23F5/06 B23F5/08 B23F5/20 (Advanced/Invention); B23F5/02 (Advanced/Non-invention)
CPC: B23F21/16 B23F23/006 Y10T409/103816 Y10T409/103975 Y10T409/105883 B23F15/06 B23F5/02 B23F5/06
European: B23F15/06 B23F21/16 B23F23/00B
US: 1/1 409/38 409/38P



Family:

Publication number	Publication date	Application number	Application date
BR112012002408 A2	20180313	BR20121102408	20100803
CN102470466 A	20120523	CN201080034944	20100803
CN102470466 B	20141112	CN201080034944	20100803
DE602010019016 D1	20141030	DE201060019016T	20100803
EP2461932 A1	20120613	EP20100742384	20100803
EP2461932 B1	20140917	EP20100742384	20100803
JP2013500875 T2	20130110	JP20120523690T	20100803
JP5700854 B2	20150415	JP20120523690T	20100803
KR20120040251 A	20120426	KR20127004726	20100803
RU2012108123 A	20130910	RU20120108123	20100803
RU2542040 C2	20150220	RU20120108123	20100803
US2012099939 AA	20120426	US20100382171	20100803
US9108258 BB	20150818	US20100382171	20100803
WO11017301 A1	20110210	WO2010US44215	20100803

Priority:
US20090230785P 20090803 EP20100742384 20100803 WO2010US44215 20100803 US20100382171 20100803

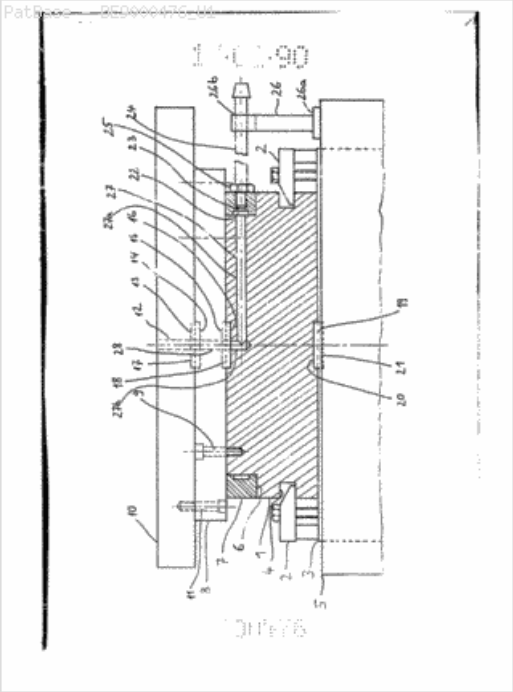
Probable Assignee: GLEASON WORKS
Assignee(s): (std): GLEASON WORKS ; STADTFELD HERMANN J ; TE GLISON VORKS
Assignee(s): THE GLEASON WORKS ; GLEASON WORKS ROCHESTER ; MANUFACTURERS AND TRADERS TRUST CO
Inventor(s): (std): STADTFELD HERMANN J ; SHTADTFEL D GERMAN J ; HERMANN J STADTFELD
Agent(s): LEINWEBER AND ZIMMERMANN; ROBERT L; MCDOWELL ROBERT L
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

310) Family number: 17637578 (DE9000476U1)

Abstract: Source: DE9000476U1 [DE] (Claim 1) 1. Vorrichtung zur Befestigung einer Vakuum-Spannplatte auf einem Drehtisch einer Werkzeugmaschine, insbesondere eines Bearbeitungszentrums, gekennzeichnet durch einen auf dem Drehtisch (3) loesbar befestigbaren @rundkoerper (1), auf dem die Spannplatte (10) befestigt ist, wobei ein durch die Spannplatte verlaufender Absauggang (2a) mit einem Ende eines durch den Grundkoerper (1) verlaufenden Verbindungsganges (27) verbunden ist, dessen ans fis Ende mit eines @ingkana@ (22) in Verbindung steht, der in einem an aem Grundkorpe (1) drehoar gelagerten Ringkoerper (7) gebildet ist, @ einen Anschlussgang (23) auf- we.;, der aen Ringkanal (22) mit einem Anschlussrohr (24) verbindet, das auf einem zu lem Drehtisch (3) drehfesten Gehaeuse (5) des Drehtisches drehunbeweglich abgestuetztist.

Machine translation: (Claim 1) 1 Device for the attachment of a vacuum chuck on a rotary table of a machine tool, in particular a machining center, characterized by one on the turntable (3) releasably secured @ rundkoerper (1), is on the clamping plate (10) attached, with one extending through the clamping plate Absauggang (2a) with an end one of the basic body (1) extending connecting passage (27) is connected, its to the F end with an @ ingkana @ (22) is connected, in one of aem parent compound (1) drehoar stored Ringkoerper is formed (7), @ a connecting passage (23)-we,., the aen annular channel (22) with a connecting pipe (24) connects the abgestuetztist on a too-lem turntable (3) non-rotatable housing (5) of the rotary table drehunbeweglich.

Classifications:
International (IPC 8-9): B25B11/00 (Advanced/Invention); B25B11/00 (Core/Invention)
International (IPC 1-7): B23Q3/08 B25B11/00
CPC: B25B11/005
European: B25B11/00C



Family:

Publication number	Publication date	Application number	Application date
DE9000476 U1	19900412	DE19900000476U	19900117

Priority:

DE19900000476U 19900117

Probable Assignee: ROHDE KARL HEINZ 7321 ZELL DE

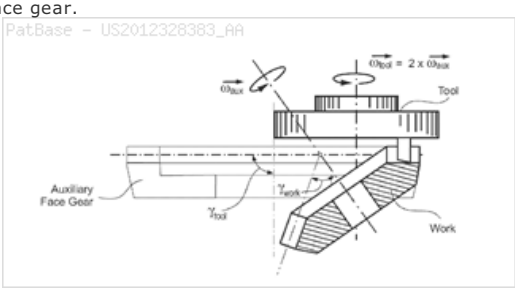
Assignee(s): ROHDE KARL HEINZ 7321 ZELL DE

311) Family number: 49386581 (US2012328383A)

Title: CONTINUOUS METHOD FOR MANUFACTURING FACE GEARS

Abstract: A continuous method of manufacturing a face gear utilizing a tool, representing a plane which can be oriented to a face gear workpiece under an angle equal to the pressure angle of the mating pinion member of the gear set (e.g. the face gear set), and, which can be rotated around a virtual pinion axis to generate a tooth flank on the workpiece. The tool is a face cutter which performs a continuous indexing motion with equal hand of rotation of cutter and workpiece (e.g. face gear) thereby describing a hypocycloid path of motion and an indexing ratio of two cutter rotations during one workpiece gear rotation which will produce straight lines along the face width of the face gear.

Classifications:
International (IPC 8-9): B23F1/02 B23F1/06 B23F15/06 B23F5/27 B62D (Advanced/Invention); B23F5/06 (Advanced/Non-invention)
CPC: B23F15/06 B23F1/02 B23F1/06 B23F5/06 Y10T409/104293 Y10T409/105883
European: B23F15/06
US: 1/1 409/38



Family:

Publication number	Publication date	Application number	Application date
CN102725089 A	20121010	CN201180007443	20110128
CN102725089 B	20161109	CN201180007443	20110128
DE602011003495 D1	20131219	DE201160003495T	20110128
EP2528705 A1	20121205	EP20110706972	20110128
EP2528705 B1	20131023	EP20110706972	20110128
IN07222DN2012 A	20151218	IN2012DN07222	20120820
JP2013517954 T2	20130520	JP20120551303T	20110128
JP5650762 B2	20150107	JP20120551303T	20110128
RU2012136862 A	20140310	RU20120136862	20110128
RU2518818 C2	20140610	RU20120136862	20110128
US2012328383 AA	20121227	US20110521064	20110128
US9132493 BB	20150915	US20110521064	20110128
WO11094492 A1	20110804	WO2011US22858	20110128

Priority:

US20100299386P 20100129 EP20110706972 20110128 WO2011US22858 20110128
US20110521064 20110128

Probable Assignee: GLEASON WORKS

Assignee(s): (std): GLEASON WORKS ; STADTFELD HERMANN J ; TE GLISON VORKS

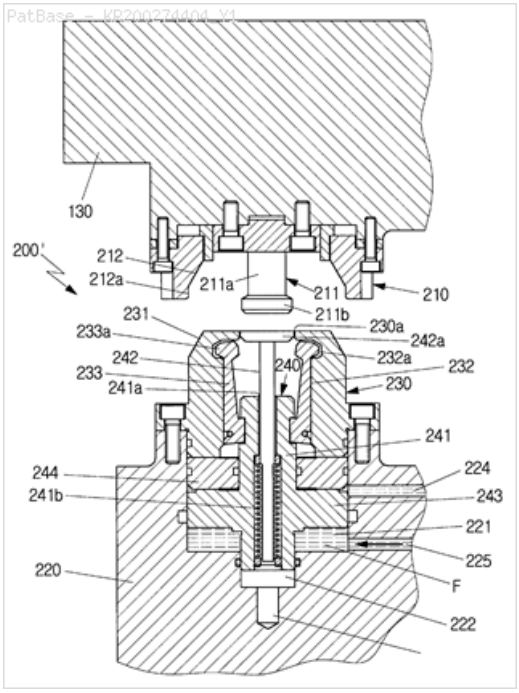
Assignee(s):	THE GLEASON WORKS ; GLEASON WORKS ROCHESTER ; MANUFACTURERS AND TRADERS TRUST CO
Inventor(s): (std)**:**	STADTFELD HERMANN J ; SHTADTFEL D GERMAN J
Inventor(s):	HERMANN J STADTFELD ; STADTFELD HERMANN J WEBSTER
Agent(s):	LEINWEBER AND ZIMMERMANN; ROBERT L; MCDOWELL ROBERT L
Designated states:	AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

312) Family number: 47069582 (KR200274404Y)

Title: Machining center of the clamp unit (Machine translation)

Abstract: Source: KR200274404Y **Machine translation:** The present invention, rats of the machining center relates to a clamp device, reciprocating up and down on one side of the bed 140 and the rotary shaft is rotatably provided to the rotating shaft 110 of the (110) and (300) which is provided extending in both directions, wherein the hanger 120, the hanger 120 and a workpiece mounted to both sides of the arm, the rotary shaft 110 (130) are spaced apart from the other side of the bed 140 is configured to include a is provided in the table 220, and a lower surface of the latch (130) has a plurality of hollow cylindrical structure is Nahap locator, provided fixed to the cap 210, the top surface of the table 220 and the locator cap 210 is detachably coupled to a plurality of the hollow cylindrical structure is nahap the locator pin 230, the machining center is provided is fixed to the arm, wherein the clamp unit is located in the inner peripheral surface of the cap 210 located on the outer peripheral surface of the pin 230 and the upper surface 231 is formed so as to be in close contact with the tapered surface 212, one side of the inclined surface 212 is located on the outer peripheral surface of the pin 230 to be coupled to a close contact with the lower side in the vertical plane (212a) made of a bent structure is characterized in that it provides. Thus, the present design of the arms located at the clamping device is formed in the inner peripheral surface of the cap portion of the inclined surface bent to the lower side in the vertical and horizontal surface form a pin located located, increasing the bonding strength between the clamp force to the arm from the workpiece during processing, adding additional layer applied to one side of lateral load due to a predetermined impact force to overcome, it is possible to prevent the departure.
Machining center, rats, clamps, fixed, leaving the workpiece, machining

Classifications:
International (IPC 8-9): B23Q3/00 (Advanced/Non-invention)
International (IPC 1-7): B23Q3/00



Family:

Publication number	Publication date	Application number	Application date
KR200274404 Y1	20020504	KR20020005296U	20020222

Priority:
KR20020005296U 20020222

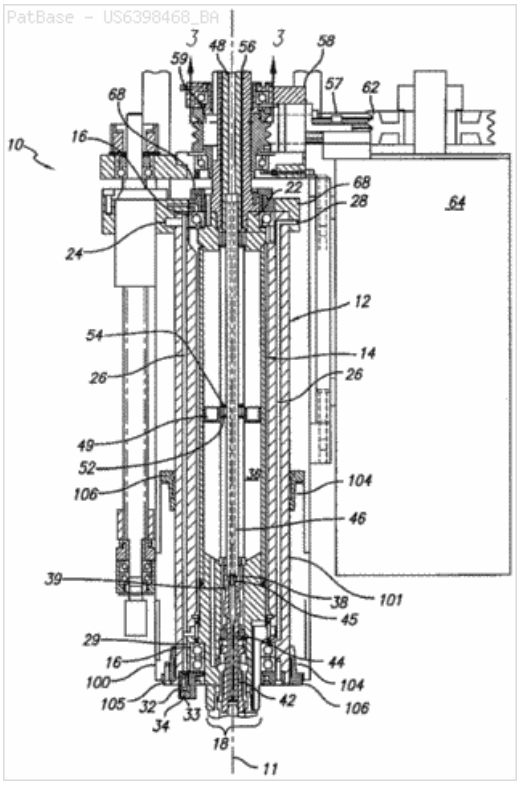
Probable Assignee:	DOOSAN MECATEC CO LTD
Assignee(s):	DOOSAN MECATEC CO LTD

313) Family number: 23246582 (US6398468B)

Title: MACHINE TOOL QUILL SPINDLE

Abstract: A quill spindle includes a quill assembly within which a spindle assembly is rotationally mounted. The quill assembly includes a coolant flow path, and the spindle assembly includes a plurality of coolant flow paths. The quill assembly flow path and one of the plurality of spindle assembly flow paths provide cooling to bearings that allow the rotation of the spindle assembly within the quill assembly. Another of the plurality of coolant flow paths within the spindle assembly provides cooling flow to a cutting tool installed on an end of the quill spindle.
Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/70
B23Q11/12 (Advanced/Invention);

B23Q1/00 B23Q11/12 (Core/Invention)
International (IPC 1-7): B23Q11/10
CPC: B23Q11/127 B23Q1/0036 B23Q1/70 Y10T408/44 Y10T409/303976 Y10T409/309352 Y10T409/309464
European: B23Q1/00B2B2 B23Q1/70 B23Q11/12D2
US: 384/493 408/56 409/135 409/231 409/233



Family:

Publication number	Publication date	Application number	Application date
US6398468 BA	20020604	US20010766434	20010119

Priority:
US20010766434 20010119

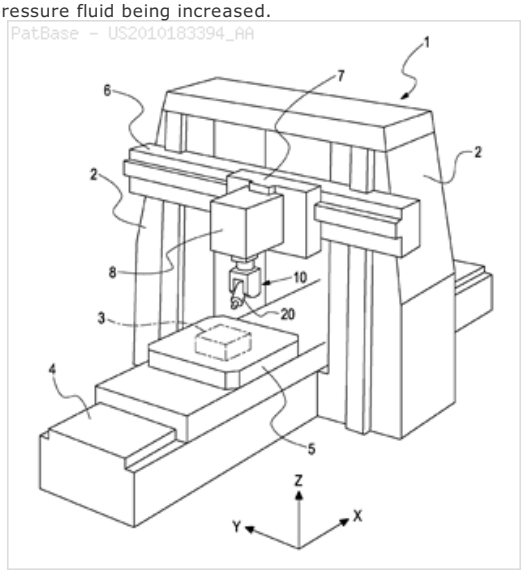
Probable Assignee: BAYER AG
Assignee(s): (std)**:** BAYER AG ; BAYER MACHINE TECH LLC
Inventor(s): (std)**:** BAYER JACK L ; BAYER SCOTT L ; PHILIPPI JOHN D

314) Family number: 42800588 (US2010183394A)

Title: INDEXING DEVICE

Abstract: An indexing device (100) is provided, in which a clamp sleeve (34a) extending along a rotary shaft (39) is disposed in the space between the rotary shaft (39) and a housing hole (31s) of a frame (31b), and the clamp sleeve (34a) bulges toward the rotary shaft (39) by supply of pressure fluid, so as to non-rotatably hold the rotary shaft (39). A pressure-receiving cylindrical portion (38a1) extending in parallel to the rotary shaft (39) is provided around the rotary shaft (39) integrally with the frame (31b). A cylinder-like portion (38b) extending along the rotary shaft (39) is provided integrally with the rotary shaft (39) in the space between the pressure-receiving cylindrical portion (38a1) and the clamp sleeve (34a). When the clamp sleeve (34a) bulges, the cylinder-like portion (38b) is pinched by the clamp sleeve (34a) and the pressure-receiving cylindrical portion (38a1). Thus, the contact area, in which a frictional force is produced, is increased, and a desirable braking force can be obtained without the pressure of the pressure fluid being increased.

Classifications:
International (IPC 8-9): B23C3/00 B23Q1/26 B23Q1/28 B23Q16/02 B23Q16/10 (Advanced/Invention);
B23C3/00 B23Q16/00 (Core/Invention)
CPC: B23Q2220/006 B23Q16/10 B23Q1/287 B23Q1/5406 B23Q16/102 Y10T409/306664
European: B23Q1/28D B23Q1/54A B23Q16/10 B23Q16/10C
US: 409/183



Family:

Publication number	Publication date	Application number	Application date
AT553881 E	20120515	AT20080777741T	20080701

CN101674917 A	20100317	CN200880012144	20080701
CN101674917 B	20110504	CN200880012144	20080701
DE602008014971 D1	20120614	DE200860014971T	20080701
EP2168718 A1	20100331	EP20080777741	20080701
EP2168718 A4	20110427	EP20080777741	20080701
EP2168718 B1	20120418	EP20080777741	20080701
JP2009018395 A2	20090129	JP20070183611	20070712
JP4993723 B2	20120808	JP20070183611	20070712
TW200904581 A	20090201	TW20080120730	20080604
TWI403383 B	20130801	TW20080120730	20080604
US2010183394 AA	20100722	US20080602937	20080701
WO09008286 A1	20090115	WO2008JP61890	20080701

Priority:

JP20070183611 20070712 EP20080777741 20080701 WO2008JP61890 20080701

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std): TATSUDA YOSHINORI ; TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH

Assignee(s): TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KANAZAWA KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA CORP

Inventor(s): (std): TATSUDA YOSHINORI ; TATSUTA YOSHINORI ; YOSHINORI TATSUDA

Agent(s): SAMSON AND PARTNER PATENTANWAELTE MBB; SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

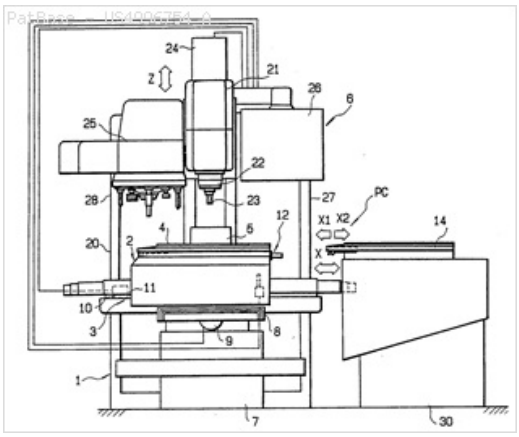
315) Family number: 29308591 (US4996754A)

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Title: PALLET CHANGER

Abstract: PCT No. PCT/JP88/00400 Sec. 371 Date Oct. 27, 1989 Sec. 102(e) Date Oct. 27, 1989 PCT Filed Apr. 25, 1988 PCT Pub. No. WO88/08770 PCT Pub. Date Nov. 17, 1988.This invention relates to a pallet changer suitable for use with a machine tool. When exchanging pallets, the pallet changer employs a drive means 3 for driving a table 2, and a transfer means 12 comprising a chain 66 and sprockets 64, 65. The transfer means 12 is driven by the drive means 3, and the pallet 4 is moved in the same direction as the table 2.

Classifications:
International (IPC 8-9): B23Q7/00 B23Q7/14 (Advanced/Invention); B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q7/00 B65G47/00
CPC: Y10T29/5196 B23Q7/1431
European: B23Q7/14K2
US: 198/346.1 29/33P



Family:

Publication number	Publication date	Application number	Application date
DE3855768 D1	19970306	DE19883855768	19880425
DE3855768 T2	19970626	DE19883855768T	19880425
EP0357775 A1	19900314	EP19880903397	19880425
EP0357775 A4	19920325	EP19880903397	19880425
EP0357775 B1	19970122	EP19880903397	19880425
JP1679793 C3	19920713	JP19870109837	19870507
JP3046252 B4	19910715	JP19870109837	19870507
JP63278738 A2	19881116	JP19870109837	19870507
US4996754 A	19910305	US19890434674	19891027
US5062190 A	19911105	US19900591827	19901002
WO8808770 A1	19881117	WO1988JP00400	19880425

Priority:

JP19870109837 19870507 WO1988JP00400 19880425 US19890434674 19891027

Probable Assignee: KITAMURA MACHINERY CO LTD

Assignee(s): (std): KITAMURA MACHINERY CO LTD

Assignee(s): KITAMURA MACHINERY CO LTD TAKAOKA TOYAMA JP ; KITAMURA MACH CO LTD ; KITAMURA MACHINERY CO

Inventor(s): (std): KITAMURA KOICHIRO

Inventor(s): KITAMURA KOICHIRO TOYAMA KEN 933 JP

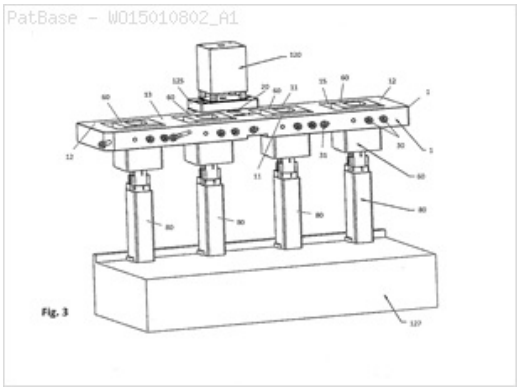
Designated states: CH DE FR GB IT LI NL US

316) Family number: 58393591 (WO15010802A1)

Title: METHOD FOR MANUFACTURING AND USING A WORKPIECE, IN PARTICULAR AN EDM- (ELECTRICAL DISCHARGE MACHINE) ELECTRODE

Abstract: The invention refers to a method for producing and using an EDM- (Electrical Discharge Machine) electrode comprising the steps of providing a holder for holding a blank; providing a blank; clamping said blank in said holder; machining of said blank clamped in the holder, into said EDM electrode at a plurality of machining centers (machines), wherein the holder holding said blank and the machined blank, respectively, is clamped in a chuck of the respective processing center, and wherein said machined blank remains in the holder during all processing steps of said EDM electrode; clamping of said holder, which still clamps said EDM- electrode, in a tool chuck of an EDM center; performing EDM machining, in particular sink EDM machining at a workpiece by said EDM electrode. Furthermore, the invention refers to a holder for implementation of such method.

Classifications:
International (IPC 8-9): B23H1/04 B23H7/22 (Advanced/Invention); B23H1/00 B23H11/00 B23H7/26 (Advanced/Non-invention)
CPC: B23H1/04 B23H1/00 B23H7/22 B23H7/26 B23H11/003



Family:

Publication number	Publication date	Application number	Application date
EP2829344 A1	20150128	EP20130177481	20130722
WO15010802 A1	20150129	WO2014EP59770	20140513

Priority:

EP20130177481 20130722

Probable Assignee: MERIT PREC TOOLS LTD

Assignee(s): (std): MERIT PREC TOOLS LTD

Assignee(s): MERIT PRECISION TOOLS LTD

Inventor(s): (std): MERTEN JOST ; VELLA CHARLES

Agent(s): LIPPERT STACHOW AND PARTNER

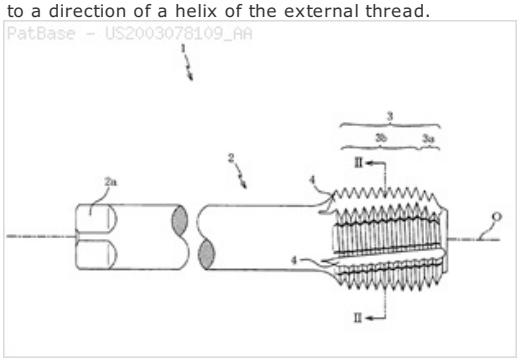
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

317) Family number: 28452591 (US2003078109A)

Title: THREAD FORMING TAP

Abstract: A thread forming tap which is capable of reducing tapping torque as well as improving durability by avoiding an increase of an apparent area of margins of external thread that causes interference with a grinding stone. The thread forming tap has an external thread in a screw shape with alternately linked margins and reliefs for forming an internal thread by plastic deformation upon having the margins of the external thread bite into a surface of a prepared hole of a workpiece. A helix of the margins of the external thread is in a direction opposite to a direction of a helix of the external thread.

Classifications:
International (IPC 8-9): B23G5/06 B23G7/00 B23G7/02 (Advanced/Invention); B23G5/00 B23G7/00 (Core/Invention)
International (IPC 1-7): B21J13/02 B23G5/06 B23G7/00 B23G7/02
CPC: Y10T408/9048 B23G7/02
European: B23G7/02
US: 408/222 470/198 470/204



Family:

Publication number	Publication date	Application number	Application date
DE10238775 A1	20030430	DE20021038775	20020823
DE10238775 B4	20071018	DE20021038775	20020823
JP2003127027 A2	20030508	JP20010324178	20011022
JP3609366 B2	20050112	JP20010324178	20011022
US2003078109 AA	20030424	US20020192608	20020710
US6685573 BB	20040203	US20020192608	20020710

Priority:

JP20010324178 20011022

Probable Assignee: OSG CORP

Assignee(s): (std)**:** ANDOH HARUYASU ; HIKOSAKA KENSUKE ; OSG CORP

Assignee(s): OSG CORP TOYOKAWA

Inventor(s): (std)**:** ANDO HARUYASU ; ANDOH HARUYASU ; HIKOSAKA KENSUKE

318) Family number: 28089593 (US2004191013A)

Title: MACHINE TOOL AND LUBRICANT JETTING STATE DETECTOR FOR MACHINE TOOL

Abstract: A machine tool capable of jetting atomized lubricant (h) forward from the tip of a cutter (17), characterized by comprising a lubricant jetting state detector for detecting the jetting state of the atomized lubricant from the tip of the cutter, the lubricant jetting state detector further comprising a guide member (21) having a straight inner hole (21a), wherein a light detection means for detecting the degree of transmission or reflection of the detection light due to injecting the direction light (c) to a specified position (b) inside the inner hole through a transparent member installed on the peripheral wall portion of the guide member or through the transparent peripheral wall portion of the guide member, and a fluid feed means (23) for feeding clean fluid of rather thin layer flowing in a specified direction along the longitudinal direction of the inner hole is installed near the inner surface of the transparent member or so as to cover the transparent peripheral wall portion, whereby a defective part due to the work machining with insufficient lubricant can be surely prevented from being produced.

Classifications:

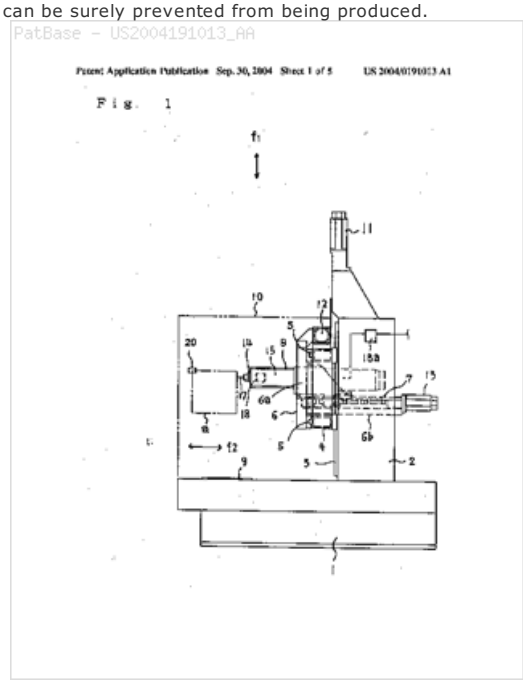
International (IPC 8-9): B23C9/00 B23Q11/10 B23Q11/12 B23Q17/00 B23Q17/09 B23Q17/24 F16N7/32 G01F1/00 (Advanced/Invention); B23Q11/10 (Advanced/Non-invention); B23C9/00 B23Q11/10 B23Q17/00 B23Q17/09 B23Q17/24 F16N7/00 G01F1/00 (Core/Invention)

International (IPC 1-7): B23B51/06 B23Q11/10 B23Q11/12 B23Q17/00 B23Q17/09 B23Q17/24 F16N7/32 G01F1/00

CPC: Y10T408/16 Y10T408/21 Y10T408/45 Y10T408/455 Y10T408/458 B23Q11/1046 B23Q11/1084 B23Q17/00 Y10T409/304032 Y02P70/169

European: B23Q11/10 B23Q17/09 B23Q17/24

US: 250/573 250/574 356/336 356/338 356/436 408/16 408/57 408/59 408/60 408/8 409/136



Family:

Publication number	Publication date	Application number	Application date
BRPI0211743 A	20040928	BR2002PI11743	20020809
BRPI0211743 B1	20110222	BR2002PI11743	20020809
CA2451365 AA	20031219	CA20022451365	20020809
CA2451365 C	20070410	CA20022451365	20020809
CN1282521 C	20061101	CN20028015545	20020809
CN1538894 A	20041020	CN20028015545	20020809
EP1415759 A1	20040506	EP20020755907	20020809
EP1415759 A4	20070704	EP20020755907	20020809
JP2003053644 A2	20030226	JP20010243649	20010810
JP3482495 B2	20031222	JP20010243649	20010810
KR100575433 B1	20060503	KR20047000618	20020809
KR20040016990 A	20040225	KR20047000618	20020809
TW536441 B	20030611	TW20020116250	20020722
US2004191013 AA	20040930	US20040486560	20040210
US7025544 BB	20060411	US20040486560	20040210
WO03013785 A1	20030220	WO2002JP08204	20020809

Priority:

JP20010243649 20010810 WO2002JP08204 20020809

Probable Assignee: HORKOS CORP

Assignee(s): (std)**:** HORKOS CORP ; MAKIYAMA TADASHI ; SUGATA SHINSUKE

Inventor(s): (std)**:** MAKIYAMA TADASHI ; SHINSUKE SUGATA ; SUGATA SHINSUKE ; TADASHI MAKIYAMA ; TADASHI SUGATA SHINSUKE MAKIYA

Inventor(s): SUGATA SHINSUKE MAKIYAMA TADASHI

Agent(s): GOWLING LAFLEUR HENDERSON LLP; MEREK BLACKMON AND VOORHEES LLC

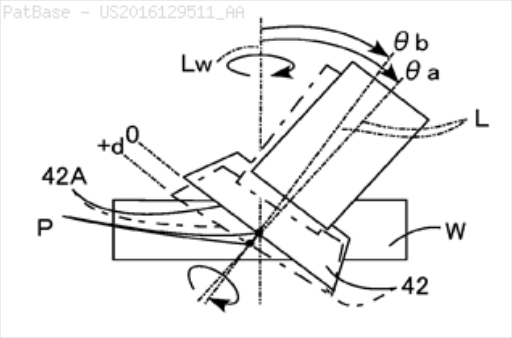
Designated states: AT BE BG BR CA CH CN CY CZ DE DK EE ES FI FR GB GR IE IT KR LI LU MC NL PT SE SK TR US

319) Family number: 62326595 (US2016129511A)

Title: GEAR MACHINING DEVICE AND GEAR MACHINING METHOD

Abstract: A gear machining device for machining a gear by using a machining tool which has a rotation axis inclined relative to a rotation axis of a workpiece and feeding the machining tool relatively in the rotation axis direction of the workpiece by rotating the machining tool in synchronization with a rotation of the workpiece. The gear machining device includes a tool state memorizing portion for memorizing a tool state including a position or a posture of the machining tool relative to the workpiece for machining a tooth bottom, first and second side surfaces of the gear and a machining control portion for controlling machining of the workpiece under each tool state of the machining tool memorized in the tool state memorizing portion.

Classifications:
International (IPC 8-9): B23F1/00 B23F1/06 B23F23/00 B23F23/08 B23F23/12 B23F5/00 B23F5/16 B24B37/013 G05B19/18 G05B19/404 G05B19/4065 (Advanced/Invention)
CPC: B23F23/085 B23F1/06 B23F1/00 B23F23/00
US: 409/36



Family:

Publication number	Publication date	Application number	Application date
CN105583472 A	20160518	CN201510750616	20151106
CN105583472 B	20190301	CN201510750616	20151106
DE102015119000 A1	20160512	DE201510119000	20151105
JP2016093881 A2	20160526	JP20150205565	20151019
JP2016093882 A2	20160526	JP20150205566	20151019
US2016129511 AA	20160512	US20150919946	20151022
US9623502 BB	20170418	US20150919946	20151022

Priority:
JP20140226843 20141107 JP20140226844 20141107 JP20150205565 20151019 JP20150205566 20151019

Probable Assignee: JTEKT CORP
Assignee(s): (std): JTEKT CORP
Assignee(s): N A
Inventor(s): (std): OTANI HISASHI ; NAKANO HIROYUKI ; ZHANG LIN ; TAKESHITA KICHIJI ; TAKESHITA YOSHIJI ; OTANI TAKASHI
Agent(s): OBLON MCCLELLAND MAIER AND NEUSTADT LLP

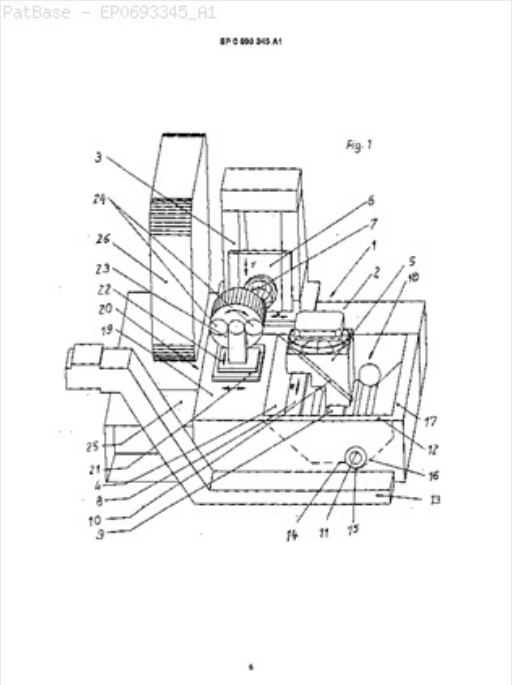
320) Family number: 10765597 (EP0693345B1)

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Title: Machine tool

Abstract: Source: EP0693345A1 [DE] Die Werkzeugmaschine weist einen eine Arbeitsspindel aufnehmenden Staender, eine Werkzeugwechseleinrichtung zur Beschickung der Arbeitsspindel und einen horizontal gefuehrten waagerechten Werkstuecktisch auf, dessen Fuehrungen sich auf unterschiedliche Hoehen eines unter dem Werkstuecktisch verlaufenden geneigten ersten Bettabschnittes verteilen. Die lastunabhaengige hohe Steife verbindet sich mit effektiven Formen der Entsorgung und des Werkzeugwechsels.

Classifications:
International (IPC 8-9): B23Q11/00 B23Q11/08 B23Q3/157 (Advanced/Invention);
B23Q11/00 B23Q11/08 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q1/01 B23Q11/00 B23Q11/08 B23Q3/157 B23Q39/02
CPC: B23Q1/017
European: B23Q1/01D



Family:

Publication number	Publication date	Application number	Application date
DE4415153 A1	19951116	DE19944415153	19940502
DE4415153 C2	20031120	DE19944415153	19940502
DE59507212 D1	19991216	DE19955007212	19950427
EP0693345 A1	19960124	EP19950106322	19950427
EP0693345 B1	19991110	EP19950106322	19950427

Priority:

DE19944415153 19940502 DE19955007212 19950427

Probable Assignee: HECKERT WERKZEUGMASCHINEN GMBH

Assignee(s): (std): HECKERT CHEMN WERKZEUGMASCH ; HECKERT CHEMNITZER WERKZEUGMAS ; HECKERT WERKZEUGMASCHINEN GMBH ; STARRAGHECKERT GMBH

Assignee(s): HECKERT CHEMNITZER WERKZEUGMASCHINEN GMBH ; HECKERT CHEMNITZER WERKZEUGMASCHINEN GMBH 09117 CH ; HECKERT CHEMNITZER WERKZEUGMASCHINEN GMBH 09117 CHEMNITZ DE

Inventor(s): (std): FLADE MIKE ; HANSCH STEFAN DR ; HANSCH STEFAN DR ING ; HANSCH STEFAN ; FLADE MIKE DIPL ING

Inventor(s): FLADE MIKE DIPL ING FH 09112 CHEMNITZ DE

Designated states: DE FR IT SE

321) Family number: 68879597 (US2018075780A)

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Title: TRAINING ASSISTANCE APPARATUS

Abstract: A training assistance apparatus includes an actual operation time acquiring unit configured to acquire an actual operation time of an operation that is executed by an operator on a processing machine, a standard time storing unit configured to store a standard time of the operation, and a display unit configured to display the actual operation time and the standard time for comparison.

Classifications:
International (IPC 8-9): G05B19/4065 G05B19/418 G06Q10/10 G07C3/00 G07C3/04 G09B19/00 G09B19/24 G09B25/02 (Advanced/Invention)
CPC: G09B25/02 G09B19/24 G07C3/04 G07C3/005 G05B19/4065 G05B2219/37616



Family:

Publication number	Publication date	Application number	Application date
CN107817762 A	20180320	CN201710816907	20170912
DE102017120927 A1	20180315	DE201710120927	20170911
JP2018045395 A2	20180322	JP20160178994	20160913
US2018075780 AA	20180315	US20170700508	20170911

Priority:

JP20160178994 20160913

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP

Assignee(s): N A

Inventor(s): (std): AONO TOSHIO ; TSUZUKI TOSHIYUKI ; TOSHIYUKI TSUZUKI ; TOSHIO AONO

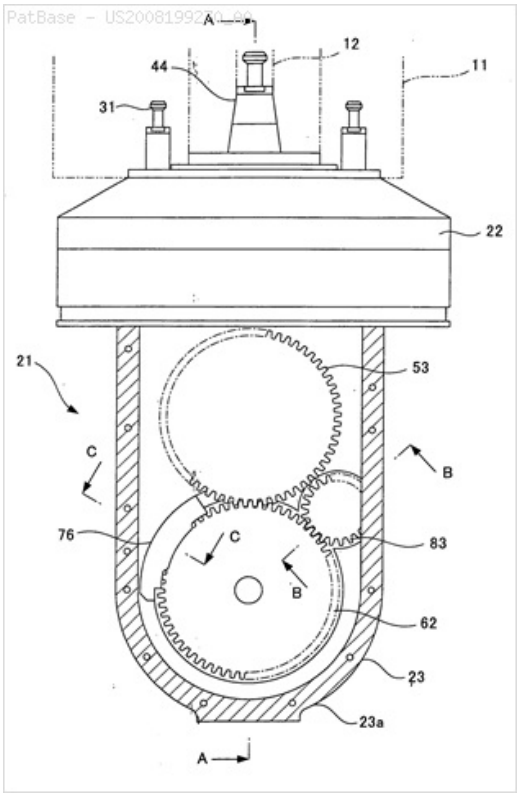
322) Family number: 42112598 (US2008199270A)

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Title: ATTACHMENT FOR MACHINE TOOL

Abstract: When a horizontal shaft and a piston are caused to travel to a first side with a gear coupling engaging, the revolution of the piston is designed to be restricted by meshing a spur gear with an internal gear fixed to a main body of a horizontal swivel part. On the other hand, when the horizontal shaft and the piston are caused to travel to a second side and the gear coupling thus disengages, the horizontal shaft and the piston are designed to be revolved in an integrated manner by meshing spur gears respectively with other spur gears. When the horizontal shaft and the piston travel from the first side to the second side, the spur gear is designed to be spaced away from the internal gear after the spur gear meshes with the spur gear.

Classifications:
International (IPC 8-9): B23C1/12 B23C7/00 B23Q16/00 B23Q16/02 B23Q16/10 B23Q3/12 B23Q3/157 B23Q5/04 B23Q5/20 (Advanced/Invention); B23Q3/12 B23Q3/157 (Advanced/Non-invention); B23C1/12 B23C7/00 B23Q16/00 B23Q3/00 B23Q3/157 B23Q5/00 (Core/Invention); B23Q16/10 B23Q3/12 (Core/Non-invention)
International (IPC 1-7): B23Q16/00 B23Q16/02 B23Q5/20
CPC: Y10T409/307672 Y10T409/308456 Y10T409/308512 Y10T409/309296 B23Q5/045 B23Q16/02 B23Q3/12 B23Q3/1554
European: B23Q16/02 B23Q5/04D2
US: 409/201 409/201S 409/215 409/216 409/230 409/230P 409/232



Family:

Publication number	Publication date	Application number	Application date
CN101244518 A	20080820	CN200810002229	20080102
CN101244518 B	20101208	CN200810002229	20080102
IN02529MU2007 A	20100716	IN2007MU02529	20071224
JP2008194795 A2	20080828	JP20070034276	20070215
JP4823097 B2	20111124	JP20070034276	20070215
KR100938019 B1	20100122	KR20070139545	20071228
KR20080076703 A	20080820	KR20070139545	20071228
TH41464 B	20140912	TH20071006285	20071207
TH94878 A	20090327	TH20071006285	20071207
TW200914196 A	20090401	TW20070145386	20071129
TWI332429 B	20101101	TW20070145386	20071129
US2008199270 AA	20080821	US20070000453	20071212
US8007213 BB	20110830	US20070000453	20071212

Priority:

JP20070034276 20070215

Probable Assignee: MITSUBISHI HEAVY IND MACHINE TOOL CO LTD

Assignee(s): (std)**:** MITSUBISHI HEAVY IND LTD

Assignee(s): MITSUBISHI HEAVY IND MACHINE TOOL CO LTD ; MITSUBISHI HEAVY INDUSTRIES CO ; MITSUBISHI HEAVY INDUSTRIES CO LTD ; MITSUBISHI HEAVY INDUSTRIES LTD ; MITSUBISHI HEAVY INDUSTRIES LTD JP ; MITSUBISHI HEAVY IND ; MITSUBISHI HEAVY IND CO

Inventor(s): (std)**:** KUME TAKAYUKI ; TAKEHANA ISAMU ; TOMIMATSU KEIJI ; YAMAMURA HIROYUKI ; TAKAYUKI KUME ; MUTSUMI YOSHIKAWA ; KEIJI TOMIMATSU ; ISAMU TAKEHANA ; HIROYUKI YAMAMURA ; YOSHIKAWA MUTSUMI

Agent(s): BIRCH STEWART KOLASCH AND BIRCH; BIRCH STEWART KOLASCH AND BIRCH LLP

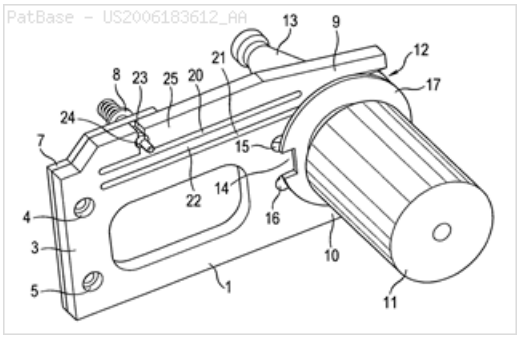
323) Family number: 33213599 (US2006183612A)

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Title: DEVICE FOR GRIPPING AND HOLDING A COMPONENT

Abstract: A gripping and holding device in the handling system of a machine tool. The device comprises at least one preferably plate-like support member provided with at least two retainer fingers spreadable against a return force and defining a common accommodation orifice for a component to be clamped. At least one resiliently displaceable retainer finger is integrally formed with the support member and can be locked in its clamping position by a locking element.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157
B23Q3/16 (Advanced/Invention);
B23Q3/00 B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/155 F16B2/00 F16B3/00
CPC: Y10S483/902 Y10T483/1809 Y10T483/1882 Y10T483/1891
B23Q7/043 B23Q3/1552
European: B23Q3/155D B23Q7/04C
US: 294/99.1 483/59 483/67 483/68 483/902



Family:

Publication number	Publication date	Application number	Application date
CN1817558 A	20060816	CN200610003096	20060210
CN1817558 B	20110928	CN200610003096	20060210
DE102005006398 A1	20060824	DE200510006398	20050211
DE102005006398 B4	20070719	DE200510006398	20050211
DE502006009936 D1	20110929	DE200650009936T	20060207
EP1690632 A1	20060816	EP20060002453	20060207
EP1690632 B1	20110803	EP20060002453	20060207
ES2367444 T3	20111103	ES20060002453T	20060207
IN00116KO2006 A	20070803	IN2006KO00116	20060210
IN242596 B	20100903	IN2006KO00116	20060210
JP2006224300 A2	20060831	JP20060033936	20060210
JP4979957 B2	20120718	JP20060033936	20060210
US2006183612 AA	20060817	US20060350465	20060208
US7341549 BB	20080311	US20060350465	20060208

Priority:

DE200510006398 20050211 EP20060002453 20060207

Probable Assignee: DECKEL MAHO PFRONTEN GMBH

Assignee(s): (std)**:** DECKEL MAHO PFRONTEN GMBH ; DECKELMARHOFRAMPTON CO LTD ; JUNG ROBERT

Assignee(s): DECKELMARHOFRAMPTON CO

Inventor(s): (std)**:** JUNG ROBERT ; ROBERT ZHENG

Inventor(s): ROBERT JUNG ; ZHENG ROBERT

Agent(s): BEETZ AND PARTNER MBB PATENTANWAELTE; BEETZ AND PARTNER; THE MAXHAM FIRM; MAXHAM FIRM

Designated states: CH DE ES FR GB IT LI

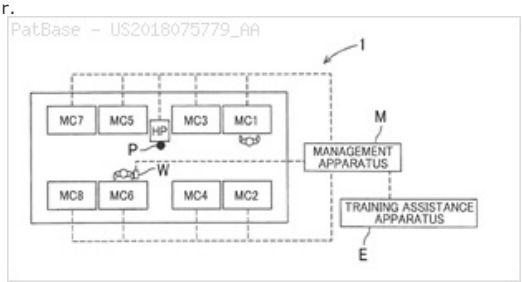
324) Family number: 68879599 (US2018075779A)

© PatBase

Title: TRAINING ASSISTANCE APPARATUS

Abstract: A training assistance apparatus includes a skilled operation condition acquiring unit configured to acquire an operation condition of a skilled operator on a processing machine in advance, and an unskilled operation condition acquiring unit configured to acquire, when an unskilled operator executes an operation, an operation condition of the unskilled operator so that the operation condition of the unskilled operator is comparable with the operation condition acquired by the skilled operation condition acquiring unit for training of the unskilled operator.

Classifications:
International (IPC 8-9): G05B19/42 G09B19/00 G09B19/24 G09B25/02 G09B5/02 G09B9/00 (Advanced/Invention)
CPC: G09B25/02 G09B19/24 G05B19/42 G09B9/00



Family:

Publication number	Publication date	Application number	Application date
CN107817778 A	20180320	CN201710816843	20170912
DE102017120929 A1	20180315	DE201710120929	20170911
JP2018045059 A2	20180322	JP20160178995	20160913
US2018075779 AA	20180315	US20170700490	20170911

Priority:

JP20160178995 20160913

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

Assignee(s): N A

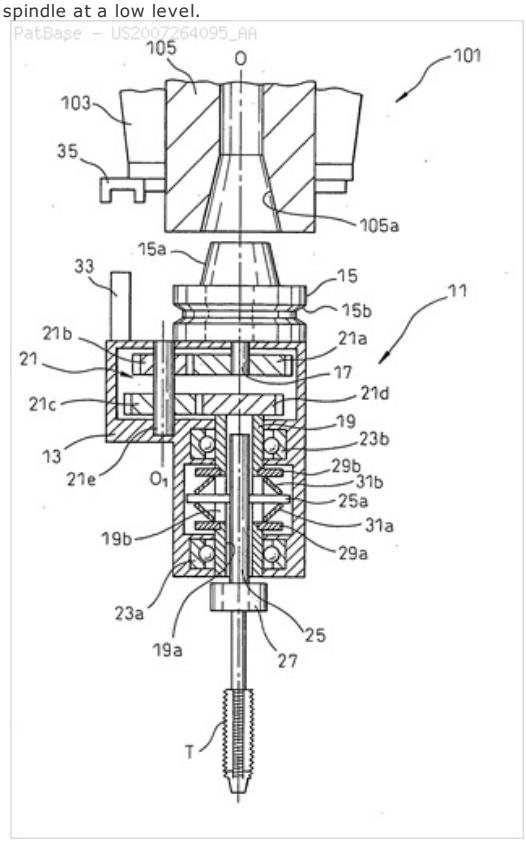
Inventor(s): (std)**:** TOSHIO AONO ; TOSHIYUKI TSUZUKI ; TSUZUKI TOSHIYUKI ; AONO TOSHIO

325) Family number: 32759602 (US2007264095A)

Title: SPINDLE ATTACHMENT DEVICE FOR MACHINE TOOL

Abstract: A spindle attachment device attached, for use, to a distal end of a spindle of a machine tool is provided. The spindle attachment device (11) includes a hollow casing (13) having an internal space; an input shaft (17) rotatably supported inside the casing; an output shaft (19) rotatably supported inside the casing; a coupling member (15) connected to the input shaft in order to join the input shaft to the spindle of the machine tool; a gear train (21) disposed between the input shaft and the output shaft in order to increase a rotation speed of the input shaft for a transmission to the output shaft; and a tap holder (25, 27) for mounting a tapping tool on the output shaft. The spindle attachment device increases the rotation speed of the spindle and transfers it to the tapping tool, and thus makes it possible to perform a tapping process on a workpiece at high speed, while maintaining the rotation speed of the spindle at a low level.

Classifications:
International (IPC 8-9): B23B39/10 B23G1/46 B23Q5/04 (Advanced/Invention); B23G1/00 B23Q5/00 (Core/Invention)
CPC: Y10S470/903 B23Q2220/008 B23G1/46 B23B2260/034 B23B2260/042 B23Q5/048 Y10T408/65 Y10T408/73 Y10T408/95
European: B23G1/46 B23Q5/04D6 L23B260/034 L23B260/042
US: 408/124 408/141 408/239.00R 408/239.00RP 408/239R 470/903



Family:

Publication number	Publication date	Application number	Application date
JP2006088270 A2	20060406	JP20040277001	20040924
US2007264095 AA	20071115	US20050663207	20050922
US7988388 BB	20110802	US20050663207	20050922
WO06033466 A1	20060330	WO2005JP18050	20050922

Priority:
JP20040277001 20040924 WO2005JP18050 20050922

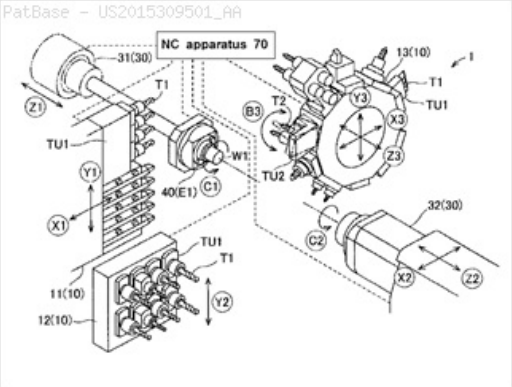
Probable Assignee: MAKINO J CO LTD
Assignee(s): (std): MAKINO J CO LTD ; MAKINO J KK ; SETO TAKASHI ; SUZUKI MASAHARU
Assignee(s): MAKINO J CO
Inventor(s): (std): SUZUKI MASAHARU ; SETO TAKASHI ; SUZUKI SEIJI
Agent(s): MORRISON AND FOERSTER LLP
Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT KE KG KM KP KR KZ LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

326) Family number: 60649603 (US2015309501A)

Title: MACHINE TOOL AND INTERPRETIVE PROGRAM

Abstract: A machine tool includes a tool post having a tool unit for machining a workpiece, operation control means for controlling the operation of the tool unit in accordance with a plurality of commands described in a numerical control program and movement limiting means for inhibiting entry of the tool unit into a no-entry region. The plurality of commands include a limit value setting command for calculating a limit value of a position of the tool unit avoiding interference with a machine element located within a movable region of the tool unit and for determining the no-entry region by the calculated limit value. Upon reading the limit value setting command out of the numerical control program, the operation control means calculates the limit value and determines the no-entry region by the calculated limit value.

Classifications:
International (IPC 8-9): B23Q15/013 G05B19/18 G05B19/4061 G05B19/4155 (Advanced/Invention)
CPC: G05B19/4061 G05B2219/35306 G05B2219/49157 B23Q15/013 B23Q15/22
US: 700/186



Family:

Publication number	Publication date	Application number	Application date
CN105045207 A	20151111	CN201510083799	20150216
EP2937752 A2	20151028	EP20150154957	20150213
EP2937752 A3	20151104	EP20150154957	20150213
JP2015210585 A2	20151124	JP20140090357	20140424
JP6442861 B2	20181226	JP20140090357	20140424
KR20150123149 A	20151103	KR20150016638	20150203
TW201541209 A	20151101	TW20150104622	20150211
TWI657323 B	20190421	TW20150104622	20150211
US2015309501 AA	20151029	US20150615511	20150206
US9904273 BB	20180227	US20150615511	20150206

Priority:

JP20140090357 20140424 KR20150016638 20150203

Probable Assignee: STAR MICRONICS CO LTD

Assignee(s): (std): STAR MFG CO ; STAR MICRONICS CO LTD

Assignee(s): STAR MICRONICS COMPANY LIMITED ; STAR MICRONICS CO

Inventor(s): (std): IKEGAYA TAKESHI

Agent(s): ADVOTEC; LEX IP MEISTER PLLC

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

327) Family number: 71607605 (WO18197022A1)

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Title: WORKPIECE ADAPTER FOR USE IN A MACHINE TOOL AND WORKPIECE CLAMPING SYSTEM

Abstract: The invention relates to a workpiece adapter (21) for use in a machine tool (1), having: an adapter base plate (215), a clamping connection (212), by means of which the tool adapter (21) can be connected to a clamping element (41) in a rotationally and translationally fixed manner, a workpiece receptacle, and a workpiece connection element (313), which has retaining means for removably receiving a workpiece (31) and connection means for connecting to the workpiece adapter (21), wherein at least three workpiece connection elements (213) are arranged on one side of the adapter base plate (215) to form the workpiece receptacle, by means of which a workpiece (31) can be attached to the workpiece adapter (21) via the workpiece connection element (311), the clamping connection (212) is arranged on a side of the adapter base plate (215) opposite the workpiece receptacle, and the clamping element (41) can be attached to a motor-operated spindle (5) of the machine tool (1) via a spindle receptacle (411), for processing of the workpiece (31) by a method and rotating of the spindle (5).

Classifications:
International (IPC 8-9): B23B31/00 B23Q3/12 B23Q7/04 F16F15/32 (Advanced/Invention)
CPC: B23Q7/047 B23Q7/045

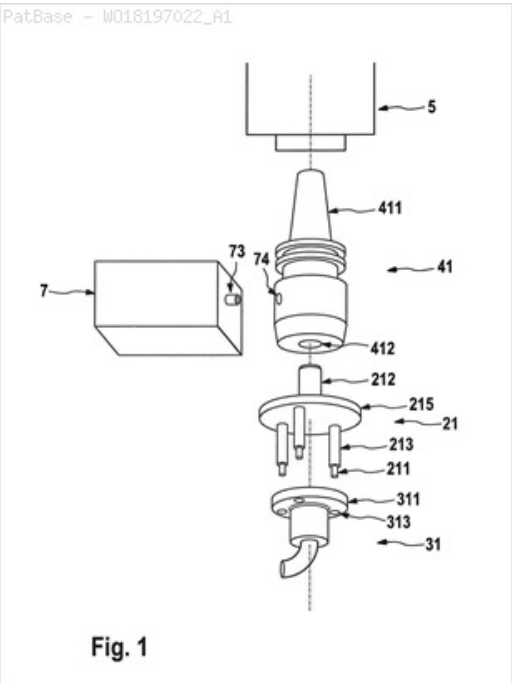


Fig. 1

Family:

Publication number	Publication date	Application number	Application date
DE102017108666 A1	20181025	DE201710108666	20170424
WO18197022 A1	20181101	WO2017EP73028	20170913

Priority:

DE201710108666 20170424

Probable Assignee: EZU METALLWAREN GMBH AND CO KG

Assignee(s): (std): EZU METALLWAREN GMBH AND CO KG

Inventor(s): (std): ZUMKELLER ANDREAS

Agent(s): KUHNEN AND WACKER PATENT U RECHTSANWALTSBUERO PARTG MBB

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

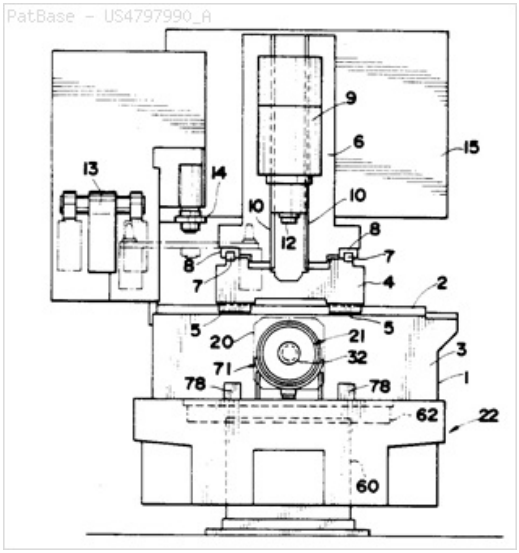
328) Family number: 2822606 (US4797990A)

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Title: VERTICAL MACHINING CENTER WITH A ROTARY PALLET CHANGER

Abstract: A vertical machining center equipped with a rotary pallet changer, the center comprising a pallet clamp unit provided along the front face of the bed, with the clamp unit holding a pallet in a vertical position, and being capable of rotating around a horizontal axis. A rotary pallet changer provided in front of a front face of a bed of the vertical machining center, a saddle provided on an upper surface of the bed. The being saddle is slidable along the X axis, and a column is provided on a top surface of the saddle, with the column being slidable along the Y axis. A headstock is provided on a front face of the column with the headstock being slidable along the Z axis. A tool magazine and an automatic tool exchange device are arranged alongside the bed with a numerical control unit being provided for numerically controlling the saddle, the column, the headstock, the pallet clamp unit, the rotary pallet changer, the tool magazine and the automatic tool exchange device.

Classifications:
International (IPC 8-9): B23B31/26 B23P23/00 B23Q1/54 B23Q7/00 B23Q7/14 (Advanced/Invention);
B23B31/02 B23P23/00 B23Q1/25 B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23C1/14 B23P23/00 B23Q7/00 H04L11/20
CPC: Y10T409/307504 Y10T483/16 B23Q1/5437 B23B31/268 B23Q7/1431
European: B23B31/26B4 B23Q1/54A B23Q1/54A9 B23Q7/14K2
US: 198/339.1 29/568 409/198 483/14



Family:

Publication number	Publication date	Application number	Application date
JP2535155 B2	19960918	JP19860254299	19861024
JP63109932 A2	19880514	JP19860254299	19861024
US4797990 A	19890117	US19870104383	19871005

Priority:

JP19860254299 19861024

Probable Assignee: MORI SEIKI SEISAKUSHO KK

Assignee(s): (std): MORI SEIKI SEISAKUSHO KK ; MORI SEIKI SISAKUSHO KK

Assignee(s): MORI SEIKI SEISAKUSHO 106 KITAKORIYAMACHO YAMATOKI ; MORI SEIKI SEISAKUSHO 106 KITAKORIYAMACHO YAMATOKIRYAMASHI NARA JAPAN KK

Inventor(s): (std): MAEDA NORIHIDE ; MIYOSHI MASAYASU ; NISHIYAMA SOICHI ; YAMAGUCHI YOSHINORI

Inventor(s): MYOSHI MASAYASU ; NISHAMA SOICHI

329) Family number: 1296606 (US4087901A)

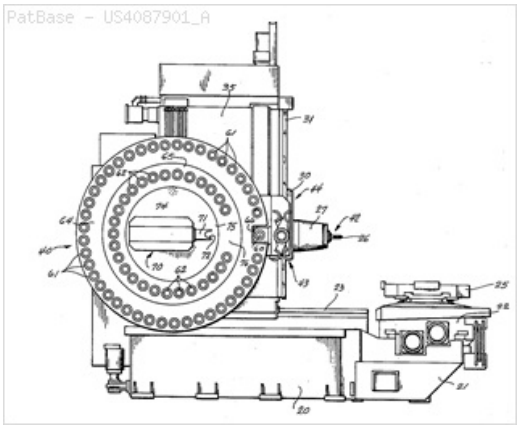
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Title: TOOL CHANGE MECHANISM FOR MACHINE TOOLS

Abstract: The tool change mechanism includes a tool storage magazine having a plurality of tool storage sockets disposed in two concentric circles. A tool transfer arm is mounted within the inner circle of sockets. The transfer arm may be rotated and extended or retracted and moved toward and away from the magazine for extracting a previously used tool from a ready socket and inserting such tool into a designated socket of the magazine. In like manner, the transfer arm will operate to extract a selected tool from any one of the sockets in the magazine and transfer it to the ready socket. The latter is mounted on a carrier which also supports a tool change arm. The carrier is pivotable between a loading position and a tool change

position. When the carrier is in the loading position, the ready socket is located at the magazine where it is accessible to the tool transfer arm for extracting previously used tools from the ready socket and inserting new tools into it. On the other hand, when the carrier is in the tool change position it is located adjacent to the spindle in position to enable the tool change arm to interchange tools between the ready socket and the spindle.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23B29/24 B23B43/00 B23Q3/00 B23Q3/155 B23Q3/157 B24B53/00
CPC: Y10T483/132 Y10T483/176 Y10T483/18 Y10T483/1827 Y10T483/1836 B23Q3/15773 B23Q3/15526 B23Q3/1554 B23Q3/15539 B23Q2003/1553
European: B23Q3/155D2 B23Q3/155D3 B23Q3/157D
US: 29/568 483/41 483/58 483/61 483/62 483/8



Family:

Publication number	Publication date	Application number	Application date
AU197726957 A1	19780810	AU19770026957	19770712
BE857805 A	19771216	BE19770180185	19770816
BR7705117 A	19780502	BR19770005117	19770803
CA1055240 A1	19790529	CA19770282531	19770712
CH623257 A	19810529	CH19770010032	19770816
DE2735260 A1	19780223	DE19772735260	19770804
FR2366098 A1	19780428	FR19770024718	19770811
FR2366098 B1	19820611	FR19770024718	19770811
GB1583578 A	19810128	GB19770034324	19770816
IN147848 A	19800719	IN1977CA01103	19770718
IT1083033 A	19850521	IT19770068754	19770727
JP1262502 C3	19850425	JP19770097725	19770815
JP53024686 A2	19780307	JP19770097725	19770815
JP59039255 B4	19840921	JP19770097725	19770815
NL169047 B	19820104	NL19770009021	19770816
NL169047 C	19820601	NL19770009021	19770816
NL7709021 A	19780220	NL19770009021	19770816
US4087901 A	19780509	US19760714496	19760816

Priority:

US19760714496 19760816

Probable Assignee: KEARNEY AND TRECKER CORP

Assignee(s): (std): KEARNEY AND TRECKER CORP

Assignee(s): KEARNEY AND TRECKER TE WEST ALLIS WISCONSIN VER ST V AM CORP ; KEARNEY AND TRECKER TE WEST ALLIS WISCONSIN VERSTVAM CORP ; KEARNEY ET TRECKER CORP ; ZANKL FRANK ; LOHNEIS EARL R ; CITICORP USA INC

Inventor(s): (std): ZANKL FRANK ; LOHNEIS EARL R ; AARU AARU ROONEISU ; FURANKU ZANKURU ; ZANKL F ; LOHNEIS E R ; LOHNEIS E

Inventor(s): R LOHNEIS EARL ; FRANK ZANKL ; EARL R LOHNEIS

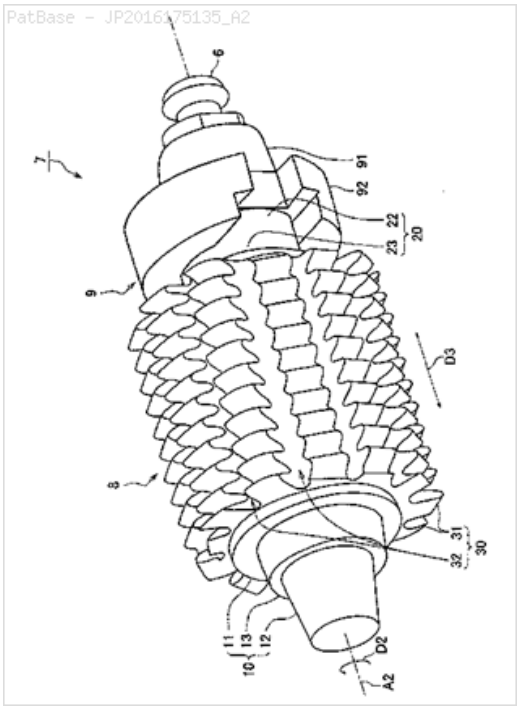
330) Family number: 63602607 (JP2016175135A)

© PatBase

Title: HOB CUTTER

Abstract: PROBLEM TO BE SOLVED: To provide a hob cutter capable of enlarging a formation region of cutting teeth.SOLUTION: A hob cutter (7) includes a hob 8 with shaft and an adapter 9. The hob 8 with shaft has a first shaft part 10, a teeth part 30 and a second shaft part 20. The adapter 9 is mounted on the second shaft part 20 of the hob 8 with shaft. The adapter 9 has a through-hole R3 insertable by a pull-stud bolt 6. The second shaft part 20 has a coupling hole Q4 through which the pull-stud bolt 6 can be coupled.SELECTED DRAWING: Figure 2

Classifications:
International (IPC 8-9): B23C5/04 B23F21/16 (Advanced/Invention)
CPC: B23F21/16 B23F23/1206 B23F23/1243



Family:

Publication number	Publication date	Application number	Application date
DE102016104724 A1	20160922	DE201610104724	20160315
JP2016175135 A2	20161006	JP20150054974	20150318
JP6265936 B2	20180124	JP20150054974	20150318

Priority:

JP20150054974 20150318

Probable Assignee:	KOMATSU MFG CO LTD
Assignee(s): (std)**:**	KOMATSU MFG CO LTD
Assignee(s):	KOMATSU LTD
Inventor(s): (std)**:**	KUKO JUNJI ; KUGO JUNSHI
Agent(s):	SHINJYU GLOBAL IP

331) Family number: 32364611 (US2005254914A)

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Title: MACHINE TOOL AND DETACHABLE/ATTACHABLE MOTOR

Abstract: A machine tool is provided with: a rotating table apparatus that has a table for holding a workpiece, and that rotates the table based on a drive force that has been input; a processing area for processing the workpiece, the rotating table apparatus being carried into and out from the processing area; and a drive source for inputting the drive force when connected to the rotating table apparatus, the drive source being provided in the processing area such that the drive source can be disconnected from the rotating table apparatus.

Classifications:

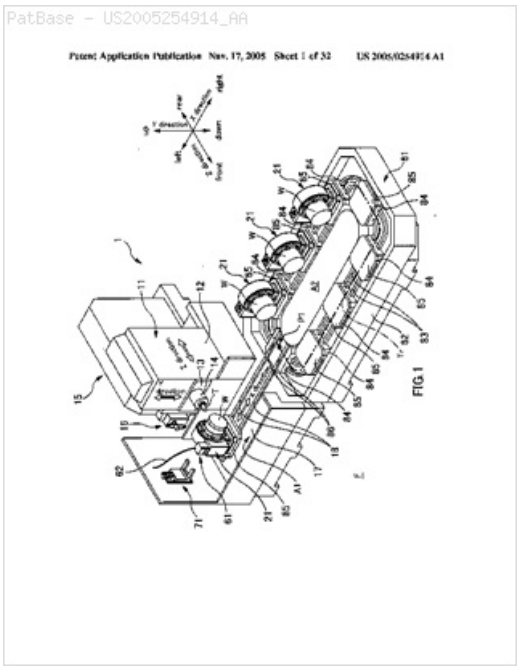
International (IPC 8-9): B23C1/14 B23Q1/00 B23Q1/25 B23Q1/66 B23Q16/00 B23Q16/02 B23Q3/157 B23Q41/02 B23Q5/00 B23Q5/22 B23Q7/00 F16D1/06 F16D1/10 F16H1/16 H02K1/27 H02K11/00 H02K17/16 H02K21/14 H02K23/04 H02K29/06 H02K5/04 H02K5/167 H02K5/173 H02K7/00 H02K7/08 H02K7/10 H02K7/14 (Advanced/Invention); B23Q16/00 B23Q3/157 B23Q5/22 B23Q7/00 (Advanced/Non-invention); B23C1/00 B23Q1/00 B23Q1/25 B23Q16/00 B23Q41/02 B23Q5/00 B23Q5/22 B23Q7/00 F16D1/00 F16D1/06 F16H1/04 H02K11/00 H02K17/16 H02K21/14 H02K23/02 H02K5/04 H02K5/173 H02K7/00 H02K7/14 (Core/Invention); B23Q3/157 (Core/Non-invention)

International (IPC 1-7): B23Q1/00 B23Q1/25 B23Q1/66 B23Q16/02 B23Q3/157 B23Q5/00 B23Q7/00 F16D1/06 F16H1/16 H02K1/27 H02K11/00 H02K17/16 H02K21/14 H02K23/04 H02K29/06 H02K5/04 H02K5/167 H02K5/173 H02K7/00 H02K7/08 H02K7/10 H02K7/14

CPC: Y10T29/5196 Y10T74/1406 Y10T483/16 Y10T409/305768 Y10T409/306104 Y10T409/308792 B23Q1/0009 B23Q1/0063 B23Q1/66 B23Q16/025 F16D1/101

European: B23Q1/00B B23Q1/00D B23Q1/66 B23Q16/02C3 F16D1/10B

US: 198/346.1 269/56 269/63 29/33P 409/167 409/173 409/221 483/14 74/814



Family:

Publication number	Publication date	Application number	Application date
CN1689753 A	20051102	CN200510068504	20050428
CN1689753 B	20100421	CN200510068504	20050428
DE602005023093 D1	20101007	DE200560023093T	20050420
EP1591194 A2	20051102	EP20050252485	20050420
EP1591194 A3	20081217	EP20050252485	20050420
EP1591194 B1	20100825	EP20050252485	20050420
JP2005313269 A2	20051110	JP20040132896	20040428
JP2005341717 A2	20051208	JP20040157447	20040527
JP4411140 B2	20100210	JP20040157447	20040527
JP4423099 B2	20100303	JP20040132896	20040428
KR20060047299 A	20060518	KR20050032951	20050421
TW200615082 A	20060516	TW20050111563	20050412
TWI326631 B	20100701	TW20050111563	20050412
US2005254914 AA	20051117	US20050104654	20050413
US7213316 BB	20070508	US20050104654	20050413

Priority:

JP20040132896 20040428 JP20040157447 20040527

Probable Assignee: SANKYO SEISAKUSHO CO

Assignee(s): (std): SANKYO MFG ; SANKYO MFG CO LTD ; SANKYO SEISAKUSHO CO LTD ; SANKYO SEISAKUSHO KK

Assignee(s): SANKYO MANUFACTURING CO LTD ; SANKYO SEISAKUSHO CO ; SANKYO MFG CO

Inventor(s): (std): HEIZABURO KATO ; KATO HEIZABURO

Agent(s): CHARLTON PETER JOHN; ISSHIKI AND CO; MORRISON AND FOERSTER LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK NL PL PT RO SE SI SK TR YU

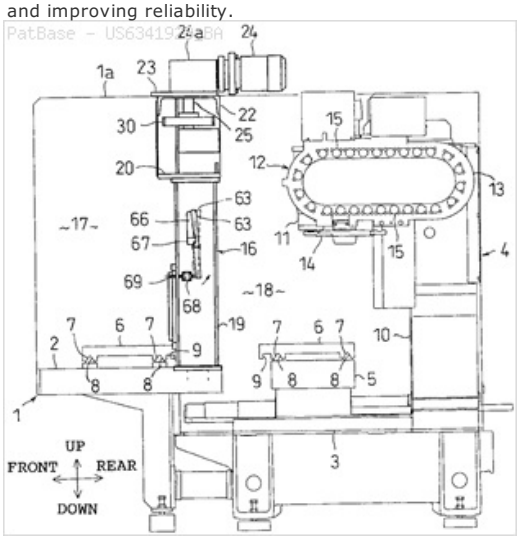
332) Family number: 15514611 (US6341928B)

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Title: PALLET CHANGER APPARATUS

Abstract: In a pallet changer apparatus, a pallet changing arm is connected to a motor via a raising/lowering mechanism and an intermittent drive unit. During operation of the motor, the pallet changing arm is raised from a lowermost position to an uppermost position, and is held at the uppermost position, and then is lowered from the uppermost position to the lowermost position. The pallet changing arm is also connected to the motor via a turning mechanism and a second cam drive portion. During operation of the motor, the pallet changing arm is turned while being held at the uppermost position. The pallet changing arm is moved up and down and turned by using the single motor provided above a table. The table below the pallet changing arm is reduced in size so as to allow an operator to perform operations without being impeded by the table. The structure also eliminates the need to determine the drive time of a plurality of drive force sources based on output signals of sensors, thereby decreasing the possibility of a malfunction and improving reliability.

Classifications:
International (IPC 8-9): B23Q1/66 B23Q11/08 B23Q7/00 (Advanced/Invention); B23Q1/25 B23Q11/08 B23Q7/00 (Core/Invention)
International (IPC 1-7): B23Q7/00 B23Q7/02
CPC: B23Q1/66 B23Q11/08 Y10T409/30392 Y10T483/16
European: B23Q1/66 B23Q11/08
US: 198/346.1 198/465.1 409/134 414/226.05 483/14



Family:

Publication number	Publication date	Application number	Application date
JP2001105271 A2	20010417	JP19990279541	19990930
JP4507309 B2	20100721	JP19990279541	19990930
US6341928 BA	20020129	US20000540875	20000331

Priority:

JP19990279541 19990930

Probable Assignee: BROTHER IND LTD

Assignee(s): (std): BROTHER IND LTD ; NISSHIN SHORYOKUKI KOGYO KK

Assignee(s): BROTHER KOGYO KABUSHIKI KAISHA ; BROTHER KOGYO KK

Inventor(s): (std): INUKAI MASAHIKO ; MATSUOKA NOBUYUKI

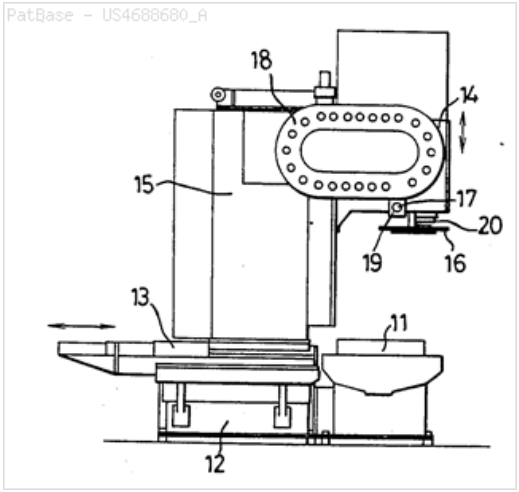
333) Family number: 5363611 (US4688680A)

© PatBase

Title: TOOL-MAGAZINE INDEXING DEVICE

Abstract: There is provided a tool-magazine indexing device for rapidly indexing tools by the utilization of pressure oil, which comprises a tool-magazine housing a number of tools, a cylindrical feed-back shaft making one rotation in synchronization with one circumferential movement of the tool-magazine and a command input shaft inserted in the cylindrical feed-back shaft so as to rotate for indexing purposes corresponding to the number of the tools in the tool-magazine so that an indexing operation by the tool-magazine indexing device can be faciliated using a hydraulic pump and a hydraulic motor for driving the rotary driving shaft of the tool-magazine.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): A47F3/08 B23Q3/155
CPC: Y10T483/1882 Y10T483/1891 B23Q3/15526
European: B23Q3/155D2
US: 211/1.5 211/1.56 29/568 483/67 483/68



Family:

Publication number	Publication date	Application number	Application date
DE3206833 A1	19820916	DE19823206833	19820222
DE3206833 C2	19880825	DE19823206833	19820222
JP57138553 A2	19820826	JP19810024606	19810221
US4688680 A	19870825	US19850713305	19850318

Priority:
JP19810024606 19810221 US19820347328 19820209

Probable Assignee: MITSUBISHI HEAVY IND LTD
Assignee(s): (std): MITSUBISHI HEAVY IND LTD
Assignee(s): MITSUBISHI JUKOGYO K K ; MITSUBISHI JUKOGYO K K TOKIO TOKYO JP ; MITSUBISHI JUKOGYO KABUSHIKI KAISHA ; MITSUBISHI JUKOGYO KK
Inventor(s): (std): WATANABE AKIRA
Inventor(s): WATANABE AKIRA KYOTO JP

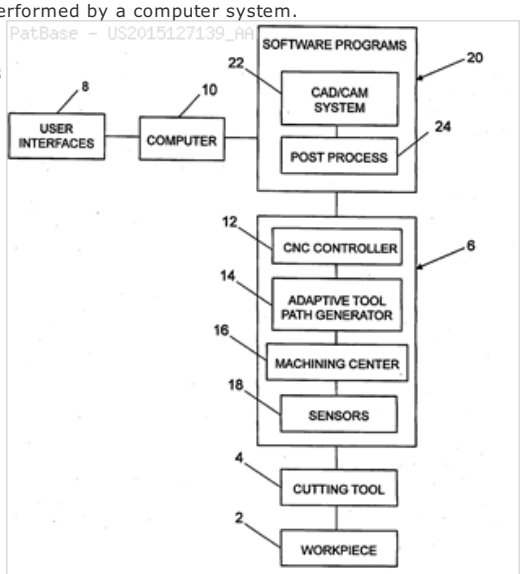
334) Family number: 59140612 (US2015127139A)

© PatBase

Title: REAL-TIME NUMERICAL CONTROL TOOL PATH ADAPTATION USING FORCE FEEDBACK

Abstract: A method for machining a workpiece using a cutting tool attached to a spindle. The method comprises: (a) defining an initial tool path of the cutting tool relative to a workpiece using part definition data; (b) causing the cutting tool to cut along the defined initial tool path relative to the workpiece; (c) receiving sensor data representing machining process conditions during said cutting along the defined initial tool path; (d) processing the sensor data to determine a value of a machining process force parameter; and (e) causing the cutting tool to cut along a modified tool path relative to the workpiece such that the radial cutting depth changes and values of the machining process force parameter does not exceed a machining process force constraint. Operations (b) through (e) are performed by a computer system.

Classifications:
International (IPC 8-9): B23C1/16 B23C9/00 B23Q15/00 B23Q15/12 B23Q17/09 B23Q5/04 G05B13/00 G05B13/02 G05B15/00 G05B19/18 G05B19/404 G05B19/4065 G05B19/4093 G05B19/4097 (Advanced/Invention)
CPC: G05B2219/37355 G05B2219/41376 G05B2219/49099 G05B19/4065
US: 700/173



Family:

Publication number	Publication date	Application number	Application date
BR102014026018 A2	20150922	BR20141026018	20141017

CA2863768 AA	20150507	CA20142863768	20140911
CA2863768 C	20171121	CA20142863768	20140911
CN104625197 A	20150520	CN201410543383	20141015
EP2871547 A1	20150513	EP20140192134	20141106
JP2015097085 A2	20150521	JP20140208669	20141010
US2015127139 AA	20150507	US20140176492	20140210

Priority:

US20130901014P 20131107 US20140176492 20140210

Probable Assignee: BOEING CO

Assignee(s): (std): BOEING CO

Assignee(s): BOLIN JARED L ; EASLEY SAMUEL J ; XU LIANGJI

Inventor(s): (std): BOLIN JARED L ; EASLEY SAMUEL J ; XU LIANGJI ; SAMUEL J EASLEY ; JARED L BOLIN ; LIANGJI XU

Agent(s): SIM AND MCBURNEY; THORNILEY PETER

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

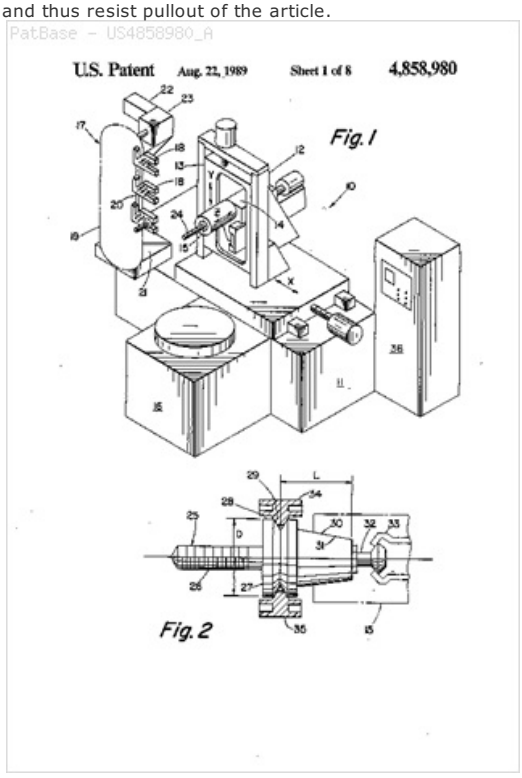
335) Family number: 3134612 (US4858980A)

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Title: ARTICLE GRIPPER

Abstract: An article gripper with a fixed jaw has a movable jaw mounted on reed springs. Deflection of the movable jaw permits the article to enter and exit the gripper. The movable jaw has an inlet cam surface and an outlet cam surface, configured so that a low-level inlet force deflects the jaw and reeds laterally, while a higher-level outlet, or removal, force is directed parallel to the reed springs causing the jaw to behave stiffly and thus resist pullout of the article.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 B23Q7/04 B25B5/06 B25B9/00 B25J15/04 (Advanced/Invention);
B23Q3/155 B23Q3/157 B23Q7/04 B25B5/00 B25B9/00 B25J15/04 (Core/Invention)
International (IPC 1-7): B23Q3/157 B23Q7/04 B25B5/08
CPC: Y10S483/902 B23Q3/15526 B23Q7/043 B25B5/06 B25B9/00 B25J15/0491 Y10T24/44769 Y10T483/1809 Y10T483/1882 Y10T483/1891 B23Q3/15722 B23Q3/15724 B23Q3/15766 B23Q2003/15527 B23Q2210/002
European: B23Q3/155D2 B23Q7/04C B25B5/06 B25B9/00 B25J15/04R
US: 24/545 248/316.7 267/158 267/160 267/181 294/99.1 483/59 483/67 483/68 483/902



Family:

Publication number	Publication date	Application number	Application date
DE68909148 D1	19931021	DE19896009148	19890516
DE68909148 T2	19940113	DE19896009148T	19890516
EP0355271 A2	19900228	EP19890108792	19890516
EP0355271 A3	19901107	EP19890108792	19890516
EP0355271 B1	19930915	EP19890108792	19890516
JP2059243 A2	19900228	JP19890101493	19890420
US4858980 A	19890822	US19880235255	19880823

Priority:

US19880235255 19880823

Probable Assignee: MAGUS GMBH

Assignee(s): (std): CINCINNATI MILACRON INC

Assignee(s): CINCINNATI MILACRON INC CINCINNATI OHIO A DE CORP ; CINCINNATI MILACRON INC N D GES DES STAATES DELAW ; CINCINNATI MILACRON INC N D GES DES STAATES DELAWARE CINCINNATI OHIO US ; CINCINNATI MILACRON INC ND GESDES STAATES DELAWARE CINCINNATI OHIO US ; MAGUS GMBH ; MAGUS INTELLECTUAL PROPERTY GMBH ; UNOVA IP CORP

Inventor(s): (std): DEEBITSUDO AI MAKUDONARUDO ; DREISIG ROBERT C ; MCDONALD DAVID I ; ROBAATO SHII DOREISHIGU

Inventor(s): MCDONALD DAVID I CINCINNATI OHIO 45230 US ; DREISIG ROBERT C WEST CHESTER OHIO 45069 US

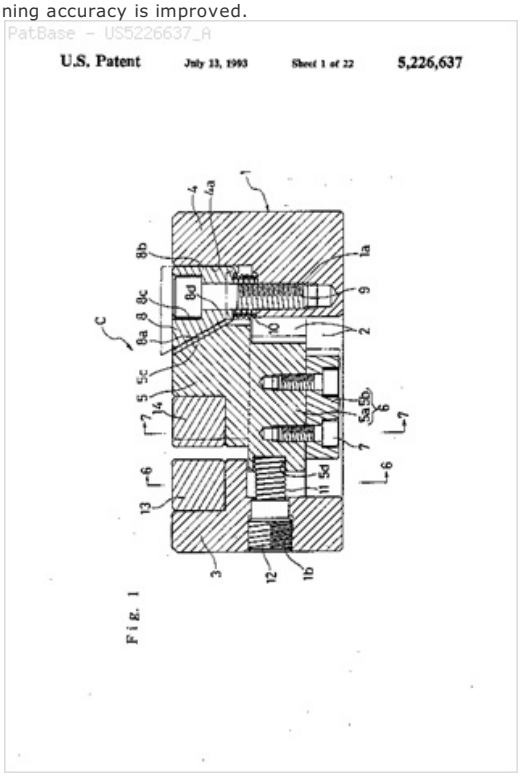
Designated states: DE FR GB NL

336) Family number: 17015612 (US5226637A)

Title: CLAMPING DEVICE

Abstract: A clamping device for clamping a work piece to be machined by a machine tool on a base surface of a table of the machine tool or a work pallet for fixing a work piece, comprises at least a clamp main body, a reaction support provided at the rear portion of the clamp main body, an input member disposed in front of the reaction support on the clamp main body with a gap therebetween, an output member arranged in front of the input member and having an output portion for clamping the work piece at the front end, a guide mechanism for slidably guiding the output member in a longitudinal direction directed back and forth, a driving mechanism for driving the input member toward the clamp main body, and a wedge type converting mechanism for converting a driving force supplied to the input member from the driving mechanism into a clamping force for driving the output member. During clamping drive or operation, the output member does not move vertically, thereby the work piece is free from damage and the machining accuracy is improved.

Classifications:
International (IPC 8-9): B23Q3/06 B25B1/08 B25B1/10 B25B5/08 (Advanced/Invention);
B23Q3/06 B25B1/00 B25B5/00 (Core/Invention)
International (IPC 1-7): B23Q3/06 B25B1/08 B25B1/10 B25B5/04 F16B2/02
CPC: B25B1/08 B25B5/08
European: B25B1/08 B25B5/08
US: 269/234



Family:

Publication number	Publication date	Application number	Application date
DE69212871 D1	19960926	DE19926012871	19920326
DE69212871 T2	19970102	DE19926012871T	19920326
EP0506385 A1	19920930	EP19920302602	19920326
EP0506385 B1	19960821	EP19920302602	19920326
JP2579523 Y2	19980827	JP19910026700U	19910326
JP4115547 U1	19921014	JP19910026700U	19910326
KR0154547 B1	19981015	KR19920004750	19920323
KR19920018365 A	19921021	KR19920004750	19920323
US5226637 A	19930713	US19920857333	19920325

Priority:
JP19910026700U 19910326

Probable Assignee: AIOI SEIKI KK
Assignee(s): (std): AIOI SEIKI KK
Assignee(s): AIOI SEIKI INC ; AIOI SEIKI INC ITAMI HYOGO JP
Inventor(s): (std): AOYAMA YOSHIO ; KIDAURA ICHIROU ; KITAURA ICHIRO
Inventor(s): AOYAMA YOSHIO AICHI KEN JP ; KITAURA ICHIRO HYOGO KEN JP
Designated states: DE

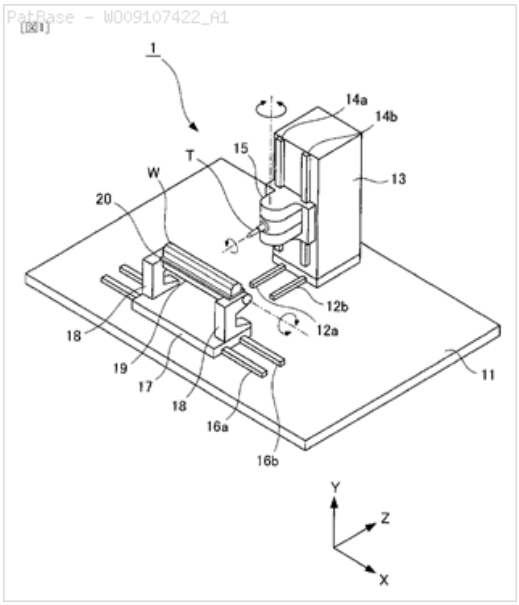
337) Family number: 43683614 (WO09107422A1)

Title: MACHINE TOOL

Abstract: Provided is a machine tool which can perform efficiently multiface-machining on a long object to be worked in a saved space. A main spindle (45) to which a tool (T) is removably attached is turned about a vertical axis orthogonal to the central axis of the main spindle (45), and a work (W) is rotated about a horizontal axis orthogonal to the central axis of the main spindle (45) and the vertical axis.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/48 B23Q1/54 B23Q1/70 (Advanced/Invention);
B23Q1/00 B23Q1/48 B23Q1/54 B23Q1/70 (Advanced/Non-invention);
B23Q1/00 B23Q1/25 (Core/Invention);
B23Q1/48 B23Q1/70 (Core/Non-invention)
International (IPC 1-7): B23Q1/00 B23Q1/48 B23Q1/54

CPC: B23Q2240/007 B23Q1/625
European: B23Q1/62A3



Family:

Publication number	Publication date	Application number	Application date
CN101952083 A	20110119	CN200980106237	20090120
IN01779MN2010 A	20110114	IN2010MN01779	20100820
JP2009202282 A2	20090910	JP20080047084	20080228
KR101207727 B1	20121203	KR20107018985	20090120
KR20100102234 A	20100920	KR20107018985	20090120
TW200946273 A	20091116	TW20090102678	20090122
TWI391207 B	20130401	TW20090102678	20090122
WO09107422 A1	20090903	WO2009JP50707	20090120

Priority:
JP20080047084 20080228 WO2009JP50707 20090120

Probable Assignee: MITSUBISHI HEAVY IND LTD

Assignee(s): (std)**:** FUJITA YOSHIHITO ; MITSUBISHI HEAVY IND LTD ; TAKEHANA ISAMU

Assignee(s): MITSUBISHI HEAVY INDUSTRIES LTD

Inventor(s): (std)**:** FUJITA YOSHIHITO ; ISAMU TAKEHANA ; TAKEHANA ISAMU ; YOSHIHITO FUJITA

Inventor(s): TAKEHANA, Isamu ; FUJITA, Yoshihito

Agent(s): MITSUISHI TOSHIRO ET AL

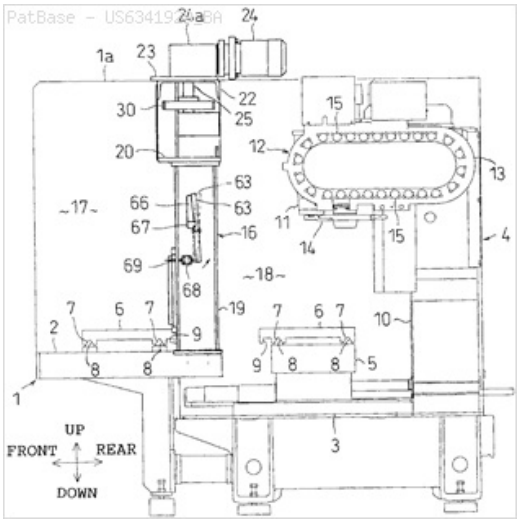
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

338) Family number: 15514616 (US6341929B)

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Title: COVER APPARATUS OF MACHINE TOOL

Abstract: In a cover apparatus of a machine tool, a slide cover and turning covers are connected to a motor via an up-down movement mechanism and a cam drive portion. During operation of the motor, the slide cover and the turning covers are raised from a lowermost position to an uppermost position, and are held at the uppermost position, and then are lowered from the uppermost position to the lowermost position. The turning covers are connected to the motor also via a pivoting mechanism and an intermittent drive unit. During operation of the motor, the turning covers are turned while being held at the uppermost position. The apparatus thus prevents deviations of the up-down movement timing of the slide cover 47 and the up-down movement timing of the turning covers, thereby improving reliability.
Classifications:
International (IPC 8-9): B23Q1/66 B23Q11/08 (Advanced/Invention);
B23Q1/25 B23Q11/08 (Core/Invention)
International (IPC 1-7): B23Q11/08 B23Q7/02
CPC: B23Q11/08 B23Q1/66 Y10T409/30392 Y10T483/16
European: B23Q1/66 B23Q11/08
US: 198/346.1 409/134 414/226.05 483/14



Family:

Publication number	Publication date	Application number	Application date
JP2001105275 A2	20010417	JP19990279540	19990930
JP4665271 B2	20110406	JP19990279540	19990930
US6341929 BA	20020129	US20000540876	20000331

Priority:

JP19990279540 19990930

Probable Assignee: BROTHER IND LTD

Assignee(s): (std)**:** BROTHER IND LTD ; NISSHIN SHORYOKUKI KOGYO KK

Assignee(s): BROTHER KOGYO KABUSHIKI KAISHA ; BROTHER KOGYO KK

Inventor(s): (std)**:** INUKAI MASAHIKO ; MATSUOKA NOBUYUKI

339) Family number: 55302616 (JP2013244551A)

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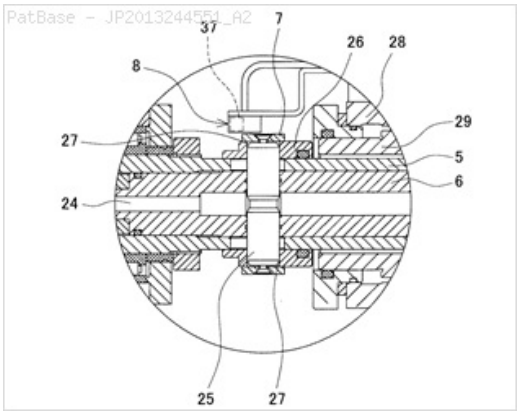
Title: TOOL MOUNTING STATE DETECTION DEVICE IN MACHINE TOOL

Abstract: PROBLEM TO BE SOLVED: To provide a compact and versatile tool mounting state detection device in a machine tool.SOLUTION: In a machine tool having a drawbar 6 for clamping or unclamping a tool to/from a front end of a main shaft 5 extending in a front-back direction, a tool mounting state detection device in a machine tool detects a clamped state where a tool is clamped to a main shaft or an unclamped state where the tool is unclamped from the main shaft, or a tool unmounted state where the tool is not mounted on the main shaft. The tool mounting state detection device includes: a position detector 7 which is fixed to the drawbar, comprises magnetic metal, and moves in a front-back direction; a sensor 8 which has an exciting coil 37 for generating eddy current in the position detector and detects electrical characteristics of the exciting coil to be varied by eddy current when the position detector crosses; and a determination means which determines, based on electrical characteristics detected by the sensor, whether the tool is in the clamped state, the unclamped state, the tool unmounted state, or an undefined state.

Classifications:

International (IPC 8-9): B23B31/00 B23B31/117 B23Q17/00 B23Q17/09 B23Q17/22 (Advanced/Invention)

CPC: B23Q17/09 B23Q17/22 B23Q17/006 B23B31/261



Family:

Publication number	Publication date	Application number	Application date
CN103419086 A	20131204	CN201310195537	20130523
CN103419086 B	20171208	CN201310195537	20130523
IN02210CH2013 A	20151030	IN2013CH02210	20130520
JP2013244551 A2	20131209	JP20120118817	20120524
JP5958080 B2	20160727	JP20120118817	20120524
KR101918785 B1	20181114	KR20130058185	20130523
KR20130132306 A	20131204	KR20130058185	20130523

Priority:

JP20120118817 20120524

Probable Assignee: HOWA MACHINERY LTD

Assignee(s): (std)**:** HOWA MACHINE LTD ; HOWA MACHINERY LTD

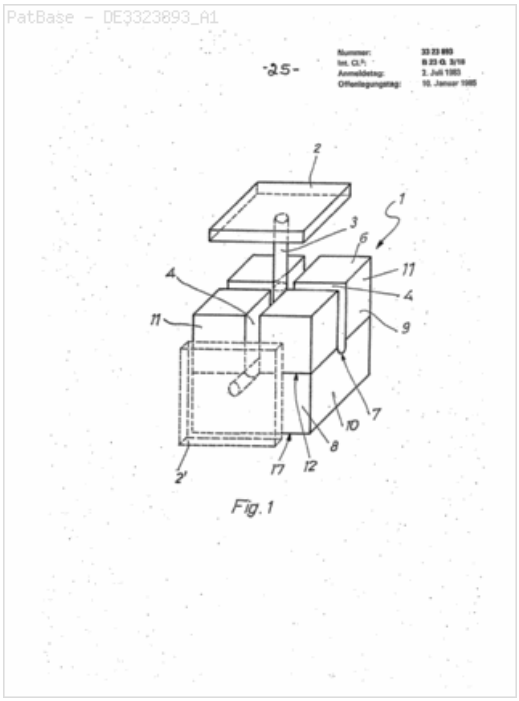
Assignee(s): HOWA MACH LTD
Inventor(s): (std)**:** SERIZAWA KAZUAKI
Inventor(s): KAZUAKI SERIZAWA

340) Family number: 3578616 (DE3323893A1)

Title: Work holder for numerically controlled machine tools

Abstract: Work holder for numerically controlled machine tools, in particular cutting machine tools. A support to which the workpiece can be firmly clamped is mounted on a ball head. The ball head is guided in a housing, and the support can be pivoted all round in each case through 90 DEG from a concentric zero position into two planes at right angles to one another. The pivoting movement of the support is limited by a stop. At least four end positions of the support are allocated to machining positions of the workpiece in which the latter in each case comes to lie with a different side to the top. The support is mounted on an extension of the ball head which protrudes from the housing and runs in slots of the housing. In the zero position, the extension lies in the intersection area of the slots. When a suitable locking device is used, a fifth side of the workpiece is accessible for machining in this zero position.

Classifications:
International (IPC 8-9): B23Q1/54 (Advanced/Invention); B23Q1/25 (Core/Invention)
International (IPC 1-7): B23Q3/18
CPC: B23Q1/545
European: B23Q1/54B



Family:

Publication number	Publication date	Application number	Application date
DE3323893 A1	19850110	DE19833323893	19830702

Priority:
DE19833323893 19830702

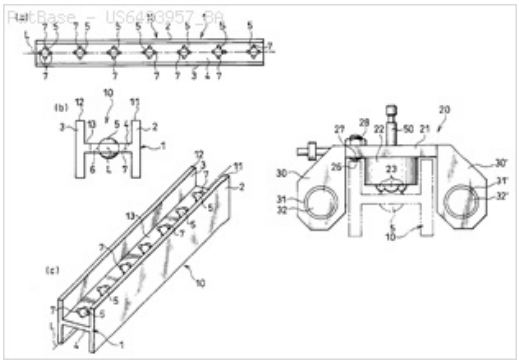
Probable Assignee: FESTO MASCHF STOLL G
Assignee(s): (std)**:** FESTO MASCHF STOLL G
Assignee(s): FESTO MASCHINENFABRIK GOTTLIEB STOLL
Inventor(s): (std)**:** STOLL KURT DIPL ING

341) Family number: 29440616 (US6493957B)

Title: BALL STEP GAUGE

Abstract: A ball step gauge includes a gauge framework that is H-shaped in cross-section and has a horizontal frame. A plurality of holes are formed at predetermined intervals in the horizontal frame in an axial direction of the horizontal frame. A plurality of grooves are formed around each of the holes. A plurality of balls are inserted under pressure in the holes, with centers of the balls existing on a neutral axis of moment of inertia of an area of the gauge framework. Since the ball intervals are less liable to change, the ball step gauge can be used as a reliable standard gauge for calibrating coordinate measuring machines.

Classifications:
International (IPC 8-9): B23Q17/20 G01B1/00 G01B11/14 G01B21/00 G01B21/04 G01B3/00 G01B3/30 G01B5/00 G01B5/004 (Advanced/Invention); B23Q17/20 G01B1/00 G01B11/14 G01B21/00 G01B21/02 G01B3/00 G01B3/30 G01B5/00 G01B5/004 (Core/Invention)
International (IPC 1-7): B23Q17/20 G01B1/00 G01B11/14 G01B21/00 G01B3/00 G01B3/30
CPC: G01B1/00 G01B3/30 G01B5/0014 G01B21/042 G01B5/00 G01B21/0
European: G01B1/00 G01B21/04B G01B3/30 G01B5/00C1
US: 33/502 33/567 335/20 73/1.79 73/179



Family:

Publication number	Publication date	Application number	Application date
DE10081572 B4	20060511	DE20001081572T	20000330
DE10081572 B4	20060511	DE20001081572	20000330
DE10081572 T	20011004	DE20001081572T	20000330
DE10081572 T1	20011004	DE20001081572T	20000330
JP2001004358 A2	20010112	JP19990172290	19990618
JP3210963 B2	20010925	JP19990172290	19990618
US6493957 BA	20021217	US20000720793	20001229
WO0079216 A1	20001228	WO2000JP02021	20000330

Priority:

JP19990172290 19990618 WO2000JP02021 20000330

Probable Assignee: JAPAN REPRESENTED BY DIRECTOR GENERAL OF AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY AS

Assignee(s): (std)**:** TAKATSUJI TOSHIYUKI ; OSAWA SONKO ; KUROSAWA TOMIZO ; NOGUCHI HIRONORI ; AGENCY IND SCIENCE TECHN ; AGENCY OF IND SCIENCE AND TECHNOL

Assignee(s): AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY ; JAPAN AS REPRESENTED BY DIRECTOR GENERAL OF AGENCY ; JAPAN AS REPRESENTED BY DIRECTOR GENERAL OF AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY ; JAPAN AS REPRESENTED BY DIRECTOR GENERAL OF AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY TOKIO TOKYO ; JAPAN REPRESENTED BY DIRECTOR GENERAL OF AGENCY OF ; JAPAN REPRESENTED BY DIRECTOR GENERAL OF AS ; JAPAN REPRESENTED BY DIRECTOR GENERAL OF AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY AS ; JAPAN REPRESENTED BY DIRECTOR GENERAL OF AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY TOKIO TOKYO AS

Inventor(s): (std)**:** KUROSAWA TOMIZO ; NOGUCHI HIRONORI ; OSAWA SONKO ; OSAWA TAKAMITSU ; TAKATSUJI TOSHIYUKI

Designated states: DE US

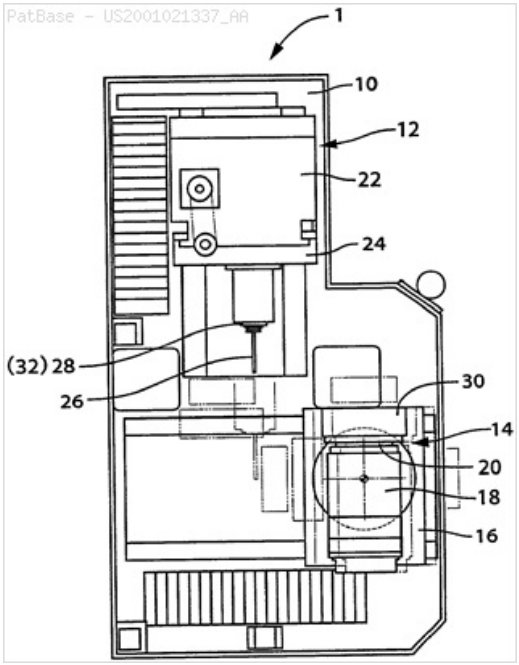
342) Family number: 28106618 (US2001021337A)

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Title: MACHINING METHOD AND MACHINING SYSTEM

Abstract: A method of machining a plurality of workpieces in an unmanned manner, including the steps of holding, with a jig, a first one of the workpieces, attaching the jig holding the first workpiece, to a workpiece holding device of at least one machining device, so that the first workpiece is machined by the machining device, detaching, after the machining of the first workpiece, the jig holding the first workpiece, from the workpiece holding device, removing the first workpiece from the jig, and holding, with the jig, a second one of the workpieces, and repeating the attaching step, the detaching step, and removing step.

Classifications:
International (IPC 8-9): B25B5/06 G05B19/418 (Advanced/Invention)
International (IPC 1-7): B23B39/28 B23C1/00 B23Q41/02 G05B19/418
CPC: Y10S409/903 B25B5/061 B25B5/062 B25B5/064 Y10T29/5124 Y10T29/5136 Y10T408/03 Y10T408/3809 Y10T409/30868 Y10T409/303808 Y10T409/309016 Y02P90/083
European: B25B5/06B B25B5/06B1 B25B5/06B2
US: 269/289 269/289.00RS 269/289R 29/563 29/563S 29/564 29/564S 295/630 408/1 408/1.00RP 408/1R 408/44 408/44S 409/132 409/132P 409/219 409/225 409/903



Family:

Publication number	Publication date	Application number	Application date
JP2001255922 A2	20010921	JP20000063914	20000308
US2001021337 AA	20010913	US20010780356	20010212
US2004071518 AA	20040415	US20030629778	20030730
US6629355 BB	20031007	US20010780356	20010212

Priority:

JP20000063914 20000308 US20010780356 20010212 US20030629778 20030730

Probable Assignee: FUJI MACHINE MFG CO LTD

Assignee(s): (std): FUJI MACHINE MFG

Assignee(s): FUJI MACHINE MFG CO ; FUJI MACHINE MFG CO LTD ; FUJI MACH MFG CO LTD

Inventor(s): (std): HONDA TATSUYUKI ; MURATA SHINTARO ; NAGATO KAZUYOSHI ; YONEKAWA KATSUJI

Agent(s): KANDO NORIKAZU

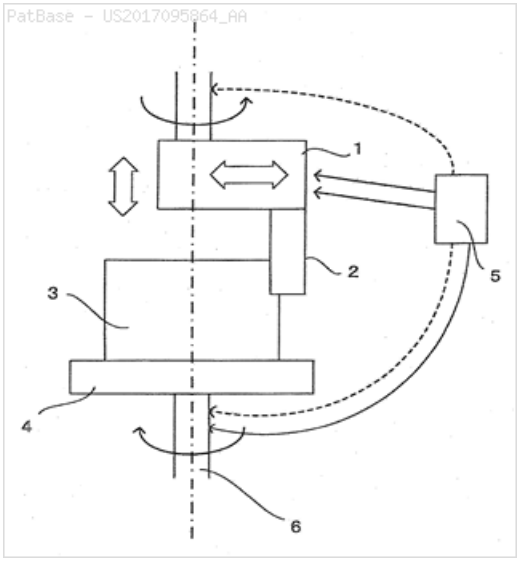
343) Family number: 64634622 (US2017095864A)

© PatBase

Title: CUTTING METHOD FOR INNER CIRCUMFERENTIAL FACE OR OUTER CIRCUMFERENTIAL FACE OF WORK

Abstract: is formulated (where {dot over (R)} denotes a time differential of the distance R), thus providing an even cut face.

Classifications:
International (IPC 8-9): B23B1/00 B23B3/26 B23B5/36 B23B5/38 B23C3/04 B23Q B23Q15/00 B23Q15/007 B23Q15/013 B23Q15/08 B23Q15/10 B23Q15/12 B23Q15/14 B23Q39/00 B23Q5/04 G05B19/416 (Advanced/Invention);
B23B5/40 B23Q39/00 (Advanced/Non-invention)
CPC: B23B1/00 B23Q15/007 B23Q15/013 B23Q15/08 B23Q15/12 B23Q5/043 B23B3/26 B23B5/38 B23B2220/52 B23B5/36 B23B5/40 B23Q15/14 B23Q15/00 B23Q15/10
US: 82/1.11



Family:

Publication number	Publication date	Application number	Application date
CA2951942 AA	20170407	CA20162951942	20161215
CA2951942 C	20170627	CA20162951942	20161215
CN106560279 A	20170412	CN201610024245	20160114
CN106625014 A	20170510	CN201710063492	20170203
CN106625014 B	20180216	CN201710063492	20170203
DE602016005166 D1	20180927	DE201660005166T	20161208
EP3150307 A1	20170405	EP20160161507	20160322
EP3231553 A1	20171018	EP20160202909	20161208
EP3231553 B1	20180829	EP20160202909	20161208
ES2686511 T3	20181018	ES20160202909T	20161208
HK1232829 A1	20180119	HK20170106639	20170703
HK1232829 B	20180824	HK20170106639	20170703
HK1235742 A1	20180316	HK20170109553	20170920
JP2017064896 A2	20170406	JP20160079952	20160413
JP6050908 B1	20161221	JP20160079952	20160413
KR101811977 B1	20171222	KR20170011811	20170125
KR20170040073 A	20170412	KR20160036016	20160325
KR20170113024 A	20171012	KR20170011811	20170125
US2017095864 AA	20170406	US20160069156	20160314
US2017129017 AA	20170511	US20170412699	20170123
US9815120 BB	20171114	US20170412699	20170123

Priority:

JP20150197065 20151002 US20160069156 20160314 KR20160036016 20160325
JP20160079952 20160413 EP20160202909 20161208 US20170412699 20170123
KR20170011811 20170125

Probable Assignee: MATSUURA MACHINERY CORP

Assignee(s): (std): MATSUURA KIKAI SEISAKUSHO KK ; MATSUURA MACHINERY CORP

Assignee(s): TAKEZAWA YASUNORI ; OHASHI SHUICHI ; MATSUURA MACHINERY CORPORATION ; MATSUURA MACHINERY FUKUI CITY CORP ; MATSUURA MACHINERY CO LTD ; AMAYA KOUICHI ; IGARASHI TETSUYA ; KATO TOSHIHIKO

Inventor(s): (std): KATO TOSHIHIKO ; SHIRAHAMA ZEMPOH ; IGARASHI TETSUYA ; AMAYA KOUICHI ; OHASHI SHUICHI ; TAKEZAWA YASUORI ; TAKEZAWA YASUNORI ; AMAYA KOICHI ; SHIRAHAMA ZENPO ; TAKESAWA

YASUNORI

Inventor(s): KOUICHI AMAYA ; TOSHIHIKO KATO ; YASUNORI TAKEZAWA ; ZEMPOH SHIRAHAMA ; TETSUYA IGARASHI ; SHUICHI OHASHI ; AMAYA KOUICHI FUKUI CITY ; KATO TOSHIHIKO FUKUI CITY ; TAKEZAWA YASUNORI FUKUI CITY ; IGARASHI TETSUYA FUKUI CITY ; OHASHI SHUICHI FUKUI CITY

Agent(s): RIDOUT AND MAYBEE LLP; V FUENER EBBINGHAUS FINCK HANO; LAMBACHER MICHAEL; UNGRIA JAVIER; ZHONGZI IP; RICHARD M

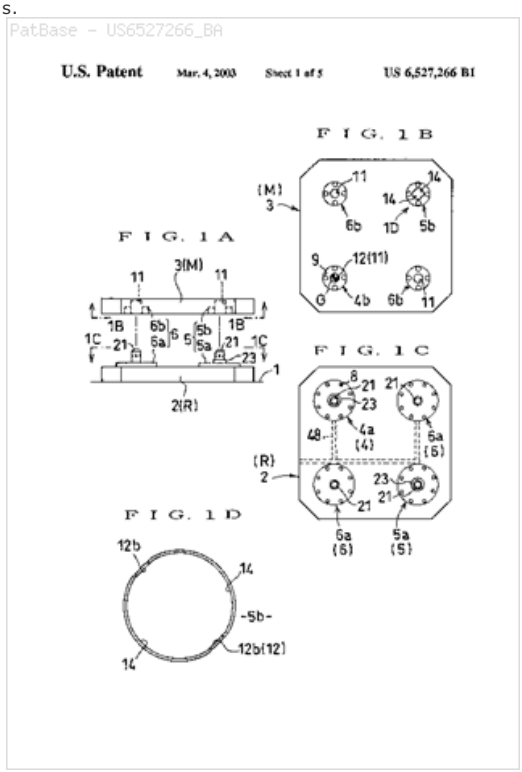
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

344) Family number: 13166622 (US6527266B)

Title: CLAMPING APPARATUS WITH DATUM FUNCTION

Abstract: A clamp pallet (2) is fixed to a table (1) of a machining center. A work pallet (3) has a positioning hole (12) and an engaging hole (13) formed in order from a lower side. A plug portion (21) projects upwards from the clamp pallet (2). A shuttle member (23) is vertically movably fitted onto the plug portion (21). A coned disc spring (24) urges the shuttle member (23) upwards. The shuttle member (23) has a tapered surface (28) with which the positioning hole (12) makes a tapering engagement. A pull rod (31) is inserted into the plug portion (21). The pull rod (31) pushes engaging balls (34) to the engaging hole (13), thereby driving the work pallet (3) downwards.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q11/00 B23Q16/00 B23Q17/00 B23Q3/00 B23Q3/18 B23Q7/00 B23Q7/14 (Advanced/Invention);
B23Q3/18 (Advanced/Non-invention);
B23Q1/00 B23Q11/00 B23Q16/00 B23Q17/00 B23Q3/00 B23Q3/18 B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q11/00 B23Q16/08 B23Q3/00 B23Q3/18 B23Q7/00 B23Q7/14
CPC: B23Q17/006 B23Q1/0081 B23Q11/005 B23Q16/00 B23Q17/002
European: B23Q1/00D B23Q1/00D3 B23Q11/00F2 B23Q16/00 B23Q17/00C B23Q17/00D B23Q7/14K
US: 269/309 269/310



Family:

Publication number	Publication date	Application number	Application date
DE60001028 D1	20030130	DE20006001028T	20000703
DE60001028 D1	20030130	DE20006001028	20000703
DE60001028 T2	20030724	DE20006001028T	20000703
EP1078713 A1	20010228	EP20000114212	20000703
EP1078713 B1	20021218	EP20000114212	20000703
JP2001038564 A2	20010213	JP19990219504	19990803
JP2003019631 A2	20030121	JP20020192816	20020702
JP3338669 B2	20021028	JP19990219504	19990803
JP3459414 B2	20031020	JP20020192816	20020702
KR100637276 B1	20061023	KR20000041253	20000719
KR20010049813 A	20010615	KR20000041253	20000719
TW478993 B	20020311	TW20000115558	20000802
US6527266 BA	20030304	US20000631670	20000803
US6527266 C1	20040622	US20000631670	20000803

Priority:
JP19990219504 19990803 JP20020192816 20020702

Probable Assignee: KOSMEK KK

Assignee(s): (std): KOSMEK KABUSHIKI KAISHA ; KOSMEK KK ; KOSMEK KOBE KK ; KOSMEK LTD

Assignee(s): KABUSHIKI KAISHA KOSMEK ; KABUSHIKI KAISHA KOSMEK KOBE

Inventor(s): (std): SHIRAKAWA TSUTOMU ; YONEZAWA KEITARO

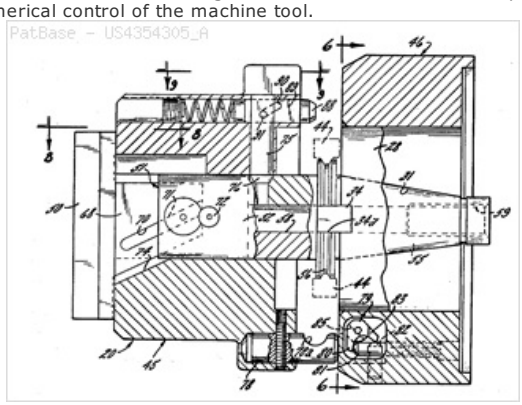
Designated states: DE FR GB IT

345) Family number: 5023624 (US4354305A)

Title: CONTOURING AND THREADING ATTACHMENT FOR MULTI-FUNCTION MACHINE TOOLS

Abstract: A contouring and threading attachment for use with numerically controlled multi-function machine tools having automatic tool changing capability. The attachment has a spindle-actuated body adapted to detachably engage an adapter collar rigidly fixed to the outer end of the spindle sleeve. The body may be installed and removed by the automatic exchange arm mechanism of the machine tool and be stored in the tool magazine when not in use. A cutting tool on the outboard end of the attachment is movably radially of the spindle axis. The radial movements of the cutting tool are executed automatically through corresponding axial movements of the spindle under the numerical control of the machine tool.

Classifications:
International (IPC 8-9): B23B29/034 B23Q1/00 (Advanced/Invention); B23B29/00 B23Q1/00 (Core/Invention)
International (IPC 1-7): B23B29/034 B23B3/26 B23Q3/157
CPC: Y10T82/125 Y10T82/2529 Y10T408/8588 Y10T483/1736 Y10T483/1771 B23B29/0345
European: B23B29/034N4B B23Q1/00D
US: 29/568 295/68 408/158 483/31 483/46 82/1.4 82/131



Family:

Publication number	Publication date	Application number	Application date
GB2040742 A1	19800903	GB19790043767	19791219
GB2040742 B2	19821006	GB19790043767	19791219
US4354305 A	19821019	US19790094545	19791115

Priority:
US19780971716 19781221 US19790094545 19791115

Probable Assignee: GIDDINGS AND LEWIS
Assignee(s): (std): GIDDINGS AND LEWIS
Assignee(s): GIDDINGS AND LEWIS INC ; CITICORP USA INC
Inventor(s): (std): KELLER WILLIAM E ; PLUMMER HARVEY R

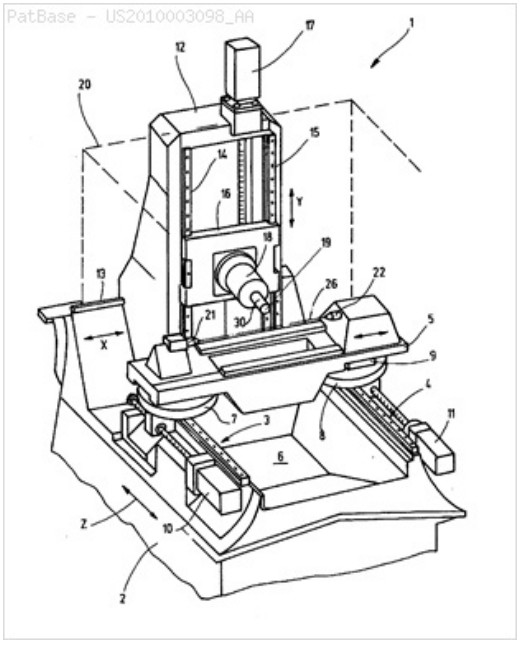
346) Family number: 34114625 (US2010003098A)

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Title: METHOD FOR FINE-MACHINING CRANKSHAFTS AND MACHINING CENTER THEREFOR

Abstract: A method and machine for machining shafts, such as crankshafts of an internal combustion engine wherein the shaft supported on a workpiece carrier rotatably about its axis and the carrier is movable relative to a milling tool adjustably supported on the machine, the bearing surfaces of the shaft are fine-machined by a milling tool taking into consideration the resiliency and the bending of the shaft by the engagement force of the milling tool during fine cutting of the bearing surfaces in the various angular rations of the shaft and the axial bearing location between the shaft ends so as to provide for a perfect final round cutting of the bearings without the need for wet grinding. The fine machining is preferably achieved by dry machining and orthogonal rotational milling, all main bearings and lifting bearings being machined in a single clamping from the rough machining dimensions to the final dimension. For a second machining sequence, some of the main bearings and lifting bearings are used as clamping surfaces.

Classifications:
International (IPC 8-9): B23C3/06 B23C3/08 B23C3/16 B23Q1/48 (Advanced/Invention); B23C3/00 B23Q1/25 (Core/Invention)
CPC: Y10T409/303808 Y10T409/305544 B23Q1/4866 B23C3/06 B23C3/08 B23Q1/44
European: B23C3/06 B23C3/08 B23Q1/44 B23Q1/48E5
US: 409/132 409/132P 409/163 409/163S



Family:

Publication number	Publication date	Application number	Application date
DE502005014858 D1	20150827	DE200550014858T	20050722
EP1907156 A1	20080409	EP20050773760	20050722
EP1907156 B1	20150715	EP20050773760	20050722
US2010003098 AA	20100107	US20080008765	20080114

US8419323 BB	20130416	US20080008765	20080114
WO07009481 A1	20070125	WO2005EP08083	20050722

Priority:

EP20050773760 20050722 WO2005EP08083 20050722 US20080008765 20080114

Probable Assignee: HELLER MASCHF GMBH GEB

Assignee(s): (std): GERBRUEDER HELLER MASCHF GMBH ; GERBRUEDER HELLER MASCHINENFABRIK GMBH ; HELLER GEB GMBH MASCHF ; FAIGLE BERND ; MAERKER WOLFGANG ; MARKER WOLFGANG

Assignee(s): GEBR HELLER MASCHINENFABRIK GMBH ; GEBRUEDER HELLER MASCHINENFABRIK GMBH ; HELLER MASCHF GMBH GEB

Inventor(s): (std): FAIGLE BERND ; MAERKER WOLFGANG ; MARKER WOLFGANG

Agent(s): RUEGER BARTHELT AND ABEL; RUEGER BARTHELT AND ABEL PATENTANWAELTE; RONALD S LOMBARD ESQUIRE; R S; K

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

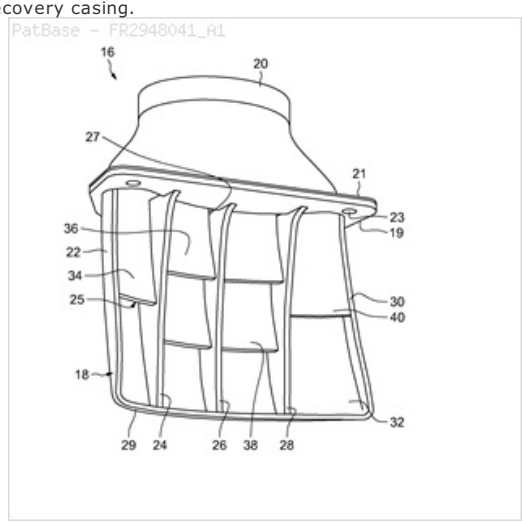
347) Family number: 48198626 (FR2948041B)

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Title: DISPOSITIF DE RECUPERATION DE PARTICULES ET DE DEBRIS EJECTES PAR USINAGE ET MACHINE A USINAGE CORRESPONDANTE

Abstract: The device (16) has a recovery casing (18) including a connection unit (20) for connecting the device to a suction device. The recovery casing comprises control units that are provided with conduits (25) to control flow of air and particles by the suction device during operation of a machining machine. The conduits are formed by axial partitions (22, 24, 26, 28, 30) that are positioned perpendicular to an internal surface (32) of the recovery casing.

Classifications:
International (IPC 8-9): B08B15/04 B08B5/04 B23Q11/00 B27G21/00 (Advanced/Invention)
CPC: B23Q11/0046
European: B23Q11/00F1 B27G3/00



Family:

Publication number	Publication date	Application number	Application date
FR2948041 A1	20110121	FR20090055016	20090720
FR2948041 B1	20130104	FR20090055016	20090720

Priority:

FR20090055016 20090720

Probable Assignee: INST NAT RECH SECURITE

Assignee(s): (std): INST NAT RECH SECURITE

Assignee(s): INSTITUT NATIONAL DE RECHERCHE ET DE SECURITE POUR LA PREVENTION DES ACCIDENTS DU TRAVAIL ET DES MALADIES PROFESSIONNELLES ; NATIONAL DE RECHERCHE ET DE SECURITE POUR LA PREVENTION DES ACCIDENTS DU TRAVAIL ET DES MALADIES PROFESSIONNELLES INST

Inventor(s): (std): L HUILLIER JEAN CLAUDE

Inventor(s): JEAN CLAUDE L HUILLIER

Agent(s): BUREAU DA CASALONGA AND JOSSE; CASALONGA

348) Family number: 34036627 (US2006291971A)

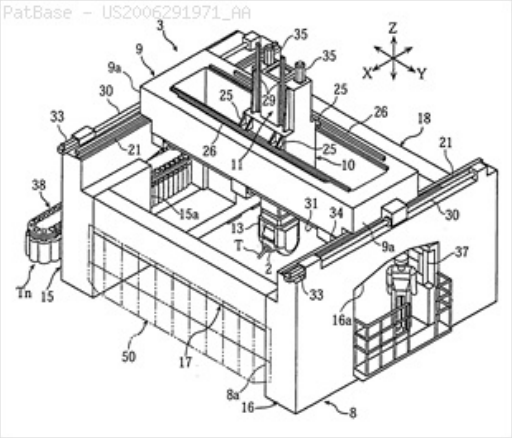
© PatBase

Title: MACHINE TOOL

Abstract: The present invention provides a machine tool realizing high-speed movement of a spindle and thus reducing the machining time without any increase in size of the whole machine. A machining unit 3 by which a spindle 2 with a tool T attached thereto is supported to be relatively movable in X-axis, Y-axis, and Z-axis directions is mounted on a long bed 4 having a plurality of machining areas a 1 to a 4 arranged in one direction, and the machining unit 3 is movable in the arrangement direction of the machining areas.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/01 B23Q11/08 (Advanced/Invention);
B23Q1/00 B23Q11/08 (Core/Invention)
CPC: Y10S83/939 B23Q1/012 B23Q1/626 B23Q3/069 Y10T409/30392 Y10T409/30952 Y10T409/307728 Y10T409/308288

European: B23Q1/01A B23Q1/62A5 B23Q3/06L
US: 409/134 409/202 409/212 409/234 83/939



Family:

Publication number	Publication date	Application number	Application date
US2006291971 AA	20061228	US20050159388	20050623
US2007031204 AA	20070208	US20060580104	20061013
US7172375 BB	20070206	US20050159388	20050623
US7255519 BB	20070814	US20060580104	20061013

Priority:
US20050159388 20050623 US20060580104 20061013

Probable Assignee: MORI SEIKI CO LTD

Assignee(s): (std)**:** FUJIWARA RYUICHI ; ISHIGAKI HIKARU ; KOTAKA TOSHIAKI ; MORI SEIKI SEISAKUSHO KK ; TANOUE SHINN

Assignee(s): MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std)**:** FUJIWARA RYUICHI ; ISHIGAKI HIKARU ; KOTAKA TOSHIAKI ; TANOUE SHINN

Agent(s): SMITH PATENT OFFICE

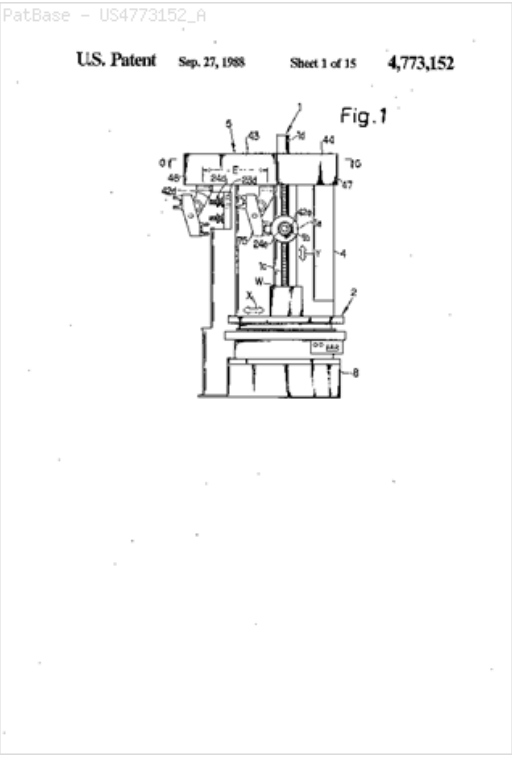
349) Family number: 3673629 (US4773152A)

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Title: AUTOMATIC TOOL CHANGER

Abstract: A machine tool (1) includes a machine spindle (1b), a tool storage magazine (3, 103) having a plurality of pots (23, 123) for storing a plurality of tools (42, 142) and an automatic tool changer (5) for transferring tools (42, 142) between the tool storage magazine (3, 103) and the machine spindle (1b). The automatic tool changer (5) includes a tool changing arm (75), a first means for moving the tool changing arm (75) in a first direction with a predetermined stroke, a second means for moving the tool changing arm (75) in a second direction with a predetermined stroke, a third means for swinging the tool changing arm (75) in a third direction with a predetermined stroke, and a fourth means for rotating the tool changing arm (75) in a fourth direction.

Classifications:
International (IPC 8-9): B23Q3/157 (Advanced/Invention); B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: Y10T483/1764 Y10T483/1771 Y10T483/1788 Y10T483/1891 B23Q3/15766 B23Q3/1574
European: B23Q3/157C2B3 B23Q3/157C2C3
US: 29/568 483/43 483/46 483/53 483/68



Family:

Publication number	Publication date	Application number	Application date
CA1268026 A1	19900424	CA19870529542	19870212

DE3767506 D1	19910228	DE19873767506	19870213
EP0235639 A2	19870909	EP19870102013	19870213
EP0235639 A3	19881221	EP19870102013	19870213
EP0235639 B1	19910123	EP19870102013	19870213
JP1762378 C3	19930528	JP19860027892	19860213
JP4051296 B4	19920818	JP19860027892	19860213
JP62188641 A2	19870818	JP19860027892	19860213
US4773152 A	19880927	US19870013456	19870211

Priority:

JP19860027892 19860213 CA19870529542 19870212

Probable Assignee: KITAMURA MACHINERY CO LTD

Assignee(s): (std): KITAMURA MACHINERY CO LTD

Assignee(s): KITAMURA MACHINERY CO LTD TAKAOKA TOYAMA JP ; KITAMUTA MACHINERY CO LTD ; KITAMURA KIKAI KK ; KITAMURA KOICHIRO ; KITAMURA MACHINERY CO

Inventor(s): (std): KITAMURA KOICHIRO

Inventor(s): KITAMURA KOICHIRO TOYAMA KEN JP

Agent(s): SMART AND BIGGAR

Designated states: CH DE FR GB IT LI NL

350) Family number: 33149630 (US2008110011A)

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Title: AUTOMATED SPUTTERING TARGET PRODUCTION AND SUB SYSTEMS THEREOF

Abstract: A fixture and method is provided for gripping an article, such as a sputtering target. The fixture comprises a base, a first set of contact rollers, and a second set of contact rollers, wherein at least one of the first set and the second set are adjustably positioned relative to the other of the first set and the second set on the base. The contact rollers can be configured as v-grooved wheels that will only touch chamfered portions of an outer diameter of the sputtering target when the contact rollers are clamped against the sputtering target. At least one of the first set and the second set of contact rollers can be pivotally mounted on a slide, with the slide being adjustably positioned on the base of the fixture.

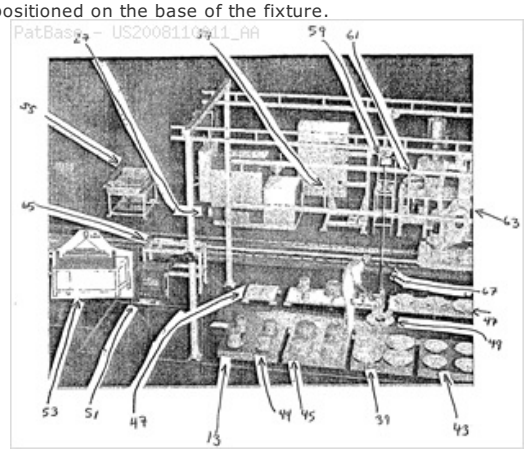
Classifications:

International (IPC 8-9): B05B3/14 B23P23/00 B23Q17/00 B23Q17/20 B23Q39/00 B23Q39/04 B23Q7/04 B25B5/00 B65H1/00 C23C14/00 C23C14/50 G06F17/00 G06F19/00 (Advanced/Invention); B05B3/00 B23P23/00 B23Q17/00 B23Q17/20 B23Q39/00 B23Q7/04 B25B5/00 B65H1/00 C23C14/00 C23C14/50 G06F17/00 G06F19/00 (Core/Invention)

CPC: C23C14/3407 H01J40/14 G05B19/418 C23C14/3414 G05B2219/31316 G05B2219/32114 G05B2219/32244 G05B2219/32256 G05B2219/32283 G05B2219/32304 Y10T29/49998 Y10T29/5124 Y10T29/5196 Y10T409/303864 Y02P90/02 Y02P90/04 Y02P90/20 Y02P90/28

European: C23C14/34B C23C14/34B2 G05B19/418 H01J40/14 S05B219/31316 S05B219/32114 S05B219/32244 S05B219/32256 S05B219/32283 S05B219/32304

US: 204/298.12 269/282 29/33P 29/559 29/559S 29/563 29/563P 409/133 700/109 700/109P 700/159 901/31



Family:

Publication number	Publication date	Application number	Application date
US2008110011 AA	20080515	US20060795391	20060118
US2008203641 AA	20080828	US20060795560	20060118
US2008221721 AA	20080911	US20060795395	20060118
US2008271305 AA	20081106	US20060795396	20060118
US7480976 BB	20090127	US20060795391	20060118
US7561937 BB	20090714	US20060795395	20060118
WO06078707 A2	20060727	WO2006US01721	20060118
WO06078707 A3	20070315	WO2006US01721	20060118
WO06078709 A2	20060727	WO2006US01725	20060118
WO06078709 A3	20070201	WO2006US01725	20060118
WO06078710 A1	20060727	WO2006US01726	20060118
WO07001486 A2	20070104	WO2006US01723	20060118
WO07001486 A3	20071004	WO2006US01723	20060118

Priority:

US20050644929P 20050119 US20050646244P 20050124 US20050656977P 20050228
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US20060795391 20060118 US20060795395 20060118 US20060795396 20060118
WO2006US01723 20060118 US20060795560 20060118 WO2006US01726 20060118
WO2006US01725 20060118 WO2006US01721 20060118

Probable Assignee: TOSOH CORP

Assignee(s): (std): MATERA JOHN P ; NOZICKA DAVID M ; TOSOH SMD ETNA LLC ; REED WILEY ZANE ; SCHMIDT KENNETH G ; WICKERSHAM CHARLES E ; WICKERSHAM CHARLES E JR ; TOSOH SMD INC ; TOSOH CORP ; BULTZ NEIL D ; COSPER BOBBY R

Assignee(s): INDUSTRIAL TECHNOLOGIES INC ; CABOT CORP ; ADVANCED AUTOMATION

Inventor(s): (std): BULTZ NEIL D ; COSPER BOBBY R ; MATERA JOHN P ; NOZICKA DAVID M ; REED WILEY ZANE ; SCHMIDT KENNETH G ; WICKERSHAM CHARLES E ; WICKERSHAM CHARLES E JR

Agent(s): WEGMAN HESSLER AND VANDERBURG

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE

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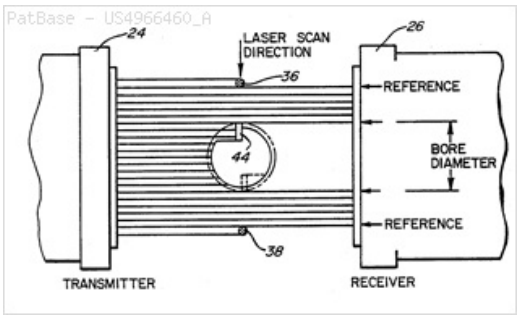
351) Family number: 4308630 (US4966460A)

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Title: LASER GAUGING OF ROTARY CUTTING TOOLS

Abstract: A laser-optical gauging system is disclosed for measuring the diameter of the cutting path of a rotary cutting tool while rotating in the machine spindle at speeds approximating the desired cutting speed for the intended cut, and for determining the axial location of the tip of a tool.

Classifications:
International (IPC 8-9): B23Q17/22 B23Q17/24 (Advanced/Invention); B23Q17/22 B23Q17/24 (Core/Invention)
International (IPC 1-7): B23Q17/22 B23Q17/24 G01B11/08 G01B11/10
CPC: B23Q17/2457 Y10T408/21
European: B23Q17/24J2
US: 356/387 356/640 408/16



Family:

Publication number	Publication date	Application number	Application date
EP0305955 A2	19890308	EP19880114082	19880830
EP0305955 A3	19901107	EP19880114082	19880830
JP1064752 A2	19890310	JP19880118021	19880514
JP64064752 A2	19890310	JP19880118021	19880514
US4966460 A	19901030	US19890369043	19890620

Priority:
US19870091533 19870831 US19870114195 19871028 US19890369043 19890620

Probable Assignee: CAMOZZI PNEUMATICS INC

Assignee(s): (std): INGERSOLL MILLING MACHINE CO ; WALDRICH WERKZEUGMASCH

Assignee(s): THE INGERSOLL MILLING MACHINE COMPANY ; WALDRICH SIEGEN WERKZEUGMASCHINENBAU GMBH ; INGERSOLL MIRINGU MACH CO ; BANK ONE NA ; CAMOZZI PNEUMATICS INC ; INGERSOLL MACHINE TOOLS INC

Inventor(s): (std): KAHLEY THEODORE E ; SEODOAA YUUJIIN KAAREE ; KAHLEY THEODORE EUGENE

Designated states: AT BE CH DE ES FR GB IT LI NL SE

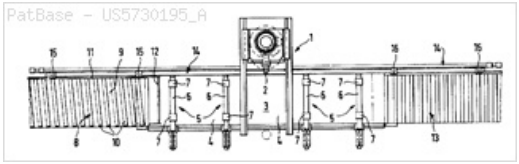
352) Family number: 13173635 (US5730195A)

© PatBase

Title: MACHINING CENTER FOR THE MACHINING OF FLAT WORKPIECES

Abstract: PCT No. PCT/EP94/03518 Sec. 371 Date Jul. 19, 1996 Sec. 102(e) Date Jul. 19, 1996 PCT Filed Oct. 26, 1994 PCT Pub. No. WO95/12479 PCT Pub. Date May 11, 1996An apparatus for machining workpieces includes a feed conveyor which has an alignment station and a discharge conveyor which adjoin a machining zone. Between the feed conveyor and the discharge conveyor, there is a transport device which is disposed at one side of the machining field and which has displaceable work holders which grasp the workpieces at one of their edges. The transport device receives the workpieces at the alignment station at the end of the feed conveyor, conveys them at substantially the same level to the machining station in the machining zone, transfers them there to vacuum work holders on a work rest, and then transports them, after the machining, to the discharge conveyor.

Classifications:
International (IPC 8-9): B23Q3/00 B27C5/06 B27C9/02 B27M1/08 (Advanced/Invention); B23Q3/00 B27C5/00 B27C9/00 B27M1/00 (Core/Invention)
International (IPC 1-7): B25B11/00 B27C1/00 B27C5/00 B27C5/06 B27C9/02 B27M1/08 B65G37/00
CPC: Y10S409/903 Y10T409/307 Y10T409/30868 B27C5/06 B23Q3/002 B27C9/02
European: B23Q3/00B B27C5/06 B27C9/02
US: 144/114.1 144/134.1 144/2.1 144/21 144/242.1 144/48.1 144/481 269/21 269/289R 409/189 409/219 409/903



Family:

Publication number	Publication date	Application number	Application date
DE4337739 C1	19940825	DE19934337739	19931105
DE59404841 D1	19980129	DE19945004841	19941026
EP0726839 A1	19960821	EP19940930227	19941026
EP0726839 B1	19971217	EP19940930227	19941026
ES2113128 T3	19980416	ES19940930227T	19941026
JP3609088 B2	20050112	JP19950512995T	19941026
JP9504753 T2	19970513	JP19950512995T	19941026
US5730195 A	19980324	US19960637714	19960719
WO9512479 A1	19950511	WO1994EP03518	19941026

Priority:
DE19934337739 19931105 DE19945004841 19941026 WO1994EP03518 19941026

Probable Assignee: IMA MASCHINENFABRIKEN KLESSMANN GMBH

Assignee(s): (std): IMA MASCHINENFABRIKEN KLESSMAN ; IMA MASCHINENFABRIKEN KLESSMANN GMBH ; KLESSMANN IMA NORTE MASCHFAB ; RIESMEIER WILHELM ; KEMPKENSTEFFEN HEINZ

Assignee(s): IMA MASCHINENFABRIKEN KLESSMANN GMBH IND ; IMA NORTE MASCHINENFABRIKEN KLESSMANN GMBH 33334 G ; IMA NORTE MASCHINENFABRIKEN KLESSMANN GMBH 33334 GUETERSLOH DE ; IMA MASCHINENFABRIKEN KLESSMANN GMBH 32312 LUEBBEC ; IMA MASCHINENFABRIKEN KLESSMANN GMBH 32312 LUEBBECKE DE ; IMA MASCH

Inventor(s): (std): RIESMEIER WILHELM ; RIESMEIER WILHELM ING GRAD ; KEMPKENSTEFFEN HEINZ

Inventor(s): KEMPKENSTEFFEN HEINZ 33397 RIETBERG DE ; RIESMEIER WILHELM ING GRAD 32312 LUEBBECKE DE ; RIESMEIER WILHELM D 32312 LUEBBECKE DE ; KEMPKENSTEFFEN HEINZ D 33397 RIETBERG 3 DE

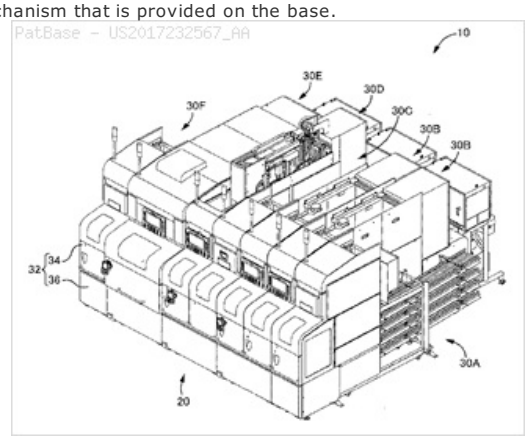
Designated states: AT BE CH DE DK ES FR GB GR IE IT JP LU MC NL PT SE US

353) Family number: 62191637 (US2017232567A)

Title: MANUFACTURING SYSTEM

Abstract: A manufacturing system including a base and multiple work machine modules that are arranged in an arrangement direction on base to be attachable to and detachable from base, in which one wheel of a pair provided on work machine module is engaged with one rail of a pair provided on base in a state in which positional deviation in the arrangement direction is prohibited, and the other wheel of the pair is engaged with the other rail of the pair in a state in which positional deviation is permitted in the arrangement direction, thereby the position of work machine modules on the base in the arrangement direction is specified, and work machine modules are fixed at a setting position on the base to be restricted so as to be drawn toward the base by a module fixing mechanism that is provided on the base.

Classifications:
International (IPC 8-9): B23P23/02 B23Q1/00 B23Q1/26 B23Q1/28 B23Q37/00 B23Q39/04 B23Q7/14 (Advanced/Invention); B23B3/00 B23B39/00 B23C1/06 B23F5/22 B23Q17/20 B23Q39/00 B23Q41/02 B23Q7/04 B23Q7/05 B23Q7/10 (Advanced/Non-invention)
CPC: B23Q39/04 B23Q7/1405 B23Q1/015 B23Q1/58 B23Q1/0054 B23Q37/005 B23Q41/02 B23B3/00 B23B39/00 B23C1/06 B23F5/22 B23P23/02 B23Q1/0072 B23Q1/26 B23Q7/04 B23Q7/05 B23Q7/10 B23Q17/20 B23Q37/007 B23Q2039/008 Y10T29/50 Y10T29/5124 B23Q3/157 B23Q7/08



Family:

Publication number	Publication date	Application number	Application date
CN107073662 A	20170818	CN201480082813	20141024
CN107073662 B	20190308	CN201480082813	20141024
JP2016063410 A1	20170803	JP20160555029T	20141024
US2017232567 AA	20170817	US20140518673	20141024
US10058967 BB	20180828	US20140518673	20141024
WO16063410 A1	20160428	WO2014JP78326	20141024

Priority:
WO2014JP78326 20141024

Probable Assignee: FUJI MACHINE MFG CO LTD

Assignee(s): (std): FUJI MACHINE MFG

Assignee(s): FUJI MACHINE MFG CO ; FUJI MACHINE MFG CO LTD ; FUJI CORP

Inventor(s): (std): HIRATA SHUICHI ; SUZUYAMA SHIGEFUMI ; MIZUTA KENJI

Agent(s): OBLON MCCLELLAND MAIER AND NEUSTADT LLP; CHUBU PATENT OFFICE

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

354) Family number: 43307640 (US2009138115A)

Title: INTELLIGENT OPTIMIZATION METHOD AND SYSTEM THEREFOR

Abstract: A method and system of optimizing a complex manufacturing process performed by an apparatus on a subject to achieve at least one processing objective. The system includes a graphical user interface, a process module, and an optimization module. The process module includes a training module, an empirical relationships database, an analytical equations database, a heuristic knowledge database, and a process models database. The graphical user interface is used to input at least one processing variable and constraints for the processing objective of the complex manufacturing process. The training module generates empirical relationships from the processing variable and empirical data obtained from the complex manufacturing process. The process module generates a process model that takes into consideration heuristic knowledge of the complex manufacturing process stored in the heuristic knowledge database, empirical relationships stored in the empirical relationships database, and optionally analytical equations stored in the analytical equations database and relating to the complex manufacturing process. The optimization module employs the process model to optimize the complex manufacturing process.

Classifications:
International (IPC 8-9): B23P15/00 F04B53/14 F16J1/00 F16J1/02 F16J1/08 F16J10/04 G05B13/02 G05B13/04 G05B17/02 G06F15/18 G06F19/00 G06N3/12 G06N5/00 G06Q10/04 G06Q10/06 (Advanced/Invention);

G05B13/04 G06F15/18 G06F19/00 G06N3/00 (Core/Invention)
CPC: G06N5/003 G05B17/02 G06Q10/04 Y10T29/49236 F04B1/0408 F04B1/124 F04B27/0409 F04B27/0878 F04B53/143 G05B13/028 G05B2219/35003 G05B2219/36253 G05B2219/45161 G05B2219/49065 G06Q10/067 Y02P90/265
European: F04B1/04K2 F04B1/12C2 F04B27/04K2 F04B27/08D3 F04B53/14P G05B17/02 G06N5/00H G06Q10/04
US: 1/1 29/888.02 29/888.020S 700/104 700/104P 700/164 700/164S 706/12 706/12S 706/13 706/13S 92/174 92/174P

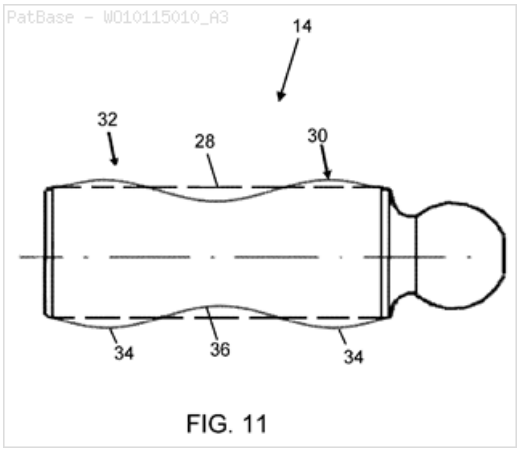


FIG. 11

Family:

Publication number	Publication date	Application number	Application date
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KR101350110 B1	20140109	KR20117025694	20100401
KR20120016076 A	20120222	KR20117025694	20100401
US2009138115 AA	20090528	US20080323972	20081126
US2012079936 AA	20120405	US20100260649	20100401
US2012191235 AA	20120726	US20120418314	20120312
US9367060 BB	20160614	US20120418314	20120312
WO10115010 A2	20101007	WO2010US29647	20100401
WO10115010 A3	20110113	WO2010US29647	20100401

Priority:

US20070990431P 20071127 US20080323972 20081126 US20090165661P 20090401
WO2010US29647 20100401 US20100260649 20100401 US20120418314 20120312

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Assignee(s): (std): FREDRICKSON ANDREW A ; GARRETT REECE ALAN ; IVANTYSYNOVA MONIKA MARIANNE ; LEE CHEOL W ; PURDUE RESEARCH FOUNDATION ; SHIN YUNG C

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Inventor(s): (std): LEE CHEOL W ; SHIN YUNG C ; FREDRICKSON ANDREW A ; GARRETT REECE ALAN ; IVANTYSYNOVA MONIKA MARIANNE

Agent(s): TURNBULL ALEXANDER JAMES; HARTMAN AND HARTMAN PC; MICHAEL D; HARTMAN GLOBAL IP LAW; GARY M; HARTMAN AND HARTMAN PC ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

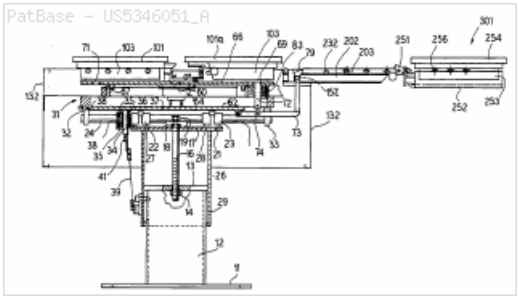
355) Family number: 11674645 (US5346051A)

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Title: QUICK CHANGE-OVER PALLET SYSTEM

Abstract: A pallet system for changing pallets at a work station which has a carousel mounted on a base and has a trolley laterally moveable which supports a turntable that is rotatably moveable. Pallets which hold workpieces are mounted to rails on the turntable. Locking devices for the trolley, the turntable and the pallets are provided. Pivoted rails allow the pallets to be moved between the carousel and the work station.

Classifications:
International (IPC 8-9): B23Q7/14 (Advanced/Invention); B23Q7/14 (Core/Invention)
International (IPC 1-7): B65G37/00
CPC: B23Q7/1431 Y10T29/5196
European: B23Q7/14K2
US: 198/346.1 198/465.3 29/33P



Family:

Publication number	Publication date	Application number	Application date
US5346051 A	19940913	US19930098930	19930729

Priority:

US19930098930 19930729

Probable Assignee: MIDACO CORP

Assignee(s): (std): MIDACO CORP

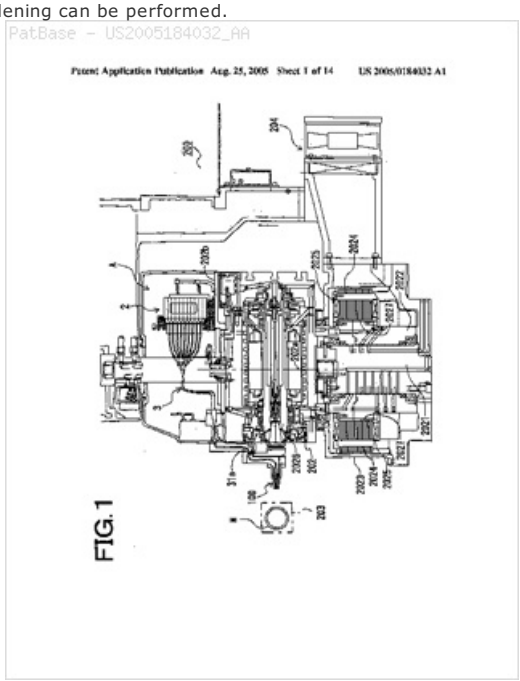
Inventor(s): (std): KEITH MALCOLM E

356) Family number: 32191646 (US2005184032A)

Title: MACHINE TOOL

Abstract: A machine tool is comprised of a tool rest for supporting a plurality of tools, and a laser beam generating means for generating laser beam. When installing a tool for cutting machining on the tool rest, cutting machining can be performed on a worpiece. When installing a tool for emitting laser beam on the tool rest, a hardening can be performed on the workpiece. Only by change of a tool, both cutting machining and hardening can be performed.

Classifications:
International (IPC 8-9): B23K26/00 B23K26/06 B23K26/067 B23K26/08 B23K26/42 B23Q3/155 B23Q3/157 B23Q37/00 C21D1/09 G02B6/04 G02B6/42 H01S3/03 H01S5/022 H01S5/40 (Advanced/Invention);
B23K26/00 B23K26/06 B23K26/08 B23Q3/155 B23Q3/157 B23Q37/00 C21D1/09 G02B6/04 G02B6/42 H01S3/03 H01S5/00 (Core/Invention)
International (IPC 1-7): B23K26/00 B23K26/06 B23Q3/155 B23Q3/157 B23Q37/00 C21D1/09 G02B6/04 G02B6/42 G11B7/0 G11B7/00 G11B7/135 H01L29/10 H01L29/12 H01S5/022 H01S5/40
CPC: G02B6/4296 H01S5/4025 B23K26/0093 B23K26/0604 B23K26/0823 B23K26/1482 C21D1/09 C21D2261/00 Y10T483/17 B23K26/142 B23K26/702
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US: 219/121.6 219/121.600P 257/43 369/121 369/44.37 372/64 385/115 483/16 483/16S



Family:

Publication number	Publication date	Application number	Application date
CN100522470 C	20090805	CN200510008461	20050221
CN1660536 A	20050831	CN200510008838	20050223
CN1660536 B	20101201	CN200510008838	20050223
CN1660542 A	20050831	CN200510008461	20050221
DE602005003036 D1	20071213	DE200560003036T	20050217
DE602005003036 T2	20080814	DE200560003036T	20050217
DE602005020544 D1	20100527	DE200560020544T	20050223
EP1568438 A1	20050831	EP20050101186	20050217
EP1568438 B1	20071031	EP20050101186	20050217
EP1577993 A1	20050921	EP20050101364	20050223
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JP2005238253 A2	20050908	JP20040048283	20040224
JP2005286310 A2	20051013	JP20050042479	20050218
JP4431420 B2	20100317	JP20040048283	20040224
US2005184032 AA	20050825	US20050063493	20050223
US2005185566 AA	20050825	US20050063182	20050220
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Priority:
JP20040048283 20040224 JP20040061255 20040304 JP20050042479 20050218

Probable Assignee: YAMAZAKI MAZAK KABUSHIKIKAISHI

Assignee(s): (std): YAMAZAKI MAZAK CO LTD ; YAMAZAKI MAZAK CORP ; YAMAZAKI MAZAK K K

Assignee(s): YAMAZAKI MAZAK KABUSHIKIKAISHI ; YAMAZAKI MAZAK KK ; YAMAZAKI MAZAK A JAPANESE CORP KK ; YAMAZAKI MAZAK A JAPANESE CORPORA KK

Inventor(s): (std): MIYAGAWA NAOOMI ; MIYAGAWA NAOTOMI ; NAOOMI MIYAGAWA ; TSUNEHIKO YAMAZAKI ; YAMAZAKI TSUNEHIKO

Agent(s): HENGELHAUPT JUERGEN; WOLF BLOCK SCHORR AND SOLIS COHEN LLP; DUANE MORRIS LLP, IP DEPARTMENT; DUANE MORRIS LLP IP DEPARTMENT; DUANE MORRIS LLP

Designated states: DE FR GB IT

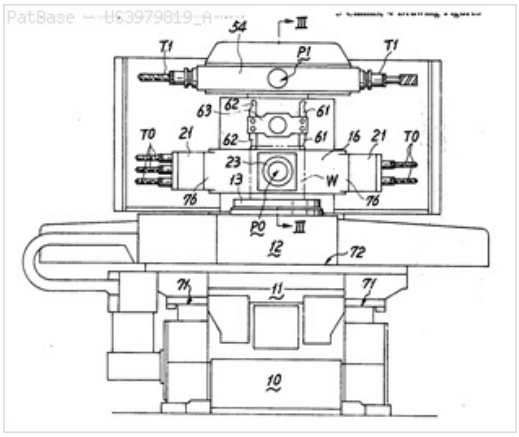
357) Family number: 1320648 (US3979819A)

Title: MACHINE TOOL WITH A TURRET HEAD FOR MULTIPLE SPINDLE UNITS AND AUTOMATIC TOOL CHANGING APPARATUS

Abstract: A machine tool having a turret head equipped with a plurality of multiple spindle units on the support stations thereof with the exception of one station rotatably supporting a tool spindle adapted to removably receive a tool, a tool storage magazine storing a plurality of "single" tools, and tool changing apparatus for interchanging the tools between the tool spindle and the tool storage magazine. The turret head may be rotated to successively position one of the multiple spindle units or the tool spindle at an operating position that confronts with the workpiece supported on the worktable such that the multiple spindle unit or the single tool on a tool spindle performs the machining operation on the workpiece. With regard to the tool changing operation for the single tool, the tool changing means may automatically interchange a tool in the tool spindle positioned at the operating position with respect to a tool presented into a changing position where it is immediately above the operating position by the rotational indexing of the tool storage magazine. Furthermore, there is

provided an elevating head which mounts thereon the turret head, the tool storage magazine and the tool changing means, and also causes the tool storage magazine and the tool changing means to travel in a body relative to the workpiece such that the tool changing operation for the single tool may be initiated immediately when and where the machining operation is halted.

Classifications:
International (IPC 8-9): B23B31/26 B23B39/16 B23Q3/155 B23Q3/157 (Advanced/Invention); B23B31/02 B23B39/00 B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23B29/34 B23B39/16 B23B39/20 B23Q3/00 B23Q3/155 B23Q3/157 B23Q39/00
CPC: Y10T408/37 Y10T483/1755 Y10T483/1882 B23Q3/15733 B23B31/263 B23Q2003/1558
European: B23B31/26B1 B23Q3/157C2B2
US: 29/568 408/35 483/39 483/67



Family:

Publication number	Publication date	Application number	Application date
DE2435947 A1	19750206	DE19742435947	19740725
FR2238554 A1	19750221	FR19740025561	19740723
FR2238554 B1	19830819	FR19740025561	19740723
GB1468542 A	19770330	GB19740027485	19740620
JP1133587 C3	19830127	JP19730085128	19730728
JP50033571 A2	19750331	JP19730085128	19730728
JP56033215 B4	19810801	JP19730085128	19730728
US3979819 A	19760914	US19740489882	19740719

Priority:
JP19730085128 19730728

Probable Assignee: TOYODA MACHINE WORKS LTD
Assignee(s): (std): TOYODA KOKI KK ; TOYODA MACHINE WORKS LTD
Assignee(s): TOYODA KOKI KK JA ; TOYODA KOKI JA KK ; TOYODA KOKI K K KARIYA AICHI JAPAN ; TOYODA KOKI KABUSHIKI KAISHA
Inventor(s): (std): KAMIYA YOZI ; NOMURA KENZI ; YOSHIOKA KENGO
Inventor(s): YOSHIOKA KENGO KARIYA ; NOMURA KENZI AICHI ; KAMIYA YOZI ANJO

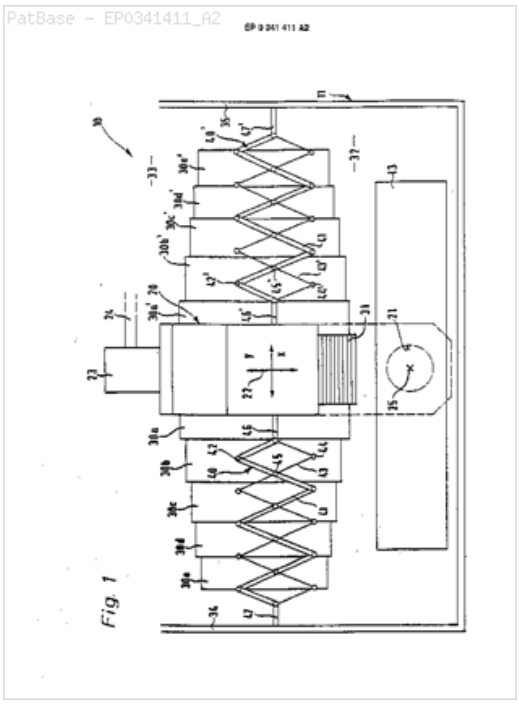
358) Family number: 3126648 (EP0341411A2)

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Title: MACHINE TOOL WITH SURROUNDING ENCLOSURE AND SEPARATING WALL.

Abstract: The machine tool has a spindle head (20) traversable along several coordinate axes (x, y). An elongated work table (13) runs with its longitudinal axis parallel to one of the coordinate axes (x). A casing (11) surrounds the spindle head (20) and the work table (13). In order to protect the space (33) of the machine tool (10) located behind the spindle head (20) from metal chips flying around and drilling water splashing around, a dividing wall (40, 40') is arranged on either side of the spindle head (20) in the direction of the coordinate axis (x) parallel to the longitudinal axis of the work table (13). The dividing wall (40, 40') spans the intermediate space between spindle head (20) and side walls (34, 35) of the casing (11) and is designed to be longitudinally variable.

Classifications:
International (IPC 8-9): B23Q11/08 E06B3/48 (Advanced/Invention); B23Q11/08 E06B3/32 (Core/Invention)
International (IPC 1-7): B23Q11/08 E06B3/48
CPC: B23Q2011/0808 B23Q11/0816 E06B3/481
European: B23Q11/08B E06B3/48B



Family:

Publication number	Publication date	Application number	Application date
DE3812218 C1	19890817	DE19883812218	19880413
EP0341411 A2	19891115	EP19890105690	19890331
EP0341411 A3	19901031	EP19890105690	19890331
EP0341411 B1	19930818	EP19890105690	19890331
JP1281841 A2	19891113	JP19890072067	19890327

Priority:

DE19883812218 19880413

Probable Assignee: CHIRON WERKE GMBH

Assignee(s): (std): CHIRON WERKE GMBH

Assignee(s): CHIRON WERKE GMBH AND CO 7200 TUTTLINGEN DE KG ; CHIRON WERKE GMBH AND CO KG ; CHIRON WERKE GMBH AND CO KG 7200 TUTTLINGEN DE

Inventor(s): (std): RUTSCHLE EUGEN ; RUETSCHLE EUGEN DIPL ING ; OIGEN RIYUTSUCHIYURE

Inventor(s): RUETSCHLE EUGEN

Designated states: CH DE ES FR GB IT LI SE

359) Family number: 40762656 (US2007251071A)

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Title: MACHINE TOOL

Abstract: Machine tool furnished with: a table (20) free to swivel about a horizontal swivel center axis, and having a table body (22) for carrying a workpiece, and an axially rotatable rotary shaft (23) disposed with the axis of the rotary shaft (23) coinciding with the swivel center axis, with a first end of the rotary shaft affixed to the table body (22); a support structure (15) for supporting rotatably the rotary shaft (23) via a bearing (15 b); a swivel drive mechanism (25) for axially rotating the rotary shaft (23); riding members (31) abutting on an outer-peripheral locus on a rotary shaft (23) second end, off a portion, supported by the bearing (15 b), of the rotary shaft (23); and hold-down mechanisms (32) arranged on the support structure (15), for supporting the riding members (31) and thereby pressing on and apply a load to the rotary shaft (23) outer-peripheral locus from above.

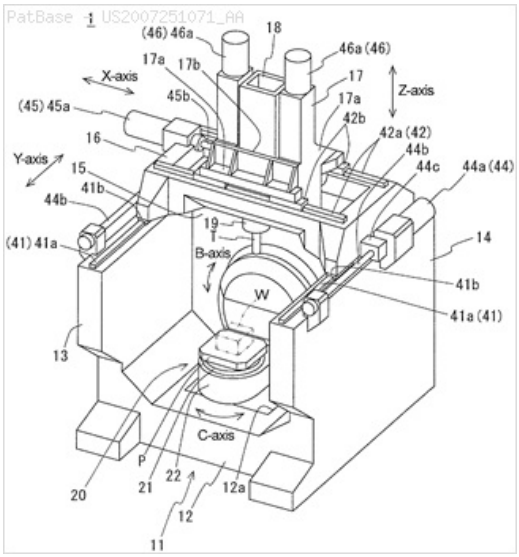
Classifications:

International (IPC 8-9): B23C1/14 B23Q1/26 B23Q1/50 B23Q1/54 B23Q1/64 B23Q1/72 B23Q7/00 (Advanced/Invention); B23Q11/00 (Advanced/Non-invention); B23C1/00 B23Q1/00 B23Q1/25 B23Q1/26 B23Q7/00 (Core/Invention); B23Q11/00 (Core/Non-invention)

CPC: Y10T29/5107 Y10T29/5114 Y10T29/5129 Y10T29/5196 Y10T408/5614 Y10T408/91 Y10T409/30896 B23C1/002 B23Q1/5437 B23Q11/0021 B23Q11/0028 Y10T409/305824 Y10T409/309576

European: B23C1/00B B23Q1/54A B23Q1/54A9 B23Q11/00C5B B23Q11/00C6

US: 269/58 269/73 29/26.00A 29/26A 29/27.00C 29/27.00CP 29/27C 29/33.00PS 29/33P 29/38.00B 29/38B 408/234 408/89 409/168 409/168S 409/224 409/235



Family:

Publication number	Publication date	Application number	Application date
DE102007019819 A1	20071122	DE200710019819	20070426
JP2007296613 A2	20071115	JP20060127279	20060501
US2007251071 AA	20071101	US20070739105	20070424
US7356895 BB	20080415	US20070739105	20070424

Priority:

JP20060127279 20060501

Probable Assignee: MORI SEIKI CO LTD

Assignee(s): (std): MORI SEIKI SEISAKUSHO KK

Assignee(s): MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std): OTA HIDEHITO

Agent(s): MURAKAMI SATOSHI; JUDGE AND MURAKAMI IP ASSOCIATES; JUDGE PATENT ASSOC

360) Family number: 70342656 (US2018185932A)

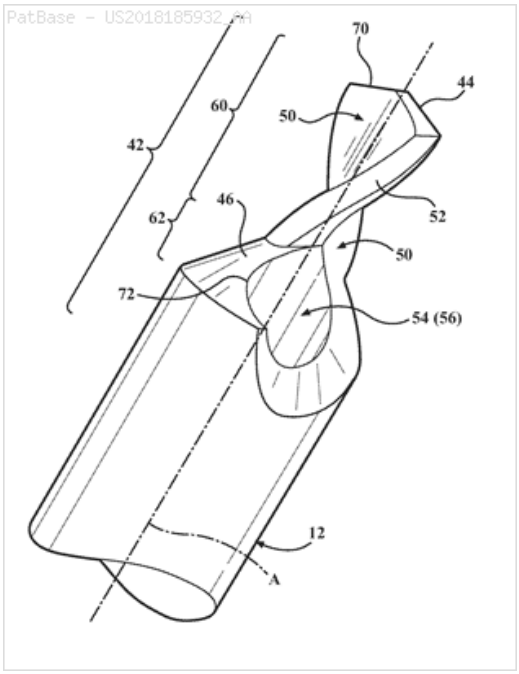
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Title: CUTTING TOOL FOR CUTTING AND COUNTERSINKING HOLES

Abstract: A cutting tool is configured to cut and countersink a hole in a workpiece. The cutting tool includes a shank and a fluted body extending along an axis. The body includes a tip, a chamfer in an axially spaced relationship with the tip and a cross hole with a proximal end opening to the chamfer. The body has a cutting section extending between the tip and the chamfer, and a countersinking section extending along the chamfer. At the cutting section, the body includes at least one hole-cutting edge. At the countersinking section, the body includes a scalloped countersink-cutting edge along a junction of

the chamfer and the proximal and of the cross hole.

Classifications:
International (IPC 8-9): B23B51/02 B23B51/08 B23B51/10 (Advanced/Invention)
CPC: B23B2251/241 B23B2251/406 B23B51/02 B23B51/08 B23B51/105 B23B2251/043
US: 408/1R



Family:

Publication number	Publication date	Application number	Application date
US2018185932 AA	20180705	US20160395265	20161230
US10265782 BB	20190423	US20160395265	20161230

Priority:

US20160395265 20161230

Probable Assignee: LINK IND

Assignee(s): (std)**:** LINK IND

Inventor(s): (std)**:** LEE DWAINE D ; GRZEBYK JOHN ; VERYSER JEFFREY J ; ROCHELEAU WAYNE

Agent(s): DARROW CHRISTOPHER G; DARROW MUSTAFA PC

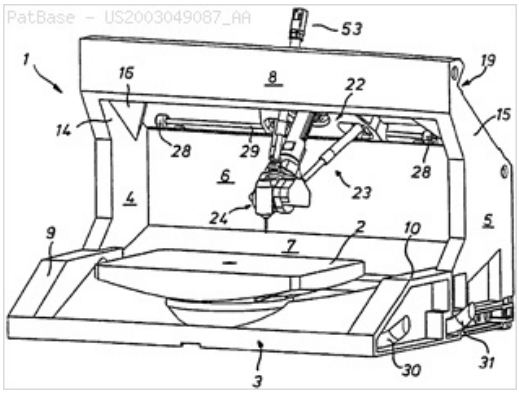
361) Family number: 28608657 (US2003049087A)

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Title: UNIVERSAL COMBINED MILLING AND BORING MACHINE

Abstract: A relatively compact, program-controlled, universal combined milling and boring machine having a horizontal base as a support for a work table, a machine frame and a supporting system for at least one spindle head. The spindle head contains a dimensionally stable central tube, a spindle head support mounted on the lower end thereof, three telescopic bars arranged at a solid angle displacement of about 120 degrees and coupled to the spindle head support in universal bearings, and an upper support member having universal bearings for the central tube and for each telescopic bar. The machine frame is preferably provided together with the base as an integrated, dimensionally stable, support structure and has two side walls, a top, front traverse and a lower rear wall. The supporting member of the supporting system is inclined between the top side of rear wall and the traverse.

Classifications:
International (IPC 8-9): B23B39/04 B23C1/06 B23Q1/00 B23Q1/01 B23Q1/44 B23Q1/54 B25J17/02 (Advanced/Invention); B23B39/00 B23C1/00 B23Q1/00 B23Q1/25 B25J17/02 (Core/Invention)
International (IPC 1-7): B23B39/04 B23C1/0 B23C1/00 B23C1/06 B23C1/12 B23D7/0 B23D7/00 B23P23/02 B23Q1/01 B23Q1/44 B23Q1/50 B23Q1/54
CPC: Y10T409/304088 Y10T409/307672 Y10T409/30784 Y10T409/308232 Y10T409/308512 Y10T409/309576 B23Q1/5462 B23Q1/015 B25J17/0266
European: B23Q1/01B B23Q1/54B3 B25J17/02F2
US: 409/137 409/201 409/204 409/211 409/216 409/235



Family:

Publication number	Publication date	Application number	Application date
CN1177673 C	20041201	CN20021042577	20020827
CN1406710 A	20030402	CN20021042577	20020827
DE10141865 A1	20030327	DE20011041865	20010827
DE10141865 B4	20060202	DE20011041865	20010827
DE50201445 D1	20041209	DE20025001445	20020812
EP1287945 A2	20030305	EP20020017786	20020812
EP1287945 A3	20030709	EP20020017786	20020812
EP1287945 B1	20041103	EP20020017786	20020812
ES2232700 T3	20050601	ES20020017786T	20020812

JP2003127040 A2	20030508	JP20020246682	20020827
JP4022112 B2	20071212	JP20020246682	20020827
US2003049087 AA	20030313	US20020229478	20020827
US6682278 BB	20040127	US20020229478	20020827

Priority:

DE20011041865 20010827 DE20025001445 20020812

Probable Assignee: DECKEL MAHO PFRONTEN GMBH

Assignee(s): (std): DECKEL MAHO PFRONTEN GMBH ; DECKEL MARHOEP FROENTEN GMBH ; GRONBACH HANS ; HOPPE GERD

Inventor(s): (std): GRENBACH H ; GRONBACH HANS ; GRONBACH HANS DR ; HOPE G ; HOPPE GERD

Inventor(s): G HOPE ; H GRENBACH

Designated states: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR

362) Family number: 41824657 (EP1925395B1)

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Title: METHOD FOR LUBRICATING REMOTELY MANEUVERABLE TOOLS AND LUBRICANT DISPENSER

Abstract: The method involves approximating a controlled-movable tool to a lubricant dispenser (16) by an appropriate movement of the tool before a processing step or between two processing steps. An actuation organ i.e. valve unit (36), of the lubricant dispenser is mechanically actuated by the contact of the tool with the actuation organ for supplying a lubricant from a lubricant storage tank of the lubricant dispenser into a dispensing opening (20) of the lubricant dispenser for the delivery of the lubricant on the tool. The actuation organ is moved by the tool.

Classifications:
International (IPC 8-9): B23Q11/10 F16N7/00 (Advanced/Invention); B23Q11/10 F16N7/00 (Core/Invention)
CPC: B23Q2230/002 B23Q11/1084
European: B23Q11/10

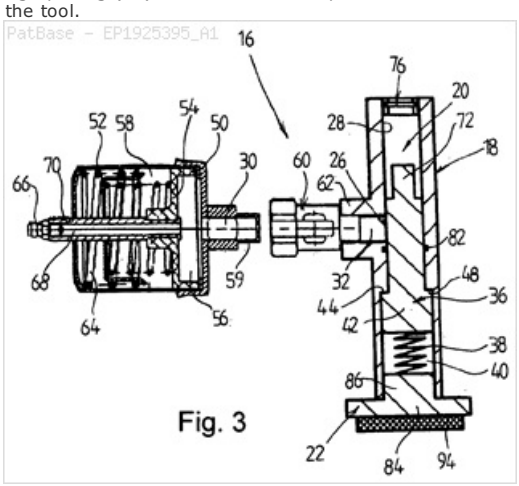


Fig. 3

Family:

Publication number	Publication date	Application number	Application date
AT477079 E	20100815	AT20070021679T	20071108
DE102006055460 A1	20080529	DE200610055460	20061124
DE502007004707 D1	20100923	DE200750004707T	20071108
DK1925395 T3	20101122	DK20070021679T	20071108
EP1925395 A1	20080528	EP20070021679	20071108
EP1925395 B1	20100811	EP20070021679	20071108

Priority:

DE200610055460 20061124

Probable Assignee: KUCHEL KAI

Assignee(s): (std): KUCHEL KAI ; KUCHEL ROBERT

Inventor(s): (std): KUCHEL ROBERT

Agent(s): THOMAS GOETZ

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL PL PT RO RS SE SI SK TR

363) Family number: 4531657 (US4478538A)

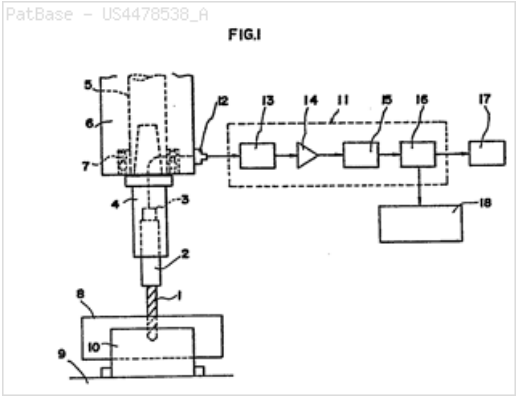
© PatBase

Title: DEVICE FOR DETECTING TOOL ABNORMALITY

Abstract: When a drill is overloaded, while cutting a hole in a workpiece, a torque limiter disconnects the drill from a main spindle. As the drill is disconnected from the main spindle, the torque limiter generates high-level elastic waves. The elastic waves are converted by a transducer into a voltage signal. The level of the voltage signal is compared with a threshold value.

Classifications:
International (IPC 8-9): B23B47/24 B23Q15/12 B23Q17/09 B23Q17/12 G01N29/14 G01N3/58 (Advanced/Invention); B23B47/00 B23Q15/007 B23Q17/09 B23Q17/12 G01N29/14 G01N3/00 (Core/Invention)
International (IPC 1-7): B23B49/00 B23Q11/00 B23Q17/00 G01N3/58 G08B21/00
CPC: Y10T408/14 Y10T408/165 Y10T408/172 Y10T409/30392 Y10T409/30728 B23Q17/0947 B23Q15/12 B23Q17/12 G01N3/58 G01N29/14 B23Q11/04
European: B23Q15/12 B23Q17/09B6M B23Q17/12 G01N29/14

G01N3/58
US: 340/683 408/11 408/6 408/9 409/134 409/194 73/104



Family:

Publication number	Publication date	Application number	Application date
DE3361541 D1	19860130	DE19833361541	19830422
EP0093558 A1	19831109	EP19830302317	19830422
EP0093558 B1	19851218	EP19830302317	19830422
JP58186550 A2	19831031	JP19820069354	19820423
US4478538 A	19841023	US19820426244	19820928

Priority:

JP19820069354 19820423

Probable Assignee: SHOWA TOOL

Assignee(s): (std)**:** KAKINO YOSHIAKI ; NF CIRCUIT DESIGN BLOCK CO LTD ; SHOWA SEIKI KK ; SHOWA TOOL

Assignee(s): SHOWA TOOL CO ; SHOWA TOOL CO LTD ; SHOWA TOOL CO LTD A CORP OF JAPAN ; NF CIRCUIT DESIGN BLOCK CO LTD A CORP OF JAPAN ; SHOWA SEIKI KABUSHIKI KAISHA ; NF CIRCUIT DESIGN BLOCK CO

Inventor(s): (std)**:** KAKINO YOSHIAKI

Designated states: CH DE FR GB IT LI SE

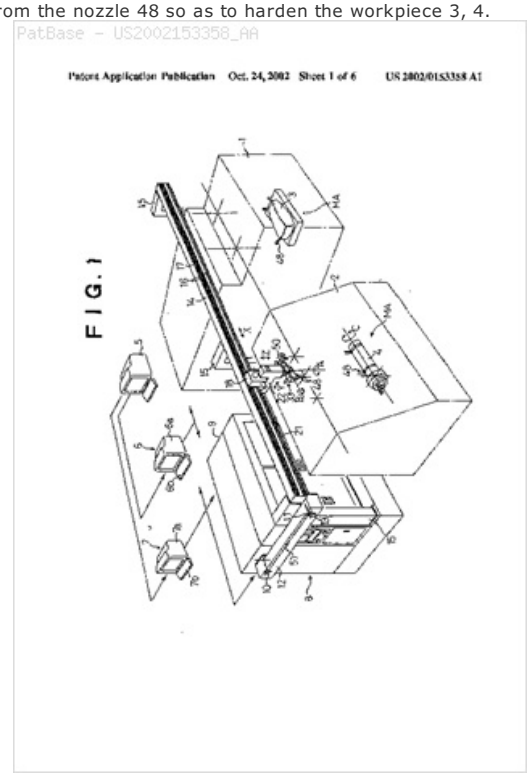
364) Family number: 28304658 (US2002153358A)

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Title: LASER BEAM HARDENING DEVICE

Abstract: A saddle 18 is movable along a guide means 16 provided, passing through an neighborhood of machining area MA of a plurality of machine tools 1, 2. The saddle 18 is provided with a machining head 33, being free to selectively insert in and retreat from the machining area MA, and a plurality of kinds of nozzles 48 for ejecting laser beam. The nozzle 48 suitable for a portion of workpiece 3, 4 to be hardened is selected so as to attach it to the machining head 33. When hardening is instructed, the nozzle 48 is moved to a desired position with respect to the workpiece 3, 4 in the state of the workpiece 3, 4 located on the machine tool 1, 2, and the laser beam 51 is ejected from the nozzle 48 so as to harden the workpiece 3, 4.

Classifications:
International (IPC 8-9)**:** B23K26/00 B23K26/06 B23K26/10 B23K26/14 B23K26/42 C21D1/09 C21D1/34 (Advanced/Invention); B23K26/00 B23K26/06 B23K26/10 B23K26/14 C21D1/09 C21D1/34 (Core/Invention)
International (IPC 1-7)**:** B23K26/00 B23K26/06 B23K26/10 B23K26/42 C21D1/00 C21D1/09 C21D1/34
CPC: Y10T483/17 B23K26/1476 B23K26/1482 B23K26/082 B23K26/702 B23K26/10
European: B23K26/08B B23K26/10 B23K26/14N1T B23K26/14N2 B23K26/42D
US: 219/121.6 219/121.600P 219/121.78 266/249 266/249S 483/16 483/16S



Family:

Publication number	Publication date	Application number	Application date
CN100489117 C	20090520	CN20021017438	20020419
CN1386868 A	20021225	CN20021017438	20020419

DE60226803 D1	20080710	DE20026026803	20020413
EP1250975 A2	20021023	EP20020008457	20020413
EP1250975 A3	20041208	EP20020008457	20020413
EP1250975 B1	20080528	EP20020008457	20020413
JP2002317223 A2	20021031	JP20010121884	20010420
JP3597488 B2	20041208	JP20010121884	20010420
US2002153358 AA	20021024	US20020122838	20020415
US6723947 BB	20040420	US20020122838	20020415

Priority:

JP20010121884 20010420

Probable Assignee: YAMAZAKI MAZAK KK

Assignee(s): (std)**:** YAMAZAKI MAZAK CORP ; YAMAZAKI MAZAC CO LTD ; YAMAZAKI MAZAK K K ; YAMAZAKI MAZAK CO LTD

Assignee(s): YAMAZAKI MAZAC CO ; YAMAZAKI MAZAK KK ; YAMAZAKI MAZAK K USHIKI KAISHA AB ; YAMAZAKI MAZAK KABUSHIKI KAISHA ; ASARI TOSHIHIKO ; INOUE TOSHIHIKO ; ITOH MASAKI ; MIYAGAWA NAOOMI

Inventor(s): (std)**:** ASARI TOSHIHIKO ; INOUE TOSHIHIKO ; ITO MASAKI ; ITOH MASAKI ; MASAKI ITO ; MIYAGAWA NAOOMI ; MIYAGAWA NAOTOMI ; SHUNGEN ASARI ; TOSHIHIKO IUE ; NAOOMI MIYAGAWA

Inventor(s): IUE TOSHIHIKO ; ASARI SHUNGEN

Agent(s): BAUER WULF

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

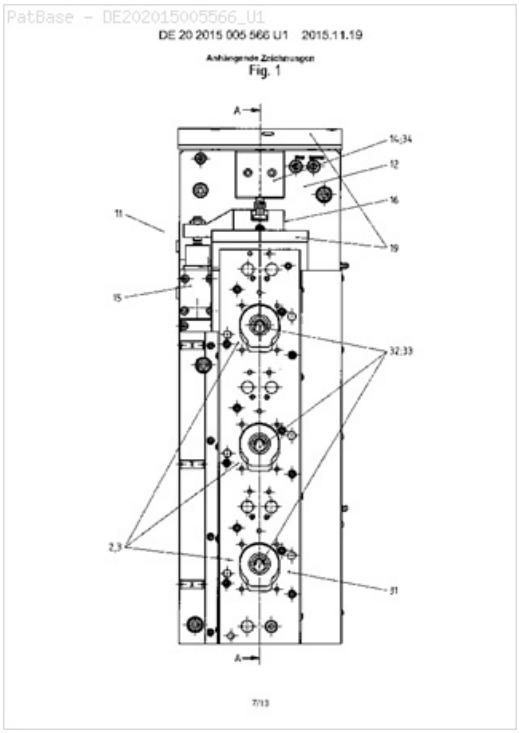
365) Family number: 60814659 (DE202015005566U1) © PatBase

Title: SCHWENKBARES MEHRSTUECK - UND MEHRSEITEN - WERKSTUECK - SPANNMODUL Pivoting MEHRSTUECK - and more sites - WORKPIECE - clamping module (Machine translation)

Abstract: Source: DE202015005566U1 [DE] Schwenkbares Mehrteile- und Mehrseiten-Werkstueck-Spannmodul, wobei auf den laengsseitigen An- und Auflageflaechen eines mehrseitigen Haltekoerpers jeweils eine Reihe gleicher duennwandiger scheiben- oder plattenfoermiger sowie kleiner rechtkantiger Werkstuecke fuer ihre allseitige spanende Aussenseiten-Bearbeitung auf Bearbeitungszentren angeordnet, wiederholgenaue positioniert und mittels eines synchron gesteuerten, schwenkbeweglichen und hydraulisch betaetigten Spannantriebssystems sicher fixierbar sind, dadurch gekennzeichnet, dass an jeder der laengsseitigen An- und Auflageflaechen (17) des mehrseitigen Haltekoerpers (1) mittels einer Tragekoerper-Halteplatte (12) ein Spannstellen-Tragekoerper (11), austauschbar angeordnet, an dieser befestigt ist und dass in dem Spannstellen-Tragekoerper (11) eine laengsbewegliche oder eine separat schwenkbewegliche Spannhaken-Traegerplatte (31) sowie deren Bewegungsantrieb (14), deren Bewegungssteuerung (15) sowie ein Kupplungs- und Einstelladapter (16) fuer die Realisierung justierbarer Bewegungsablaeufe aufgenommen und Bearbeitungsspaene mittels dachfoermiger Abdeckelemente (19) vom Spannstellen-Traegerkoerper (11) ableitbar sind, dass jeder der allein oder in einer Reihe gleich beabstandet zueinander auf einer Spannhaken-Traegerplatte (31), senkrecht nach aussen und zum jeweiligen Werkstueck (4) hin gerichtet, angeordneten Spannhaken (32) mit ihrem abgewinkelten Hakenvorsprung (33), gleichgerichtet mit der Laengsbewegung der Spannhaken-Traegerplatte (31), linear bewegt und – mit einem zufuehrenden Bewegungszylinder (34) und mit einem entgegengerichtet wegfuehrenden Bewegungszylinder (34) ebenso wie – mit einem Spannzug- und Entspannhubzylinder (35) bewegungsverbunden ist und dass ein Spannhaken (32) gemeinsam mit einer Bodenplatte (23), mit stirnseitig fest oder federnd angeordnetem Positionieranschlaegen (22), die mit Sensoren fuer eine intelligente Werkstueck-Vorhandensein-Abfrage ausgestattet sind, eine oben offene Werkstueck-Kassette (21) bilden und ein Werkstueck (4) in einer Niederzug-Spannstelle (3) positioniert und fixiert ist.

Machine translation: Swivel Mehrteile- and multi-sided workpiece clamping module, which is arranged on the laengsseitigen arrival and bearing areas of a multipage Haltekoerpers each a number the same thin-walled disc or plattenfoermiger and smaller right-edged workpieces for their all-round cutting outer side machining on machining centers, repeatable positioned and by means of a synchronously controlled, pivotable and hydraulically actuated clamping drive system are certainly fixable, characterized in that at each of laengsseitigen arrival and bearing areas (17) of the multi-page Haltekoerpers (1) by means of a Tragekoerper holding plate (12) a clamping points-Tragekoerper (11), arranged exchangeably, secured to this, and that in the clamping points-Tragekoerper (11) has a laengsbewegliche or separately pivotable tensioning hook-bearing plate (31) and the movement actuator (14), the motion control (15) and a coupling and adjustment module added (16) for the realization of adjustable Bewegungsablaeufe and Bearbeitungsspaene means dachfoermiger cover elements (19) from the clamping points-Traegerkoerper (11) can be derived that each alone or in a number equal distance from one another on a hook clamp-bearing plate (31), perpendicular to the outside and directed to the respective workpiece (4) back, arranged clamping hook (32) with its angled hook projection (33), rectified by means of Laengsbewegung the tension hook-bearing plate (31) moves linearly and - in opposite directions with a feeding movement cylinder (34) and with a leading away moving cylinder (34) as well as - with a Spannzug- and Entspannhubzylinder (35) is connected to move and that a clamping hook (32) together with a base plate (23), with the front side fixed or resiliently arranged positioning stops (22), the one with sensors intelligent workpiece-existence query feature, form an open-topped workpiece cassette (21) and a workpiece (4) in a descending clamp body (3) is positioned and fixed.

Classifications:
International (IPC 8-9): B23Q3/08 (Advanced/Invention)
CPC: B23Q3/082 B23Q1/522 B23Q3/061



Family:

Publication number	Publication date	Application number	Application date
DE202015005566 U1	20151119	DE201520005566U	20150806

Priority:

DE201520005566U 20150806

Probable Assignee: WVL WERKZEUG U VORRICHTUNGSBAU LICHTENSTEIN GMBH

Assignee(s): (std)**:** WVL WERKZEUG U VORRICHTUNGSBAU LICHTENSTEIN GMBH

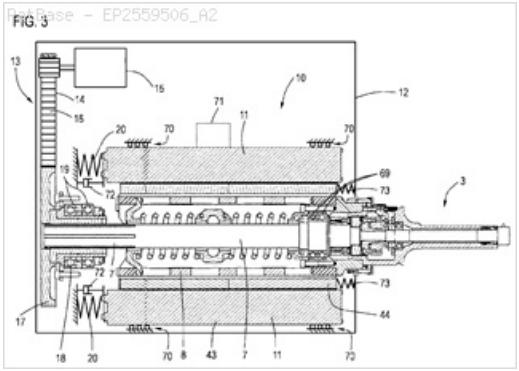
366) Family number: 53038660 (EP2559506B1)

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Title: WHIRLING UNIT DISPOSITIF A TOURBI

Abstract: Source: EP2559506A3 [DE] P ID PA01 NUM 0001 BEARBEITUNGSVORRICHTUNG INSBESONDERE WIRBELVORRICHTUNG 1 UMFASSEND EIN WERKZEUG 23 DAS AN EINER UM EINE DREHACHSE ROTIEREND U LAENGS EINER LINEARACHSE LINEAR VERSCHIEBBAR BEWEGBAREN SPINDEL 22 ANGEORDNET IST WOBEI DIE SPINDEL IN EINEM WERKZEUGGEHAEUSE 21 AUFGENOMMEN IST U UEBER EINE MITTELS EINES ANTRIEBSMITTELS 10

Classifications:
International (IPC 8-9): B23B19/02 B23B31/113 B23C3/32 B23G1/34 B23Q1/26 B23Q1/48 B23Q5/04 B23Q5/10 B23Q5/28 (Advanced/Invention)
CPC: B23B2220/52 B23B2240/04 B23C2220/68 B23C2240/04 B23G1/34 B23G2240/60 B23B31/113



Family:

Publication number	Publication date	Application number	Application date
DE102011110131 A1	20130221	DE201110110131	20110815
DE102011110131 B4	20190502	DE201110110131	20110815
DE502012006877 D1	20160602	DE201250006877T	20120813
EP2559506 A2	20130220	EP20120180288	20120813
EP2559506 A3	20131030	EP20120180288	20120813
EP2559506 B1	20160427	EP20120180288	20120813

Priority:

DE201110110131 20110815 EP20120180288 20120813

Probable Assignee: LEISTRITZ PRODUKTIONSTECHNIK GMBH

Assignee(s): (std)**:** LEISTRITZ PRODUKTIONSTECHNIK GMBH

Inventor(s): (std)**:** STAVE HINRICH ; KUDRYAVTSEV DENIS ; DR STAVE HINRICH

Agent(s): LINDNER BLAUMEIER PATENT U RECHTSANWAELTE PARTNERSCHAFTSGESELLSCHAFT MBB; BLAUMEIER

JOERG

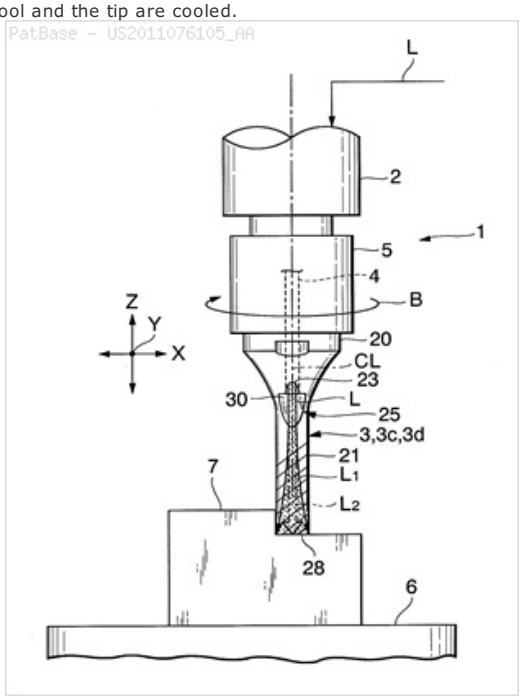
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

367) Family number: 48526666 (US2011076105A)

Title: CYLINDRICAL ROTATING TOOL WITH INTERNAL FLUID PASSAGE AND MACHINING METHOD USING THE SAME

Abstract: A cylindrical rotating tool comprises a major diameter portion having formed therein an internal fluid passage, a minor diameter portion provided in front of the major diameter portion, and a tip attached to the front of the minor diameter portion. When seen from behind the central axis line, an inner circumference of an outlet of the internal fluid passage intersects with an outer circumference of the minor diameter portion. At the site of the outlet, a notch is formed on an outer circumferential surface of the minor diameter portion. An inclined portion of the notch is formed obliquely so that the distance from the central axis line to the inclined portion on further forward of the minor diameter portion becomes larger than the distance from the central axis line to the inclined portion on a closest position on the entire circumference of the outlet to the central axis line. The inclined portion guides a partial flow of the coolant, gushing forward from the outlet, outward in a radial direction of the minor diameter portion. Accordingly, the coolant ejected forward from the outlet flows over the outer circumferential surface of the tool, spreading like a curved fan without diffusing outward in the radial direction, and is supplied to the tip, whereby the outer circumferential surface of the tool and the tip are cooled.

Classifications:
International (IPC 8-9)**:** B23B27/10 B23B51/06 B23C3/00 B23C5/28 B23D77/00 B23Q11/10 (Advanced/Invention); B26D7/18 (Advanced/Non-invention)
CPC: Y10T407/14 Y10T408/44 Y10T409/303752 B23Q11/10 B23B27/12 B23C5/28
European: B23B27/12 B23C5/28 B23Q11/10
US: 407/11 407/11P 408/56 409/131 409/131S



Family:

Publication number	Publication date	Application number	Application date
CN201799629 U	20110420	CN201020541976U	20100921
DE102010046312 A1	20110331	DE201010046312	20100923
JP2011088270 A2	20110506	JP20100114272	20100518
JP5512386 B2	20140604	JP20100114272	20100518
US2011076105 AA	20110331	US20100882603	20100915
US8393830 BB	20130312	US20100882603	20100915

Priority:

JP20090221385 20090925 JP20100114272 20100518

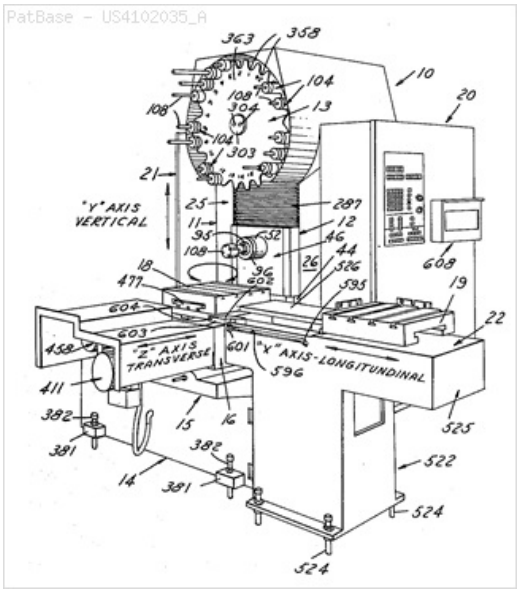
Probable Assignee: MORI SEIKI CO LTD
Assignee(s): (std)**:** HIDETA MORIHIRO ; MORI SEIKI SEISAKUSHO KK ; MORI SEKI CO LTD
Assignee(s): MORI SEKI CO ; MORI SEIKI CO ; MORI SEIKI CO LTD
Inventor(s): (std)**:** HIDETA MORIHIRO ; MORIHIRO HIDETA
Agent(s): FUKAMI PATENT OFFICE PC; KRATZ QUINTOS AND HANSON LLP

368) Family number: 1525667 (US4102035A)

Title: MACHINING CENTER WITH AUTOMATIC TOOL CHANGER

Abstract: A machining center type machine tool which is a four-axis, horizontal spindle machining center with a carousel-type automatic tool changer and which is adapted to be controlled by a computer numerical control system. The machining center can perform a variety of machining operations, such as milling, contouring, drilling, tapping and boring, in both roughing and finishing applications. A rotary work table is operatively carried on two movable, perpendicularly disposed slide members to provide movement of the work table along both "X" and "Z" axes. A horizontal tool spindle slide assembly is slidably mounted on a "Y" axis on a twin column assembly. A rotary, carousel-type combination tool storage and tool changer, holding twenty-four tools, is rotatably mounted on a horizontal axis that is aligned and parallel with the axis of the horizontal tool spindle. The rotary carousel functions to automatically load and unload tools directly into the tool spindle at a tool exchange location. The tool spindle extracts the tools from the carousel, and inserts the tools back into the carousel after a cutting operation. The machining center includes a manually operated optional pallet changer for automatically loading a pallet carrying a new workpiece onto the work table, and unloading the pallet with a finished workpiece from the work table. The tool spindle is provided with automatic mechanical spindle positioning for each spindle stop.
Classifications:

International (IPC 8-9): B23B31/26 B23B39/00 B23Q3/15 B23Q3/157 B23Q5/20 B23Q7/00 B23Q7/14 (Advanced/Invention); B23B31/02 B23B39/00 B23Q3/157 B23Q5/00 B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23B39/02 B23B39/04 B23Q1/06 B23Q3/15 B23Q3/155 B23Q3/157 B23Q39/02 B23Q5/00
CPC: Y10T483/1705 Y10T483/1795 Y10T483/1809 B23Q3/15706 B23Q3/157 B23Q7/1431 G05B2219/50249 Y10T409/309016 Y10T483/16 B23B31/265 Y10T29/5196
European: B23B31/26B2 B23Q3/157 B23Q3/157B B23Q7/14K2 S05B219/50249
US: 29/568 409/225 483/14 483/18 483/56 483/59



Family:

Publication number	Publication date	Application number	Application date
CA1073650 A1	19800318	CA19770293169	19771215
CH627106 A	19811231	CH19780003769	19780407
DE2758962 A1	19781026	DE19772758962	19771230
GB1582646 A	19810114	GB19780016078	19780424
IT1102653 A	19851007	IT19780048864	19780412
IT7848864 A0	19780412	IT19780048864	19780412
JP1395663 C3	19870824	JP19780047945	19780424
JP53135079 A2	19781125	JP19780047945	19780424
JP58132434 A2	19830806	JP19820225115	19821223
JP58132436 A2	19830806	JP19820225114	19821223
JP61059856 B4	19861218	JP19780047945	19780424
JP62113937 U1	19870720	JP19860147888U	19860929
US4102035 A	19780725	US19770790224	19770425
US4173817 A	19791113	US19780885045	19780309

Priority:

US19770790224 19770425 US19780885045 19780309

Probable Assignee: EX CELL O CORP

Assignee(s): (std): EX CELL O CORP

Assignee(s): HEMPEL RAYMOND O ; VOGLRIEDER LEONHARD

Inventor(s): (std): HEMPEL RAYMOND O JR ; HEMPEL RAYMOND O JUN ; REIMONDO OU HEMUBERU JIYUNIA ; REIMONDO OU HEMUPERU JIYUNIA ; REONHARUDO BOGURURIIDAA ; VOGLRIEDER LEONHARD ; HEMPEL JR RAYMOND O ; HEMPEL JUN RAYMOND O

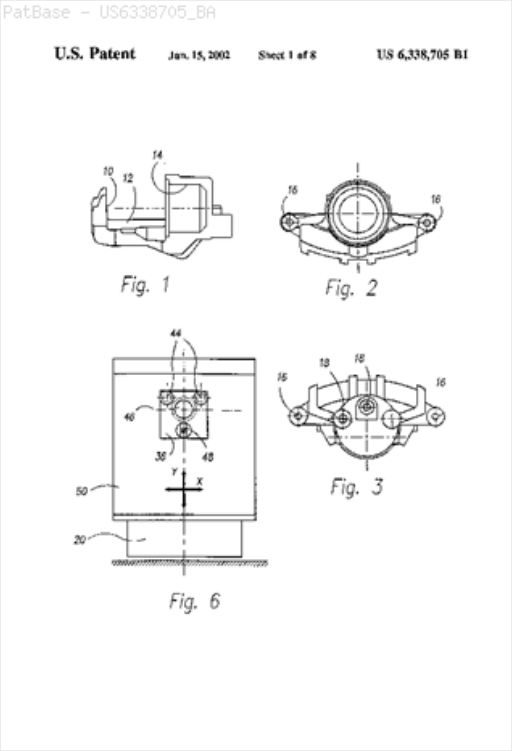
Inventor(s): HEMPEL RAYMOND O ; LEONHARD VOGLRIEDER ; O HEMPEL JUN ; O HEMPEL JUN RAYMOND ; RAYMOND O HEMPEL JUN ; REIMONDO O HEMUPERU JUNIA

369) Family number: 15489667 (US6338705B)

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Title: APPARATUS FOR MACHINING CALIPER BLOCKS AND BRACKETS OF MOTORCAR DISK BRAKES

Abstract: A machining head (36) is drivable along a vertical axis and two horizontal axes with respect to a workpiece held on a workpiece-holding device, and has, at progressively lower levels along said vertical axis, one or two high-speed spindles (44), one or two low-speed spindles (46) and one or two feed-out spindles (48), all arranged at right angles to said vertical axis and driven by one or more motors (42) mounted on the head. The machining head can bring the high-speed spindles to cooperate with a tool-changing magazine (52). The workpiece-holding device (54; 154) is adapted to carry two sets of workpieces on respective supports (56, 58; 170), and to shift said supports in succession between a working position near the head and a tool-changing position remote from the head.
Classifications:
International (IPC 8-9): B23P23/02 B23Q39/02 (Advanced/Invention); B23P23/00 B23Q39/00 (Core/Invention)
International (IPC 1-7): B23B39/02 B23C1/04 B23P23/02 B23Q3/157 B23Q39/02
CPC: Y10T29/5107 Y10T29/5172 Y10T408/36 Y10T408/38 Y10T409/307784 Y10T409/308344 Y10T409/308568 Y10T483/16 Y10T483/1795 B23Q39/024 B23P23/02 B23Q39/028
European: B23P23/02 B23Q39/02 B23Q39/02B2D B23Q39/02D
US: 29/26A 29/53 408/31 408/42 409/203 409/213 409/217 483/14 483/56



Family:

Publication number	Publication date	Application number	Application date
DE60005921 D1	20031120	DE20006005921T	20000204
DE60005921 D1	20031120	DE20006005921	20000204
DE60005921 T2	20040519	DE20006005921T	20000204
EP1122027 A1	20010808	EP20000830080	20000204
EP1122027 B1	20031015	EP20000830080	20000204
ES2208251 T3	20040616	ES20000830080T	20000204
US6338705 BA	20020115	US20000715153	20001120

Priority:

EP20000830080 20000204

Probable Assignee: VIGEL SPA

Assignee(s): (std)**:** VIGEL SPA

Assignee(s): VIGEL S P A ; VIGEL S P A BORGARO TORINESE

Inventor(s): (std)**:** CAVALLO GIORGIO ; MARTINIS MARCO

Designated states: DE ES FR GB IT

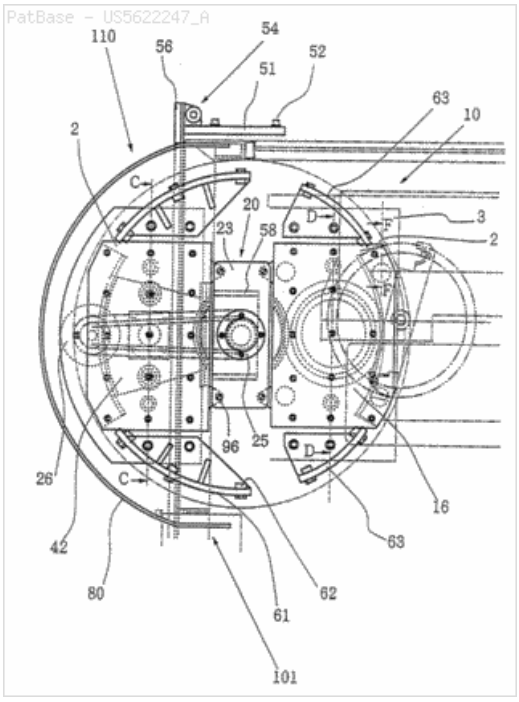
370) Family number: 13028667 (US5622247A)

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Title: PALLET CHANGER

Abstract: A pallet changer of the type in which a pallet is exchanged between a pallet changer body and a table of a machine tool. A circular groove is provided on the bottom side of the pallets and plate members having a shape corresponding to that of the groove are provided on the pallet changer body and the table. The pallets are rotatable through a path, defined between the plate of the pallet changer body and the plate of the machine tool table.

Classifications:
International (IPC 8-9): B23Q7/14 (Advanced/Invention);
B23Q7/14 (Core/Invention)
International (IPC 1-7): B65G37/00
CPC: B23Q7/1431 Y10T29/5196
European: B23Q7/14K2
US: 198/345.3 198/346.1 29/33P



Family:

Publication number	Publication date	Application number	Application date
US5622247 A	19970422	US19940341064	19941116

Priority:

US19940341064 19941116

Probable Assignee: KITAMURA MACHINERY CO LTD

Assignee(s): (std)**:** KITAMURA MACHINERY CO LTD

Assignee(s): KITAMURA MACHINERY CO

Inventor(s): (std)**:** YAMADA SHIGERU

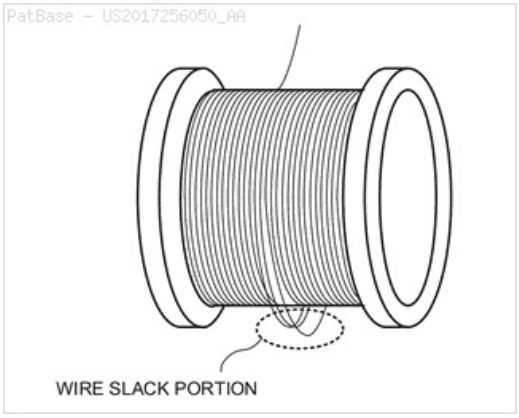
371) Family number: 66861669 (US2017256050A)

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Title: INSPECTION SYSTEM FOR WIRE ELECTRICAL DISCHARGE MACHINE

Abstract: Provided is an inspection system for a wire electrical discharge machine, capable of automatically performing inspection of a constituent element and the like. The inspection system for a wire electrical discharge machine is provided with the wire electrical discharge machine, a robot for inspecting the constituent element of the wire electrical discharge machine, an image pickup device provided on a movable part of tee robot and configured to image the constituent element, an image processing unit configured to acquire an image of the constituent element by means of the image pickup device, and a maintenance necessity determination unit configured to determine the necessity of maintenance of the constituent element based on the image acquired by the image processing unit.

Classifications:
International (IPC 8-9): B23H11/00 B23H7/02 B23Q17/09 B23Q17/24 G01N21/88 G05B19/18 G06K9/20 G06K9/62 G06T7/00 (Advanced/Invention)
CPC: G06T7/0008 G06K9/20 G06K9/6202 G05B19/188 G06T2207/30164 G05B2219/45043 G06K9/6212 G06K2009/6213 G06T7/001 G01N21/8851 B23H7/02 B23H11/00 G01N2201/102 G05B19/4065 G05B2219/37243
US: 382/152



Family:

Publication number	Publication date	Application number	Application date
CN107153066 A	20170912	CN201710128444	20170306
DE102017103982 A1	20170907	DE201710103982	20170227
JP2017154237 A2	20170907	JP20160041937	20160304
JP6321703 B2	20180509	JP20160041937	20160304
US2017256050 AA	20170907	US20170444007	20170227

Priority:

JP20160041937 20160304

Probable Assignee: FANUC CORP

Assignee(s): (std)**:** FANUC CORP ; FANUC LTD

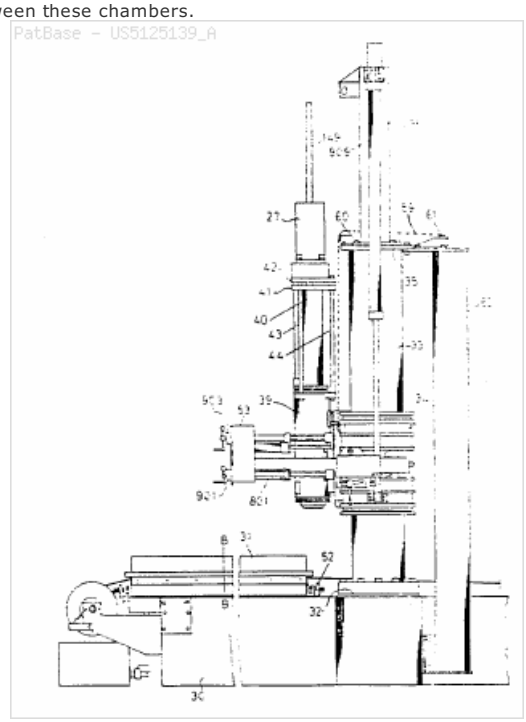
Inventor(s): (std): NAKAYAMA KAZUTAKA
Agent(s): AIWA INT PATENT AGENCY

372) Family number: 5063676 (US5125139A)

Title: HYDRAULIC DRIVE MECHANISM IN MACHINE TOOL

Abstract: A hydraulic drive mechanism in a machine tool, in which both the ends of a feed rod connected to frontward/reverse rotation drive means are journaled in bearings by a base frame and a cylinder frame, a feed plate is threadably mounted on the feed rod between the cylinder frame and the base frame, reciprocatively movable members are connected to the rods of double-acting cylinders, the primary chambers and secondary chambers of these cylinders are respectively connected to the primary chambers and secondary chambers of double-acting drive cylinders being oil pressure sources for the first-mentioned cylinders, the drive cylinders are fixed to one surface of the cylinder frame and have their rods inserted through holes provided in the cylinder frame, the distal ends of the rods of the drive cylinders turnably connected to the feed plate, and the other surface of the cylinder frame is confronted to the base frame with a proper spacing therebetween. In addition, drive-cylinder transfer valves which communicate and shut off the primary and secondary chambers of the drive cylinders are interposed in pipe lines laid between these chambers.

Classifications:
International (IPC 8-9): B23Q5/26 (Advanced/Invention); B23Q5/22 (Core/Invention)
International (IPC 1-7): B23Q5/26 F15B13/04
CPC: B23Q5/26 Y10T29/5107 Y10T408/6757 Y10T409/308288
European: B23Q5/26
US: 29/260A 29/26A 408/130 409/212 91/410



Family:

Publication number	Publication date	Application number	Application date
US5125139 A	19920630	US19910722136	19910627

Priority:
US19910722136 19910627

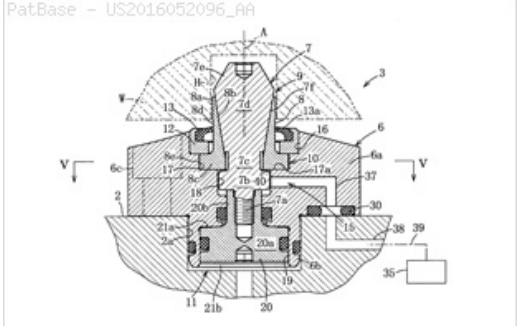
Probable Assignee: OHTA TADASHI
Assignee(s): (std): OHTA TADASHI
Inventor(s): (std): OHTA TADASHI

373) Family number: 57610678 (US2016052096A)

Title: POSITIONING DEVICE

Abstract: A positioning device capable of increasing the amount of diametrical expansion of an engagement member to be engaged in a cylindrical hole in a workpiece, and capable of performing positioning while not exerting any force on the workpiece in the downward direction positions a cylindrical hole (Ha) in a workpiece (W) in a first direction while permitting shifting thereof in a second direction, the device comprising: the insertion shaft member; a hydraulic cylinder for driving the insertion shaft member; a pair of engagement members; a taper engagement mechanism for shifting the engagement members to increase their diameter; and a movement permitting holding mechanism that, along with supporting the engagement members, so that they cannot shift in the first direction but are capable of shifting in the second direction.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q11/00 B23Q3/06 B23Q3/18 B25B1/00 (Advanced/Invention)
CPC: B23Q3/18 B23Q11/00 B23Q3/06 B23Q2703/00 B23Q2716/00 B23Q1/009
US: 269/20



Family:

Publication number	Publication date	Application number	Application date
CN105189036 A	20151223	CN201480019212	20140214
EP2987587 A1	20160224	EP20140784813	20140214
EP2987587 A4	20170412	EP20140784813	20140214
JP2014205219 A2	20141030	JP20130084577	20130415
JP6222688 B2	20171101	JP20130084577	20130415
KR20150141998 A	20151221	KR20157031829	20140214
TW201446404 A	20141216	TW20140107085	20140303
TWI601594 B	20171011	TW20140107085	20140303
US2016052096 AA	20160225	US20140782398	20140214
US10035227 BB	20180731	US20140782398	20140214
WO14171173 A1	20141023	WO2014JP53535	20140214

Priority:

JP20130084577 20130415 WO2014JP53535 20140214

Probable Assignee: PASCAL ENGINEERING CORP

Assignee(s): (std): PASCAL ENG CORP

Assignee(s): PASCAL ENGINEERING CORP

Inventor(s): (std): KAWAKAMI TAKAYUKI

Agent(s): ROBERTS MARK PETER; OKAMURA TOSHIO; NORRIS MCLAUGHLIN AND MARCUS PA

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

374) Family number: 73423678 (WO19048610A1)

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Title: EXCHANGEABLE OPTICAL MODULE FOR A LASER MACHINING MACHINE

Abstract: The present invention relates to an optical module (2) for a machine (1) for machining workpieces and/or for producing moulded bodies by location-selective solidification of material powder to form connected regions by means of a focused laser beam. The optical module (2) comprises a housing (8) having means for releasably attaching the optical module (2) to the machine (1). According to the invention, a plurality of optical components (4, 14) are arranged in or on the housing (8) to collimate and focus the laser beam.

Classifications:

International (IPC 8-9): B22F3/105 B23K26/046 B23K26/06 B23K26/064 B23K26/14 B23K26/34 B23K26/70 G02B27/00 G02B27/14 G02B7/02 G02B7/08 G02B7/14 G02B7/16 G02B7/18 H01S3/00 (Advanced/Invention)

CPC: G02B7/16 B22F3/1055 B22F2003/1056 B23K26/046 B23K26/0648 B23K26/0665 B33Y30/00 B33Y40/00 G02B7/028 G02B7/08 G02B7/14 G02B7/1815 G02B27/0006 G02B27/141 H01S3/005 B23K26/0006 B23K26/0643 B23K26/1476 B23K26/342

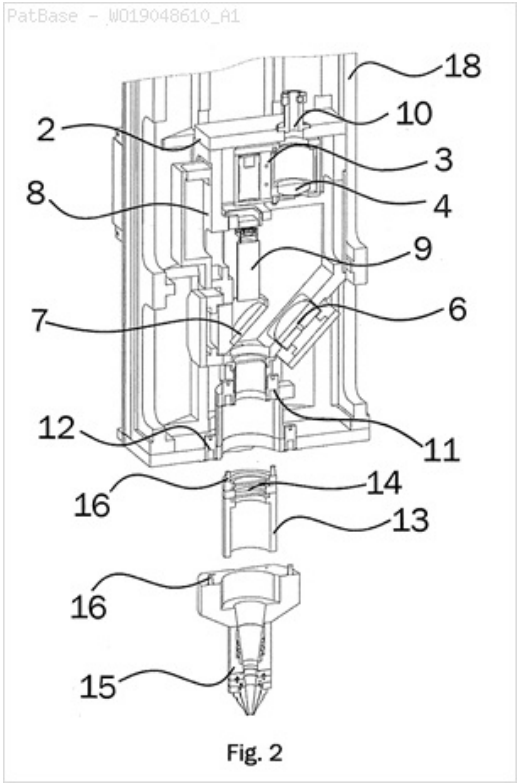


Fig. 2

Family:

Publication number	Publication date	Application number	Application date
DE102017215838 A1	20190307	DE201710215838	20170907
WO19048610 A1	20190314	WO2018EP74133	20180907

Priority:

DE201710215838 20170907

Probable Assignee: SAUER GMBH

Assignee(s): (std): SAUER GMBH

Inventor(s): (std): ABT ANDREAS ; STUERMER UDO

Agent(s): MERH IP MATIAS ERNY REICHL HOFFMANN PATENTANWAELTE PARTG MBB

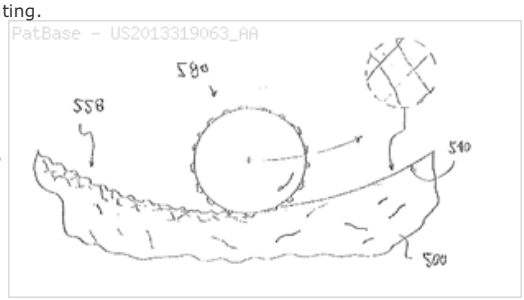
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

375) Family number: 51335679 (US2013319063A)

Title: MACHINING METHOD AND MACHINING TOOL FOR MACHINING A CURVED WORKPIECE SURFACE, AND WORKPIECE

Abstract: In a machining method for machining a curved workpiece surface (210) of a workpiece (200), a roll-embossing operation is carried out. At least one rolling element (180A, 180B, 180C) of a machining tool (100) is rolled here under a contact pressure against a section (198) to be machined of the curved workpiece surface. An external surface of the rolling element has a rough surface structure in at least one working section (190A, 190B, 190C) intended for rolling contact with the workpiece surface. The contact pressure is set in such a manner that, during the rolling, a rough roll-embossed structure is produced by local deformation of workpiece material without removing material in the machined region of the workpiece surface. The machining method can be used, for example, for machining the internal surface of a bore in a workpiece, in particular for roughening the workpiece surface for a subsequent coating.

Classifications:
International (IPC 8-9): B21B15/00 B21H7/14 B21H7/18 B23B27/24 B23P9/02 C23C4/02 (Advanced/Invention)
CPC: B21B15/00 B23B41/12 B23B2215/24 B23P9/025 C23C4/18 C23C30/005 C23C4/06 F02F1/20 B21H7/14 B21H8/005 B24B39/023 B21H7/18 B23B27/24 B23P9/02 C23C4/02
European: B21H7/18 B23B27/24 B23B41/12 B23P9/02 C23C30/00B C23C4/02 C23C4/06 C23C4/18 F02F1/20 L23B215/24
US: 72/252.5



Family:

Publication number	Publication date	Application number	Application date
CN103442823 A	20131211	CN201180068140	20111213
CN103442823 B	20161221	CN201180068140	20111213
DE102010063704 A1	20120621	DE201010063704	20101221
DE102011079757 A1	20130131	DE201110079757	20110725
EP2654986 A1	20131030	EP20110796999	20111213
KR20140010373 A	20140124	KR20137019292	20111213
US2013319063 AA	20131205	US20110996947	20111213
WO12084612 A1	20120628	WO2011EP72647	20111213

Priority:
DE201010063704 20101221 DE201110079757 20110725 WO2011EP72647 20111213

Probable Assignee: ELGAN DIAMANTWERKZEUGE GMBH AND CO KG

Assignee(s): (std)**:** ELGAN DIAMANTWERKZEUGE GMBH AND CO KG ; SCHMID JOSEF ; WITT THOMAS ; XAVIER FABIO ANTONIO ; ZELLER STEFFEN

Inventor(s): (std)**:** SCHMID JOSEF ; XAVIER FABIO ANTONIO ; ZELLER STEFFEN ; WITT THOMAS ; XAVIER FABRO ANTONIO

Agent(s): PATENTANWAELTE RUFF WILHELM BEIER DAUSTER AND PARTNER; PATENTANWAELTE RUFF WILHELM BEIER DAUSTER AND PARTNER

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

376) Family number: 74340680 (WO19091512A1)

Title: METHOD AND DEVICE FOR DETERMINING THE POSITION OF A PISTON OF A HYDRAULIC CYLINDER OF A MACHINE TOOL

Abstract: The invention relates to a method and to a device (28) for determining the position of a piston (30) of a hydraulic cylinder (26) of a machine tool (10). In order to enable more accurate position detection, in particular in order to monitor the function of the hydraulic cylinder (26) during operation of the machine tool (10), the method comprises: a) producing a reference signal by sending an acoustic signal through a cylinder wall (32) of the hydraulic cylinder (26) to the piston (30), which is in a reference position, and capturing an echo signal as the reference signal; b) sending the acoustic signal through the cylinder wall (32) to the piston (30) in order to determine the position of the piston and capturing the echo signal as a measurement signal; c) producing a comparison signal from the measurement signal and the reference signal; and d) determining the propagation time from the comparison signal in order to determine the position of the piston (30) from the propagation time. The device (28) is designed accordingly for carrying out the method. The invention further relates to a hydraulic cylinder unit (24) having the device and to a machine tool (10) having said hydraulic cylinder unit.

Classifications:
International (IPC 8-9): B23Q3/08 F15B15/28 G01B17/00 G01S15/08 G01S15/88 G01S7/52 (Advanced/Invention)
CPC: G01S15/88 B23Q3/082 F15B15/2884 G01S7/52006 G01S15/08 G01S2007/52014

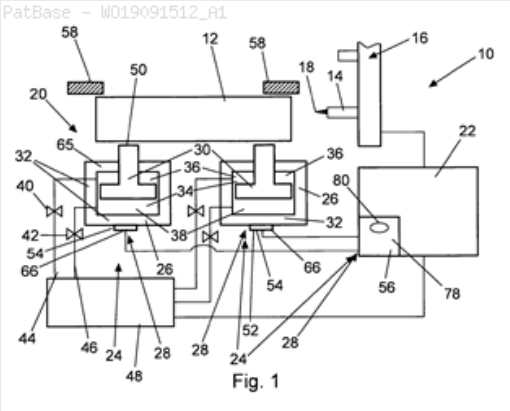


Fig. 1

Family:

Publication number	Publication date	Application number	Application date
DE102017129445 A1	20190516	DE201710129445	20171211
WO19091512 A1	20190516	WO2018DE100875	20181026

Priority:

DE201710126494 20171110 DE201710129445 20171211

Probable Assignee: GROB GMBH AND CO KG

Assignee(s): (std)**:** GROB GMBH AND CO KG

Assignee(s): GROB WERKE GMBH AND CO KG

Inventor(s): (std)**:** SCHMIDT ROBERT ; STRELLER MATTHIAS ; WIESER HERBERT

Agent(s): KASTEL PATENTANWAELTE PARTG MBB ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

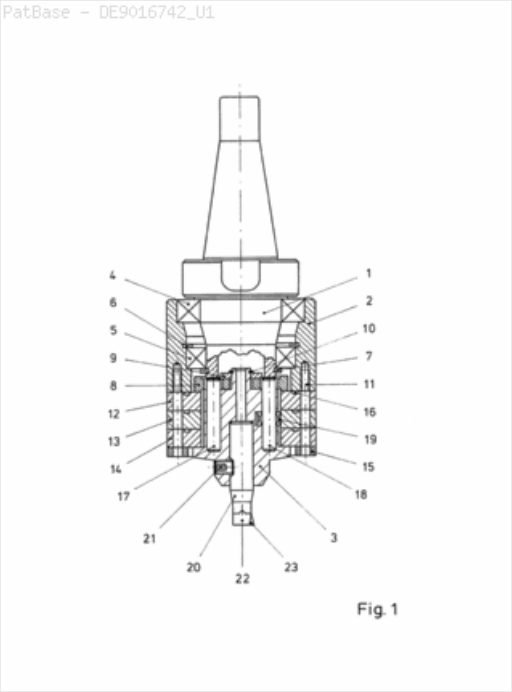
377) Family number: 17689680 (DE9016742U1)

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Abstract: Source: DE9016742U1 [DE] (Claim 1) 1. Geraet, im folgenden Formbohrer genannt, fuer die spanende Herstellung von Formbohrungen, z. B Vierkant-, Sechskant-, Ellipsen-, Polygonbohrungen und dergleichen, im wesentlichen bestehend aus einem Antriebsschaft, einem Gehaeuse und einem Bohrkopf, wobei der Antriebsschaft im Gehaeuse gelagert ist und waehrend des Betriebs rotiert, das Gehaeuse waehrend des Betriebs feststeht, und eine rotative Kraftkomponente vom Antriebsschaft auf den Bohrkopf uebertragen wird, dadurch gekennzeichnet, dass dem Gehaeuse mechanische Elemente zur zwangsweisen Steuerung des Bohrkopfes zugeordnet sind, um der rotativen Bewegung des Bohrkopfes laterale Bewegungen so zu ueberlagern, dass mindestens ein geometrischer Punkt des Bohrkopfes eine Bahn beschreibt, welche der Kontur einer herzustellenden Formbohrung entspricht.

Machine translation: (Claim 1) 1 Device, called in the following form drills for metal-cutting production of shaped holes, eg square, hexagon, ellipse, polygon bores and the like, essentially consisting of a drive shaft, a housing and a drilling head, wherein the drive shaft is mounted in the housing and during operation rotates the housing during it is the operation, and a rotational component of force from the drive shaft about wear on the drill head, characterized in that the casing are associated with mechanical elements for forcible control of the drill head to the rotational movement of the drill lateral movements so to superimpose that at least one geometric point of the drill head describes a path which corresponds to the contour of the shaped hole.

Classifications:
International (IPC 8-9): B23Q35/26 (Advanced/Invention);
B23Q35/00 (Core/Invention)
International (IPC 1-7): B23B41/04 B27G15/00
CPC: B23Q35/26
European: B23Q35/26



Family:

Publication number	Publication date	Application number	Application date
DE9016742 U1	19920521	DE19900016742U	19901211

Priority:

DE19900016742U 19901211

Probable Assignee: HOERMANSDOERFER GERD 3167 BURGDORF DE

Assignee(s): HOERMANSDOERFER GERD 3167 BURGDORF DE

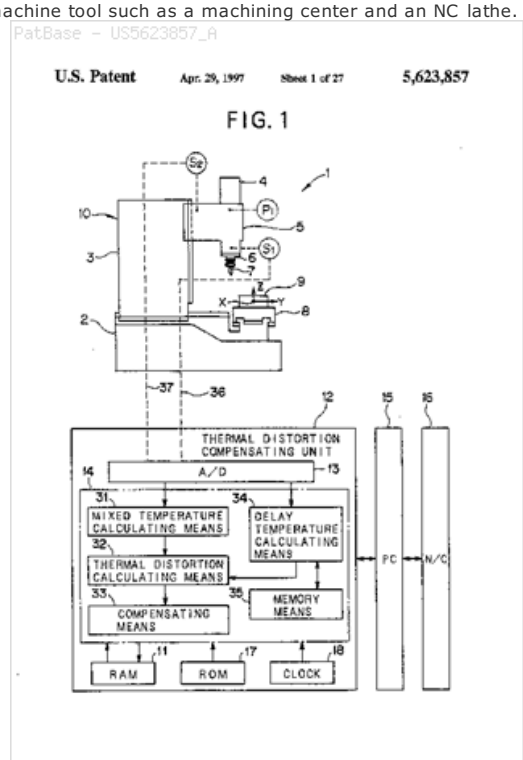
378) Family number: 10120681 (US5623857A)

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Title: METHOD AND APPARATUS FOR COMPENSATING FOR THERMAL DISTORTION FOR A MACHINE TOOL

Abstract: A temperature change of a machine tool which is influenced by a heat generating source is detected by a temperature sensor. A temperature change having substantially the same time constant as a time constant of a thermal distortion of the machine tool is calculated by using the detected temperature change. A machining error is corrected on the basis of the thermal distortion corresponding to the calculated temperature change. According to a method and an apparatus for compensating for the thermal distortion in the machine tool, it is possible to perform the compensation relative to the thermal distortion with high precision. The invention is applied to a machine tool such as a machining center and an NC lathe.

Classifications:
International (IPC 8-9): B23Q11/12 B23Q15/18 G05B19/404 (Advanced/Invention); B23Q11/14 B23Q15/00 (Advanced/Non-invention); B23Q15/007 G05B19/404 (Core/Invention)
International (IPC 1-7): B23Q11/12 B23Q15/18 G05B19/404
CPC: Y10S82/90 B23Q15/18 G05B2219/49206 G05B2219/49219 Y10T82/10 Y10T82/2552 Y10T409/303976
European: B23Q15/18 S05B219/49206 S05B219/49219
US: 409/135 82/1.11 82/11.1 82/142 82/900



Family:

Publication number	Publication date	Application number	Application date

CN1077000 C	20020102	CN19951005559	19950614
CN1126130 A	19960710	CN19951005559	19950614
DE69525683 D1	20020411	DE19956025683	19950613
DE69525683 T2	20021121	DE19956025683T	19950613
EP0687522 A1	19951220	EP19950109116	19950613
EP0687522 B1	20020306	EP19950109116	19950613
JP2004042260 A2	20040212	JP20030206691	20030808
JP3792266 B2	20060705	JP19950024741	19950119
JP8174380 A2	19960709	JP19950024741	19950119
KR19960000412 A	19960125	KR19950012666	19950520
TW320588 B	19971121	TW19950103121	19950331
US5623857 A	19970429	US19950458305	19950602

Priority:

JP19940158105 19940616 JP19940284357 19941024 JP19950024741 19950119 JP20030206691 20030808

Probable Assignee: MORI SEIKI HITECH CO LTD

Assignee(s): (std): HITACHI FINE MACHINE CO LTD ; HITACHI SEIKI KK ; MORI SEIKI HITECH CO LTD

Assignee(s): HITACHI SEIKI CO ; HITACHI SEIKI CO LTD ; HITACHI FINE MACHINE CO

Inventor(s): (std): OBA HAJIMU ; SAKURABA HAJIME

Inventor(s): HAJIMU OBA

Designated states: DE GB IT

379) Family number: 73423681 (WO19048608A1)

© PatBase

Title: OPTICAL MODULE HAVING A DEVICE FOR AUTOMATICALLY CHANGING A COLLIMATION OPTIC

Abstract: The invention relates to an optical module (2) for a machine (1) for machining workpieces and/or for producing molded bodies by way of location-selective solidification of material powder into contiguous regions by means of a laser beam. The optical module (2) comprises a housing (8) having means for releasably fastening the optical module (2) to the machine (1), and a collimation optics changer (3) releasably arranged in the housing (8), having at least two collimation optics (4), which can be moved into a beam path of the laser beam for collimating the laser beam. According to the invention, the collimation optics changer (3) has a mechanism for automatically changing the collimation optics (4).

Classifications:

International (IPC 8-9): B22F3/105 B23K26/046 B23K26/06 B23K26/064 B23K26/14 B23K26/144 B23K26/34 B23K26/70 B33Y30/00 B33Y40/00 G02B27/00 G02B27/14 G02B7/02 G02B7/08 G02B7/14 G02B7/16 G02B7/18 H01S3/00 (Advanced/Invention)

CPC: G02B7/028 B22F3/1055 B22F2003/1056 B23K26/0648 B23K26/1462 B33Y30/00 B33Y40/00 G02B7/08 G02B7/14 G02B7/16 G02B7/1815 G02B27/0006 G02B27/141 H01S3/005 B23K26/123 B23K26/144 B23K26/342 B23K26/703

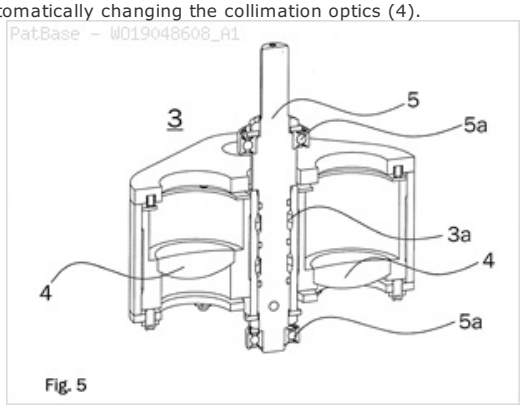


Fig. 5

Family:

Publication number	Publication date	Application number	Application date
DE102017215839 A1	20190307	DE201710215839	20170907
WO19048608 A1	20190314	WO2018EP74131	20180907

Priority:

DE201710215839 20170907

Probable Assignee: SAUER GMBH

Assignee(s): (std): SAUER GMBH

Inventor(s): (std): ABT ANDREAS ; STUERMER UDO

Agent(s): MERH IP MATIAS ERNY REICHL HOFFMANN PATENTANWAELTE PARTG MBB

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

380) Family number: 6520682 (US4743144A)

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Title: FACE MILLING CUTTING TOOL

Abstract: A face milling cutting tool comprises a cutter body and cutting bits or tips mounted thereon and is characterized in that each cutting tip: is of flat shape with at least one cutting edge of convexly curved contour and has at one part of its peripheral surface a rake surface; is so tangentially mounted that a front clearance face thereof leaves an axial relief angle relative to the surface of workpiece being machined; and is so mounted that the radial rake angle of the curved cutting edge is of a large negative value. The contour shape of a cutting tip may be substantially triangular, rectangular, parallelogrammatic, circular, elliptical, or any other suitable closed figure, or a combination of any of such contour shapes.

Classifications:

International (IPC 8-9): B23C5/00 B23C5/04 B23C5/06 B23C5/20 B23C5/22 (Advanced/Invention);

B23C5/00 B23C5/02 B23C5/16 (Core/Invention)
International (IPC 1-7): B23C5/04 B23C5/06 B23C5/20
CPC: Y10T407/1924 Y10T407/1936 Y10T407/1964 Y10T407/23 B23C5/2226 B23C5/207 B23C2200/0438 B23C2200/045 B23C2200/0461 B23C2200/0483 B23C2200/367
European: B23C5/20B4 B23C5/22B2 L23C200/04E1 L23C200/04G L23C200/04I1 L23C200/04L1 L23C200/36F
US: 407/113 407/42 407/48 407/62

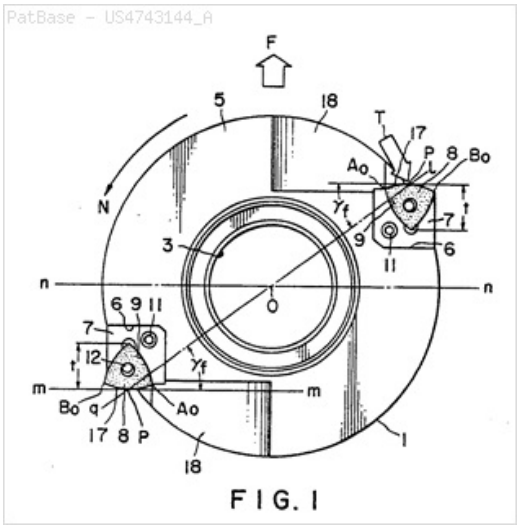


FIG. 1

Family:

Publication number	Publication date	Application number	Application date
DE3673951 D1	19901011	DE19863673951	19861007
EP0222156 A1	19870520	EP19860113891	19861007
EP0222156 B1	19900905	EP19860113891	19861007
JP1909799 C3	19950309	JP19850226200	19851011
JP6020657 B4	19940323	JP19850226200	19851011
JP62088508 A2	19870423	JP19850226200	19851011
KR19870003839 A	19870504	KR19860008433	19861008
KR900003576 B1	19900526	KR19860008433	19861008
US4743144 A	19880510	US19860917904	19861010

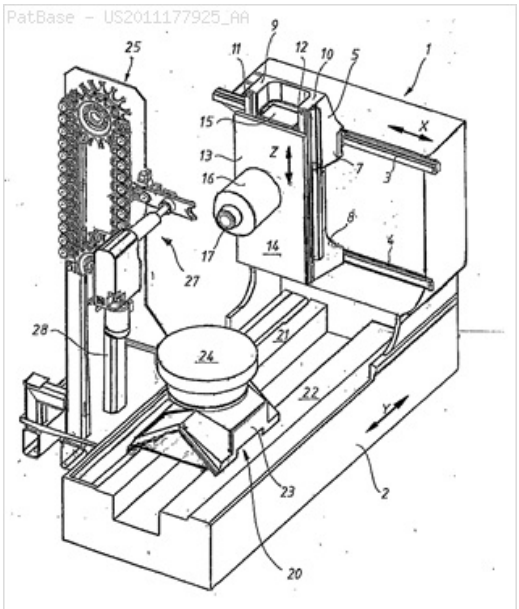
Priority:
JP19850226200 19851011

Probable Assignee: TOKYO SHIBAURA ELECTRIC CO
Assignee(s): (std)**:** TOSHIBA CORP ; TOSHIBA KAWASAKI KK ; TOSHIBA KK
Assignee(s): TOSHIBA KAWASAKI KANAGAWA JP KK ; TOSHIBA OF KK ; KABUSHIKI KAISHA TOSHIBA ; KABUSHIKI KAISHA TOSHIBA KAWASAKI KANAGAWA JP ; TOKYO SHIBAURA ELECTRIC CO
Inventor(s): (std)**:** SHIKADA HIROSHI ; SHIKATA HIROSHI
Inventor(s): SHIKATA HIROSHI YOKOHAMA SHI KANAGAWA KEN JP
Designated states: CH DE FR GB IT LI SE

381) Family number: 42173682 (US2011177925A)

Title: TOOL CHANGER FOR MACHINE TOOLS

Abstract: A tool changer for machine tools, especially for milling machines, with a tool double gripper, which is attached at the free end of an axially displaceable and rotatably mounted shaft and has two pliers-like tool holders. A drive motor is coupled kinematically with the shaft for the linear and rotary movements of the tool double gripper and with transmission means for converting the rotation of the motor shaft of the drive motor into the linear and rotary movements of the tool double gripper. The transmission means contains a worm gear driven by the drive motor, the worm gear drives a cam plate at the front end of which a lifting curve for the linear movement and a rotation curve are constructed. A driver of a rack and pinion drive coupled rotationally with the shaft engages the rotation curve, and a driver of a pivoting linkage translationally coupled with the shaft engages the lifting curve and is guided by it.
Classifications:
International (IPC 8-9): B23Q1/48 B23Q3/155 B23Q3/157 B23Q5/34 (Advanced/Invention);
B23Q1/25 B23Q3/155 B23Q3/157 B23Q5/22 (Core/Invention)
CPC: Y10T483/1755 Y10T483/1767 Y10T483/1779 B23Q1/4876 B23Q5/347 B23Q3/15766 B23Q3/1554 B23Q2003/155428 B23Q2003/155439
European: B23Q1/48G B23Q3/155D3 B23Q5/34B8
US: 483/14 483/14P 483/39 483/44 483/49



Family:

Publication number	Publication date	Application number	Application date
CN102123822 A	20110713	CN200980131910	20090707
CN102123822 B	20140618	CN200980131910	20090707
DE202008009035 U1	20080911	DE200820009035U	20080707
DE502009009204 D1	20140528	DE200950009204T	20090707
EP2318178 A2	20110511	EP20090777013	20090707
EP2318178 B1	20140416	EP20090777013	20090707
ES2461142 T3	20140516	ES20090777013T	20090707
IN00535KN2011 A	20111125	IN2011KN00535	20110202
JP2011526846 T2	20111020	JP20110517023T	20090707
JP5529125 B2	20140625	JP20110517023T	20090707
US2011177925 AA	20110721	US20090003248	20090707
WO10003642 A2	20100114	WO2009EP04912	20090707
WO10003642 A3	20100729	WO2009EP04912	20090707
WO10003642 A4	20101028	WO2009EP04912	20090707

Priority:

DE200820009035U 20080707 EP20090777013 20090707 WO2009EP04912 20090707

Probable Assignee: DECKEL MAHO PFRONTEN GMBH

Assignee(s): (std)**:** DECKEL MAHO PFRONTEN GMBH ; KRAFT OLIVER ; MAYR MATTHIAS

Inventor(s): (std)**:** MAYR MATTHIAS ; KRAFT OLIVER ; MATTHIAS MAYR ; OLIVER KRAFT

Agent(s): BEETZ AND PARTNER MBB PATENTANWAELTE; BEETZ AND PARTNER; UNGRIA JAVIER

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

382) Family number: 73423685 (WO19048611A1)

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Title: EXCHANGEABLE FOCUSING MODULE

Abstract: The present invention relates to a focusing module (13) for a machine (1) for machining workpieces and/or for producing shaped articles by location-selective solidification of material powder to form contiguous regions by means of a laser beam. The focusing module (13) comprises a substantially cylindrical carrier housing and focusing optics (14). According to the invention the focusing module (13) comprises fastening means (16) for releasably fastening the focusing module (13) to a laser machining head (2) of the machine (1).

Classifications:

International (IPC 8-9): B22F3/105 B23K26/046 B23K26/06 B23K26/064 B23K26/14 B23K26/34 B23K26/70 G02B27/00 G02B7/02 G02B7/08 G02B7/14 G02B7/18 H01S3/00 (Advanced/Invention)

CPC: G02B27/0006 B22F3/1055 B22F2003/1056 B33Y30/00 B33Y40/00 G02B7/028 G02B7/08 G02B7/14 G02B7/1815 H01S3/005 B23K26/144 B23K26/1482 B23K26/342

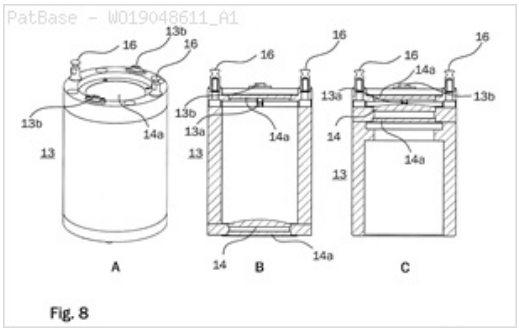


Fig. 8

Family:

Publication number	Publication date	Application number	Application date
DE102017215840 A1	20190307	DE201710215840	20170907
WO19048611 A1	20190314	WO2018EP74134	20180907

Priority:

DE201710215840 20170907

Probable Assignee: SAUER GMBH

Assignee(s): (std)**:** SAUER GMBH

Inventor(s): (std)**:** ABT ANDREAS ; STUERMER UDO

Agent(s): MERH IP MATIAS ERNY REICHL HOFFMANN PATENTANWAELTE PARTG MBB

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

383) Family number: 12852685 (DE19548431A1)

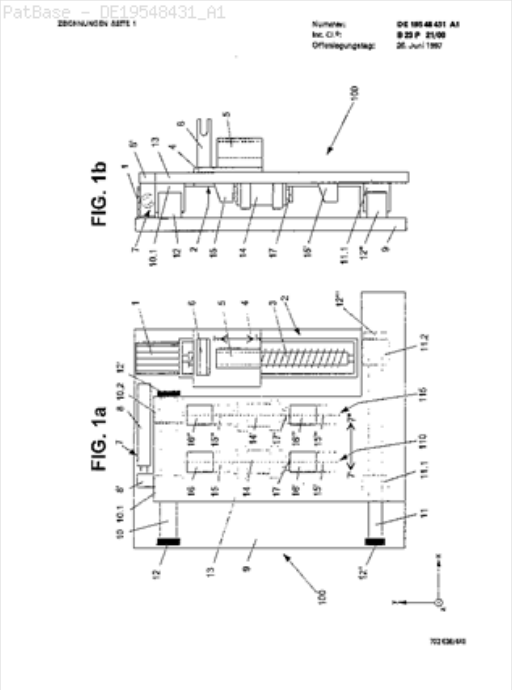
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Title: Device for automatic assembly of press-in elements, especially for coupling to manipulator, e.g. industrial robot

Abstract: For the realisation of modular type construction a base support module (100) with at least one module interchange system (110,115) is provided. A drilling or milling module is provided for forming the recesses for the press-in elements. The drilling or milling module has a blast air unit with a nozzle for blowing out swarf remaining behind in the recesses. A jointing module is provided for driving in the press-in elements.

Classifications:

International (IPC 8-9): B23P21/00 B27M3/00 (Advanced/Invention); B23P21/00 B27M3/00 (Core/Invention)
International (IPC 1-7): B23P21/00 B25B27/00
CPC: B23P21/00 B27M3/0006
European: B23P21/00 B27M3/00C



Family:

Publication number	Publication date	Application number	Application date
DE19548431 A1	19970626	DE19951048431	19951222
DE19548431 C2	19981217	DE19951048431	19951222

Priority:

DE19951048431 19951222

Probable Assignee: FRAUNHOFER GES

Assignee(s): (std)**:** FRAUNHOFER GES ; FRAUNHOFER GES FORSCHUNG

Assignee(s): FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWAN ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E V 80636 MUENCHEN DE ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG EV 80636 MUENCHEN DE

Inventor(s): (std)**:** HOERZ THOMAS DIPL ING ; BREUTER MARTIN

Inventor(s): BREUTER MARTIN 97705 BURKARDROTH DE ; HOERZ THOMAS DIPL ING 70794 FILDERSTADT DE

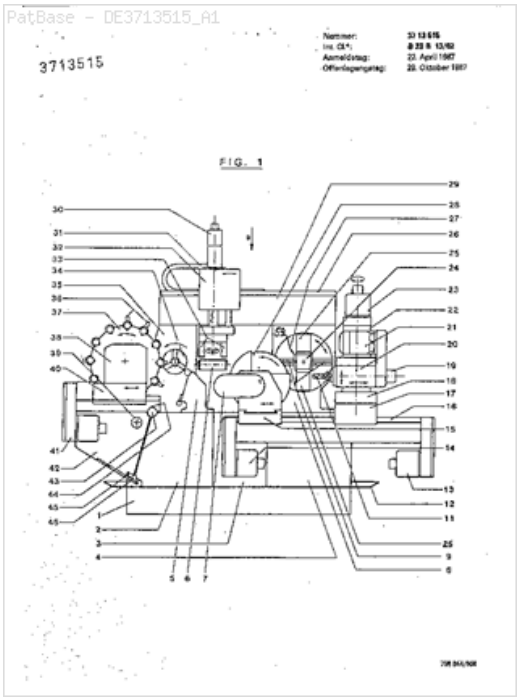
384) Family number: 2583686 (DE3713515A1)

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Title: Flexible, cutting production cell or machining centre

Abstract: The invention relates to a machining centre which contains on a frame a milling attachment with a rotatably mounted milling table with four adjustable jaws. To increase the machining diversity and precision, provision is made according to the invention for the respective, preferably plane, jaws (9, 25) of each jaw pair to clamp concentrically to one another. It is advantageous if the milling table (27), mounted in a bearing housing if need be mounted in a displaceable manner, is provided with a tunnel (59) concentric to the axis of rotation, and if the workpieces to be machined can be fed to the milling table (27) through the bearing housing and the tunnel (59) from its side remote from the jaws (9, 25) and can be fed into the gripping area of the jaws (9, 25).

Classifications:
International (IPC 8-9): B23B31/16 B23Q1/26 B23Q3/157 B23Q39/04 B23Q7/04 F16C29/02 (Advanced/Invention); B23Q1/26 B23Q7/04 F16C29/00 (Core/Invention)
International (IPC 1-7): B23B11/00 B23B13/02 B23Q1/20 B23Q39/00
CPC: B23B31/16 B23Q3/15706 B23Q39/04 F16C2322/39 F16C29/02 B23Q1/26 B23Q7/047
European: B23B31/16 B23Q1/26 B23Q3/157B B23Q39/04 B23Q7/04F F16C29/02



Family:

Publication number	Publication date	Application number	Application date
AT108486 A	19880315	AT19860001084	19860423
AT12187 A	19880515	AT19870000121	19870123
AT386780 B	19881010	AT19860001084	19860423
AT387174 B	19881212	AT19870000121	19870123
DE3713515 A1	19871029	DE19873713515	19870422

Priority:

AT19860001084 19860423 AT19870000121 19870123

Probable Assignee: CERNY ANTON

Assignee(s): (std)**:** CERNY ANTON

Inventor(s): (std)**:** CERNY ANTON

385) Family number: 49177686 (BRPI0904158A)

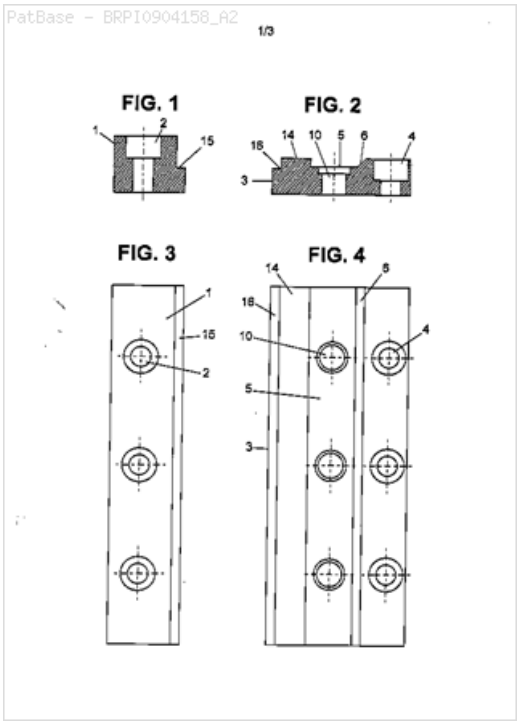
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Title: dispositivo para fixacao de pecas em maquinas operatrizes Device to clamp workpieces in machine tools (Machine translation)

Abstract: Source: BRPI0904158A [PT] 1 3 tf RESUMO "DISPOSITIVO PARA FIXACAO DE PECAS EM MAQUINAS OPERATRIZES", idealizado a fim de proporcionar um melhor ajuste e fixacao com precisao de pecas em maquinas operatrizes de centro de usinagem, permite utilizar a area e o curso total da mesa da maquina em qualquer eixo, x, y, e z, independente do tamanho da peca, minimizando e facilitando o seu manuseio, devido a superficie superior da peca ficar totalmente livre para ser usinada, e facilitando o alinhamento ou realinhamento quando necessario, nao exigindo grandes habilidades para seu devido ajuste e fixacao caracterizado por ser constituido por uma guia fixa(I), com furacoes(2) a ser alinhada e fixada por parafusos(P) junto a mesa da maquina, uma guia movel(3), para ajuste ao tamanho e fixacao da peca(A), fixada tambem junto as furacoes(4), e dotada na parte superior de uma canaleta(5) com face angular(6) onde acopla-se a guia de ajuste(7), tambem com base de face angular(8), havendo a furacao(9) que em conjunto com as furacoes(lO) alinhadas e distribuidas no interior da canaleta(5) proporciona a passagem dos parafusos(P) de fixacao, assim como o acople de molas(M) entre a guia de ajuste(7) e a guia movel(3), sendo a guia de ajuste(7) dotada de uma face lateral angular(ll) que em conjunto com a barra de ajuste(12) de conformacao cilindrica, mas com lateral facetada(13), desliza sobre parte superior plana(14) fixando a peca(A) a ser usinada, deixando a parte superior completamente livre para ser trabalhada, sendo a peca(A) apoiada sobre uma especie de trilho conformado pela a face em "L"(15) da guia fixa(I) e a face em "L"(16) da guia movel(3), ficando suspensa com relacao a mesa da maquina, possibilitando quando necessario a fu racao traspassada da peca(A), sem riscos de causar danos a mesa da maquina.

Machine translation: 1 3 H SUMMARY "DEVICE FOR PARTS OF Fixing IN Production Machinery", designed to provide a better fit and fixation with precision of parts in machine tool machining center, allows you to use the area and the full travel of the machine table on any axis, x, y, and z, independent of part size, minimizing and facilitating their handling, because the upper surface of the workpiece to be totally free to be machined, and facilitating alignment or realignment when necessary, not requiring great skills to its proper fit and fixation, characterized by being constituted by a fixed guide (I) with holes (2) to be aligned and fixed by screws (P) next to the machine table, a movable guide (3) for adjusting the size and fixation of the piece (A), fixed also with the hurricanes (4), and provided at the top of a channel (5) with an angular face (6) where it engages the adjustment guide (7), also with face base angle (8) having a bore (9) which together with the holes (LO) aligned and distributed inside the channel (5) provides for the passage of screws (P) fixation as well as the spring engages (M) between the fitting guide (7) and the movable guide (3), with an adjustment guide (7) having an angular sidewall (II) which together with the adjustment bar (12) of cylindrical conformation, but with faceted side (13) slides on a flat upper part (14) fixing the piece (A) to be machined, leaving the top of fully free to be worked, with the part (A) supported on a kind of track formed by the face "L" (15) of the fixed guide (I) and face in "L" (16) of the mobile guide (3), getting suspended in relation to the machine table, enabling, when necessary the fu ration pierced the piece (A) with no risk of damage to the machine table.

Classifications:
International (IPC 8-9): B23Q3/00 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
BRPI0904158 A2	20110628	BR2009PI04158	20091023

Priority:

BR2009PI04158 20091023

Probable Assignee: MARCELO L XAVIER ME

Assignee(s): (std)**:** MARCELO L XAVIER ME

Inventor(s): (std)**:** XAVIER MARCELO LIMA

Inventor(s): MARCELO LIMA XAVIER

386) Family number: 67173687 (US2017295303A)

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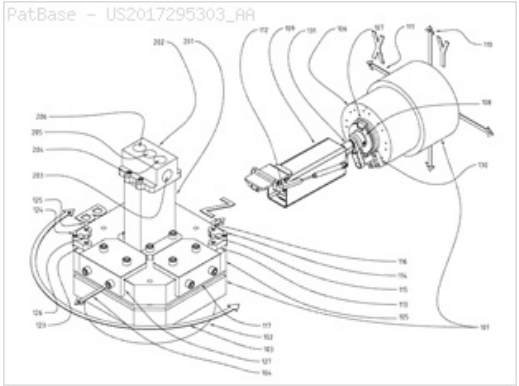
Title: CONTROLLED CAMERA OFF-AXIS ALIGNMENT FOR THE DYNAMIC BORE-SURFACE-STRUCTURE INSPECITIONS VIA ROTATIONAL/ORBITAL/ROTATIONAL ORBITING ANGULAR OFF-AXIS CONTROLLED VISION CAMERA SYSTEMS AND THEIR CORRESPONDING OPTICAL POSITIONAL/ANGULAR ALIGNMENT DATUM'S

Abstract: An orbiting camera mount including an anti-rotation arm for connection to a spindle nose of a machine tool. A stationary pulley, having a pulley bore, is fixed to an end portion of the anti-rotation arm. The mount also includes a mounting post for connection to a spindle of the machine tool. The mounting post includes a drive shaft portion extending through the pulley bore. A drive housing is fixed to the drive shaft portion for rotation therewith and an output shaft is supported in the drive housing. A driven pulley is fixed to the output shaft and a drive belt extends between the stationary and driven pulleys, whereby rotation of the mounting post causes the output shaft to orbit around the drive shaft portion. A camera mounting stem is coupled to the output shaft and is oriented at a non-zero angle with respect to the drive shaft portion.

Classifications:

International (IPC 8-9): B23Q17/24 F16M11/08 F16M11/10 F16M11/18 G02B26/10 G03B17/56 G05B19/401 G05B19/406 H04N5/225 H04N5/232 (Advanced/Invention)

CPC: H04N5/23209 G05B19/406 G03B17/561 G05B2219/37206 G05B2219/37208 G05B2219/50026 H04N5/2251 H04N5/2257 H04N5/232



Family:

Publication number	Publication date	Application number	Application date
US2017295303 AA	20171012	US20170480594	20170406
US10095091 BB	20181009	US20170480594	20170406
WO17177070 A1	20171012	WO2017US26460	20170406

Priority:

US20160319180P 20160406 US20170480594 20170406

Probable Assignee: COSTA LARRY J

Assignee(s): (std): COSTA LARRY J

Inventor(s): (std): COSTA LARRY J

Agent(s): PERKINS COIE LLP; CARPENTER JOHN WRAY ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

387) Family number: 73423687 (WO19048612A1)

Title: POWDER NOZZLE FOR A LASER MACHINE TOOL

Abstract: The invention relates to a powder nozzle (15) for a tool (1) for machining workpieces and/or producing moulded bodies by location-selective compaction of material powder to form continuous regions by means of a laser beam. The powder nozzle (15) comprises a substantially rotationally symmetric base body with an axial through-opening for the laser beam and securing means (16) for detachably securing the powder nozzle (15) to a laser machining head (2) of the tool (1). According to the invention, the powder nozzle (15) comprises means for cooling the powder nozzle (15).

Classifications:
International (IPC 8-9): B22F3/105 B23K26/144 B23K26/342 B29C64/153 B33Y30/00 B33Y40/00 (Advanced/Invention)
CPC: B22F3/1055 B22F2003/1056 B23K26/342 B29C64/153 B33Y30/00 B23K26/144 B23K26/1482

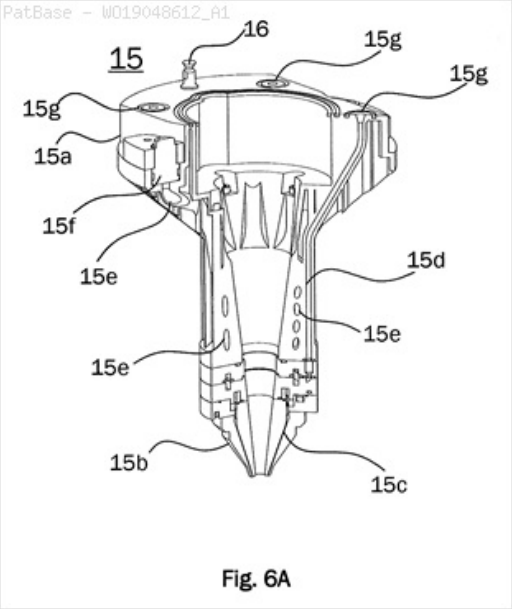


Fig. 6A

Family:

Publication number	Publication date	Application number	Application date
DE102017215841 A1	20190307	DE201710215841	20170907
WO19048612 A1	20190314	WO2018EP74135	20180907

Priority:
DE201710215841 20170907

Probable Assignee: SAUER GMBH

Assignee(s): (std): SAUER GMBH

Inventor(s): (std): STUERMER UDO ; ABT ANDREAS

Agent(s): MERH IP MATIAS ERNY REICHL HOFFMANN PATENTANWAELTE PARTG MBB

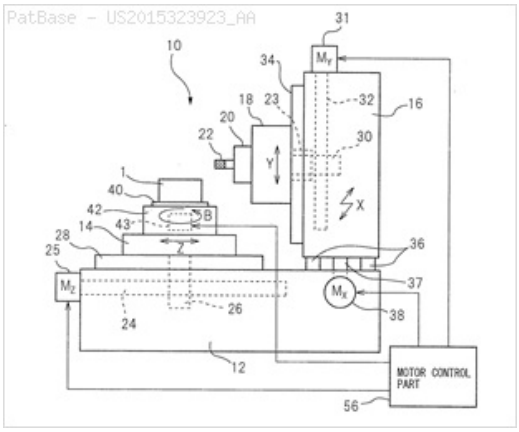
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

388) Family number: 55480695 (US2015323923A)

Title: CONTROL DEVICE FOR MACHINE TOOL AND MACHINE TOOL

Abstract: A control device for a machine tool for machining a workpiece while orbital movement is performed for causing an auto-rotating rotary tool to move in a circular manner, the control device comprising: a reading and interpreting unit for reading a machining program containing input information; and a computing unit for combining a first tool pathway along which a rotary tool travels and which has been set on the basis of input information about the travel of the rotary tool, and a second tool pathway along which the rotary tool orbits and which has been set on the basis of input information about the orbital movement, and for setting a third tool pathway along which the rotary tool travels in a machining shape while moving in an orbital manner.

Classifications:
International (IPC 8-9): B23C3/28 B23C3/34 B23Q15/00 G05B19/19 G05B19/4155 (Advanced/Invention)
CPC: G05B19/19 B23C3/28
US: 700/186



Family:

Publication number	Publication date	Application number	Application date
CN104428088 A	20150318	CN201280074310	20120628
CN104428088 B	20170829	CN201280074310	20120628
DE602012049680 D1	20180906	DE201260049680T	20120628
EP2868411 A1	20150506	EP20120880039	20120628
EP2868411 A4	20160224	EP20120880039	20120628
EP2868411 B1	20180808	EP20120880039	20120628
JP2014002228 A1	20160526	JP20140522306T	20120628
US2015323923 AA	20151112	US20120410008	20120628
US9886021 BB	20180206	US20120410008	20120628
WO14002228 A1	20140103	WO2012JP66570	20120628

Priority:

EP20120880039 20120628 WO2012JP66570 20120628

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std)**:** MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE ; TAKABE TOMOHIRO

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std)**:** TAKABE TOMOHIRO

Agent(s): WUESTHOFF AND WUESTHOFF PATENTANWAELTE PARTG MBB; THUM BERNHARD; AOKI ATSUSHI; SHIMADA TETSURO; MORRISON AND FOERSTER LLP; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

389) Family number: 56929697 (RU2012156207A)

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Title: MACHINE Vacuum Cleaning Systems (Machine translation)

Abstract: Source: RU2012156207A **Machine translation:** 1. Machine tool with dust extraction system consisting of a base with a slide mounted thereon, is moved along the base by passing the "screw-nut rolling" column of the table, moving along the slide, the tool magazine mounted on the bracket, characterized in that the spindle is equipped with high cooling system, which is a rotor rotating inside the stator in two radial bearings and axial electromagnetic support, and to ensure safe operation provided support for the rotor-catchers and measuring sensors, radial and axial, which converts signals from the control computer in the excitation current in the windings than the magnetomotive force is regulated, the rotor returns to the original position besides machining center equipped with a dust removal system of a working area comprising a removable dust receptacle configured to fit the shape of the workpiece, and to maximize the processing zone of the intake precipitating dust, which through a pivot compound allows to select the optimum absorption of dust duct connected to the inlet of the cyclone outlet comprising helically cover the exhaust pipe, a cylindrical portion and a conical shell, and the outlet conduit is attached a filter element, wherein the cyclone is mounted on a pedestal, wherein arranged in the Bunker Dust sealingly connected to the conical portion of the shell tsiklopa.2. The machine with dust removal system according to claim 1, characterized in that the coolant supply system to the spindle and comprises a chamber body with holes for entry and exit of cooling

Classifications:
International (IPC 8-9): B23Q3/155 (Advanced/Invention)

Family:

Publication number	Publication date	Application number	Application date
RU2012156207 A	20140627	RU20120156207	20121225

Priority:

RU20120156207 20121225

Probable Assignee: KOCHETOV OLEG SAVELIEVICH

Assignee(s): (std)**:** KOCHETOV OLEG SAVELIEVICH

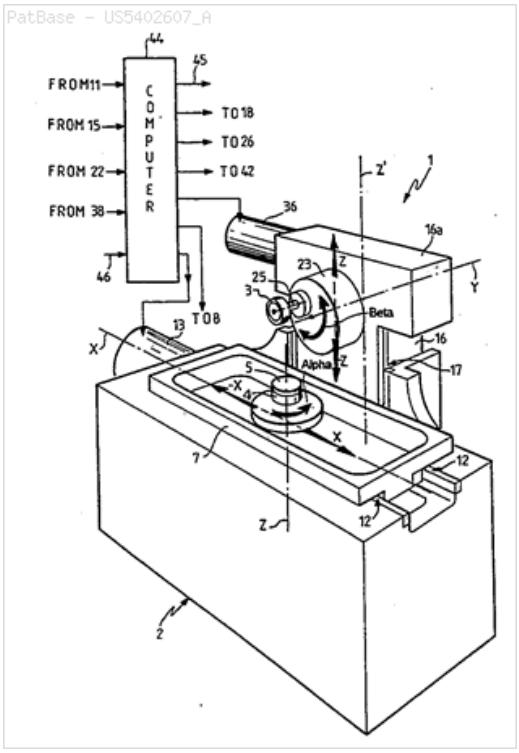
390) Family number: 10524699 (US5402607A)

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Title: Method and multi-axis numerically-controlled machine for machining surfaces

Abstract: In this machining method using a multi-axis numerically-controlled machine, a workpiece holder (4) is rotated (rotation alpha) in step-by-step motion around an axis (Z), rectilinear movements are produced between a tool (3) and the workpiece holder (4) respectively along axes (Z and X), and in addition the tool (3) is rotated (rotation beta) around an axis (Y), these various movements being controlled in response to data corresponding to a required surface to be produced on a workpiece. The step-by-step rotating movement and the rectilinear movements are used for producing a spiral path of the tool on the surface of the workpiece to be machined, while the rotating movement (beta) is used to achieve the required thickness removed at successive points on the spiral path.

Classifications:
International (IPC 8-9): B23Q1/48 B24B13/06 B24B53/065 (Advanced/Invention)
International (IPC 1-7): B23Q15/00 B23Q27/00 B23Q5/00 B24B13/00 B24B13/06 B24B49/00 B24B53/065
CPC: B23Q1/48 B24B13/06
European: B23Q1/48 B24B13/06
US: 451/106 451/11 451/28 451/5



Family:

Publication number	Publication date	Application number	Application date
DE4230979 A1	19930325	DE19924230979	19920916
DE4230979 C2	20010621	DE19924230979	19920916
FR2681546 A1	19930326	FR19910011602	19910920
FR2681546 B1	19951208	FR19910011602	19910920
GB2259662 A1	19930324	GB19920019224	19920911
GB2259662 B2	19941207	GB19920019224	19920911
GB9219224 A0	19921028	GB19920019224	19920911
JP5269659 A2	19931019	JP19920249409	19920918
US5402607 A	19950404	US19920945231	19920914

Priority:
FR19910011602 19910920

Probable Assignee: ESSILOR INT

Assignee(s): (std): ESSILOR INT CIE GENERALE ; ESSILOR INT

Assignee(s): ESSILOR INT (COMPAGNIE GENERALE D'OPTIQUE) ; ESSILOR INT COMP GENERALE D OPTIQU ; ESSILOR INTERNAL CIE GLE OPTIQUE ; ESSILOR INTERNATIONAL ; ESSILOR INTERNATIONAL COMPAGNIE GENERALE D OPTIQUE ; ESSILOR INTERNATIONAL COMPAGNIE GENERALE D OPTIQUE CRETEIL VAL DE MARNE FR ; ESSILOR INTERNATIONAL COMPAGNIE GENERALE D OPTIQUE CRETEIL

Inventor(s): (std): LOMBARD GERARD ; GERARD LOMBARD

Inventor(s): LOMBARD GERARD TRONVILLE EN BARROIS FR

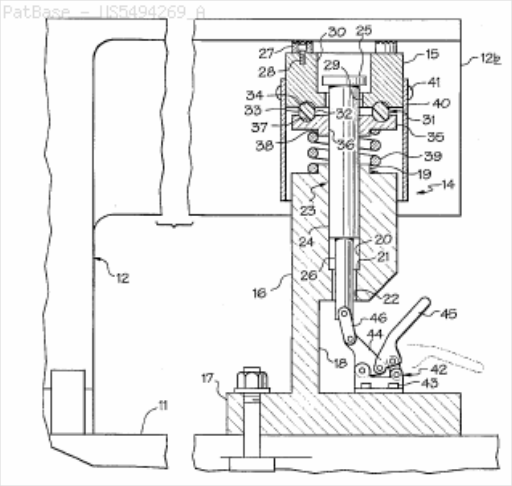
391) Family number: 12403700 (US5494269A)

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Title: VIBRATION DAMPER

Abstract: A workpiece is clamped to a machine table while being machined, but a cantilevered portion of the workpiece is subject to vibrations. The cap of a vibration damping unit is supported on the machine base and spring-loaded upwardly against the workpiece. A support spring acting on a seat forces a damping element against the cap which, in turn, is impressed against the cantilevered workpiece. Vibrations are suppressed by horizontal shearing motion of the ring damping element. The entire damping assembly comprising the cap, ring damping element, seat and spring are retracted from the workpiece by means of a central rod connected to a manually actuated toggle clamp.

Classifications:
International (IPC 8-9): B23Q11/00 (Advanced/Invention); B23Q11/00 (Core/Invention)
International (IPC 1-7): B23Q3/02
CPC: B23Q11/0032 B23Q3/065
European: B23Q11/00D
US: 269/224 269/228 269/310



Family:

Publication number	Publication date	Application number	Application date
US5494269 A	19960227	US19940296634	19940826

Priority:

US19940296634 19940826

Probable Assignee: MAGUS GMBH

Assignee(s): (std)**:** CINCINNATI MILACRON INC

Assignee(s): MAGUS GMBH ; MAGUS INTELLECTUAL PROPERTY GMBH ; UNOVA IP CORP

Inventor(s): (std)**:** MCCALMONT PAUL E

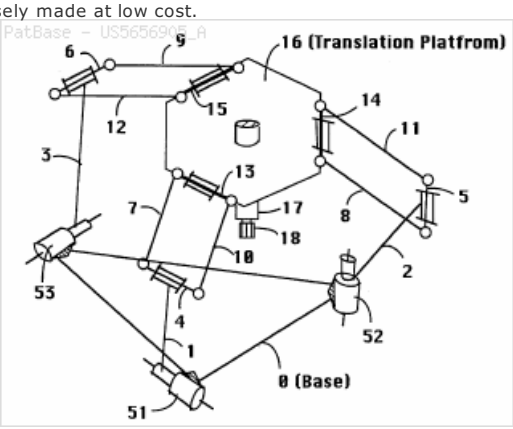
392) Family number: 13181700 (US5656905A)

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Title: MULTI-DEGREE-OF-FREEDOM MECHANISMS FOR MACHINE TOOLS AND THE LIKE

Abstract: A new generation of hybrid form multi-axis machine tools is described. The hybrid machine tools comprise a position mechanism and an orientation mechanism. Both mechanisms are three-DOF parallel mechanisms that can be connected either in series to form a hybrid parallel-serial manipulator, or in parallel to form a cooperating machine. The position mechanism is used for manipulating the position and the orientation mechanism is used for manipulating the orientation of an object. Six-axes machining of a workpiece is achieved by coordinating the motions of the position and orientation mechanisms. This approach has several important advantages. First of all, a high stiffness, low inertia, and high speed machine tool is realized by using the parallel construction. Secondly, its direct and inverse kinematic solutions could be solved in closed forms which would greatly simplify the control and path planning problems. Thirdly, it has a relatively large workspace in comparison to fully parallel platform manipulators. Fourthly, its position and orientation are completely decoupled. Lastly, it utilizes mostly revolute joints which can be precisely made at low cost.

Classifications:
International (IPC 8-9): B23Q1/54 B25J17/02 B25J9/06 B25J9/10 (Advanced/Invention);
B23Q1/25 B25J17/02 B25J9/06 B25J9/10 (Core/Invention)
International (IPC 1-7): B25J15/02
CPC: B23Q1/5462 B25J9/06 B25J9/1065 B25J17/0266 Y10T74/20207 Y10T409/307672 Y10T409/308512 Y10T409/309576
European: B23Q1/54B3 B25J17/02F2 B25J9/06 B25J9/10L2
US: 318/560 318/568.11 318/568.19 318/568.21 318/574 409/201 409/216 409/235 74/479.01 901/15 901/28 901/41 901/50 901/8



Family:

Publication number	Publication date	Application number	Application date
US5656905 A	19970812	US19950415851	19950403

Priority:

US19950415851 19950403

Probable Assignee: TSAI LUNG WEN

Assignee(s): (std)**:** TSAI LUNG WEN

Inventor(s): (std)**:** TSAI LUNG WEN

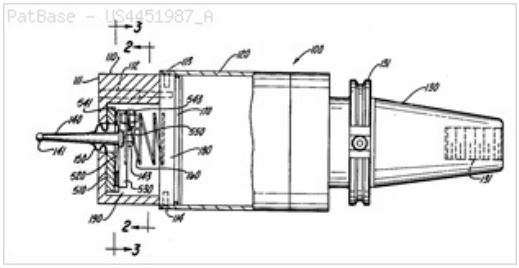
393) Family number: 29252702 (US4451987A)

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Title: Touch probe

Abstract: A touch probe for detecting contact with a workpiece or other object is disclosed and features a highly accurate

repositioning system for returning the moveable portion of the touch probe to a predetermined rest position in the absence of contact force acting on the moveable portion.



Classifications:
International (IPC 8-9): B23B25/06 B23Q17/00 B23Q17/20 B23Q17/22 B23Q35/24 B43L15/00 G01B21/00 G01B21/04 G01B5/00 G01B5/012 G01B5/016 G01B7/00 G01B7/012 G08B1/08 G08C17/00 G08C23/04 (Advanced/Invention);
B23Q17/22 G01B21/00 G01B5/00 (Advanced/Non-invention);
B23B25/00 B23Q17/00 B23Q17/20 B23Q17/22 B43L15/00 G01B21/00 G01B5/00 G01B5/008 G01B7/00 G01B7/008 G08C23/00 (Core/Invention)
International (IPC 1-7): B23B25/06 B23Q15/00 B23Q17/00 B23Q17/02 B23Q17/20 B23Q17/22 B23Q35/24 B25B13/02 B25B13/14 B25B15/00 B43L13/00 G01B11/00 G01B21/00 G01B21/04 G01B5/00 G01B5/03 G01B5/14 G01B7/00 G01B7/02 G01B7/03 G01B7/14 G01D15/02 G01D5/02 G01R33/00 G05D G08B1/08 G08C17/00 G08C23/00 G12B H01H25/06 H01R
CPC: G01B5/012 B43L15/00 Y10S33/03 G01B7/002 G01B7/012 G01B21/047 G01B7/00 G01B2210/58
European: B43L15/00 G01B21/04D G01B5/012 G01B7/00 G01B7/00B G01B7/012 S01B210/58
US: 250/493.1 327/517 33/174L 33/558 33/561 33/642 33/DIG.3 340/686.5 340/870.16 81/484 D8/14

Family:

Publication number	Publication date	Application number	Application date
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AU198426731 A1	19841220	AU19840026731	19840411
AU198427404 A1	19841220	AU19840027404	19840426
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AU557913 B2	19870115	AU19840026731	19840411
AU557955 B2	19870115	AU19840027404	19840426
BE897040 A	19831003	BE19830210993	19830613
BE899914 A	19841001	BE19840213141	19840614
BE899916 A	19841001	BE19840213143	19840614
BR8303114 A	19840131	BR19830003114	19830613
CA1198188 A1	19851217	CA19830430330	19830614
CA1234893 A1	19880405	CA19840456490	19840613
CA1236896 A1	19880517	CA19840456489	19840613
DE3321454 A1	19831215	DE19833321454	19830614
DE3321454 C2	19930311	DE19833321454	19830614
DE3422103 A1	19841220	DE19843422103	19840614
DE3422103 C2	19921022	DE19843422103	19840614
DE3422103 C3	19921022	DE19843422103	19840614
DE3422180 A1	19841220	DE19843422180	19840614
DE3422180 C2	19900405	DE19843422180	19840614
DE3448172 C2	19890112	DE19843448172	19840614
FR2528565 A1	19831216	FR19830009766	19830613
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FR2548071 A1	19850104	FR19840008688	19840601
FR2548071 B1	19870619	FR19840008688	19840601
FR2548350 A1	19850104	FR19840009230	19840613
GB2121966 A1	19840104	GB19830015940	19830610
GB2121966 B2	19850911	GB19830015940	19830610
GB2141364 A1	19841219	GB19840011090	19840501
GB2141364 B2	19870408	GB19840011090	19840501
GB2141547 A1	19841219	GB19840009524	19840412
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GB2179744 A1	19870311	GB19850021521	19850829
GB2179744 B2	19870819	GB19850021521	19850829
GB2179754 A1	19870311	GB19860022069	19840412
GB8315940 A0	19830713	GB19830015940	19830610
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JP3042601 B4	19910627	JP19830105625	19830613
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JP59063501 A2	19840411	JP19830105625	19830613
JP60010106 A2	19850119	JP19840118053	19840608
JP60036904 A2	19850226	JP19840122880	19840614
KR19850000666 A	19850228	KR19840003109	19840604
KR19850000667 A	19850228	KR19840002892	19840525
KR850000666 A	19850228	KR19840003109	19840604
KR850000667 A	19850228	KR19840002892	19840525
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MX154753 A	19871208	MX19840201656	19840613
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NL8302096 A	19840102	NL19830002096	19830613
NL8401828 A1	19850102	NL19840001828	19840608

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SE8303325 A	19831215	SE19830003325D	19830613
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SE8303325 L	19831215	SE19830003325	19830613
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SE8403155 A0	19840613	SE19840003155	19840613
SE8403155 L	19841215	SE19840003155	19840613
SE8403157 A	19841215	SE19840003157	19840613
SE8403157 A0	19840613	SE19840003157	19840613
SE8403157 L	19841215	SE19840003157	19840613
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US4509266 A	19850409	US19830504066	19830614
US4510693 A	19850416	US19830504149	19830614
US4543859 A	19851001	US19840671860	19841115
ZA8304262 A	19840328	ZA19830004262	19830610
ZA8403831 A	19860129	ZA19840003831	19840521
ZA8403833 A	19860129	ZA19840003833	19840521

Priority:

US19820388187 19820614 CA19830430330 19830614 US19830504066 19830614
US19830504149 19830614 CA19840456489 19840613 CA19840456490 19840613
DE19843422103 19840614 JP19840122880 19840614 US19840671860 19841115
GB19840009524 19850829 GB19850021521 19850829

Probable Assignee: VALENITE INC

Assignee(s): (std): GTE BALETON CORP ; GTE VALENITE CORP ; VALERON CORP ; GTE VALERON CORP ; GTE VALERON TE TROY MICHIGAN VER ST V CORP ; GTE VALENITE CORP N D GES D STAATES DELAWARE TRO ; JII TEI II BARERON CORP ; SMITH D A ; SMITH DONALD ANTHONY ; VALERON TE TROY MICHIGAN VER ST V CORP

Assignee(s): VALERON TROY MI A CORP OF MI CORP ; VALERON TE TROY MICHIGAN VER ST V AM CORP ; JII TEII II BEIRURON CORP ; VALERON CORPORATON TROY MI A CORP OF MI ; GTE VALENITE CORP N D GES D STAATES DELAWARE TROY MICH US ; GTE VALERON TE TROY MICHIGAN VER ST V AM CORP ; VALERON CORPORATON TROY MI A CORP ; VALENITE INC ; GTE VALERON CORP TROY MICH US ; BANKERS TRUST CO ; BARERON CORP ZA ; CUSACK ROBERT F ; DONALD ANTHONY SMITH

Inventor(s): (std): CUSACK R ; CUSACK R F ; CUSACK ROBERT F ; CUSACK ROBERT FRAZIER ; CUSACK ROBERT FRAZIER GROSSE POINTE MICH ; FRAZIER CUSACK ROBERT ; QUISACK ROBERT P ; R F CUSACK ; ROBAATO FURAJAA KASATSUKU ; ROBAATO FURAJII KASATSUKU ; ROBAATO FURAJIYAA KASATSUKU ; ROBAATO FUREIJA KASATSUKU ; ROBAATO FUREIJIYA KASATSUKU ; ROBERT FRAZIER CUSACK ; SMITH DONALD ANTHONY

Inventor(s): DONALD ANTHONY SMITH ; RF CUSACK

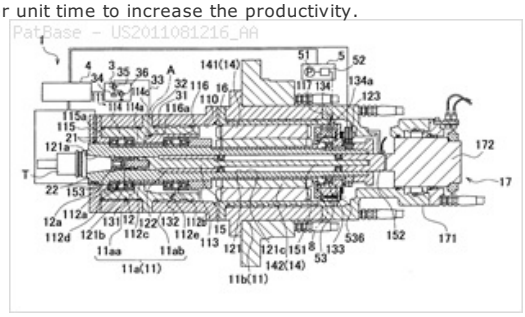
Agent(s): PHILLIPS ORMONDE FITZPATRICK; WRAYS; WRAYS PTY LTD; RIDOUT AND MAYBEE LLP; MACRAE AND CO

394) Family number: 48694702 (US2011081216A)

Title: SPINDLE DEVICE FOR MACHINE TOOL

Abstract: The damping property of a rear rolling bearing (133) is adjusted by controlling a damping force that is applied by damping application means (5, 134) based on, for example, the type of a tool (T). Thus, it is possible to provide the optimum damping properties for various tools that differ in natural vibration, and to suppress the generation of chattering of the various tools. As a result, it is possible to increase the cut amount per unit time to increase the productivity.

Classifications:
International (IPC 8-9): B23B19/02 B23Q1/26 B23Q1/70 B23Q11/00 B23Q17/09 B23Q5/04 F16C25/06 F16C25/08 (Advanced/Invention)
CPC: B23Q1/265 B23Q1/70 B23Q11/0039 B23Q17/0976 F16C25/083 Y10T408/76 Y10T409/304312 Y10T409/309352 Y10T409/309464
European: B23Q1/26C2 B23Q1/70 B23Q11/00D4 B23Q17/09E8B
US: 384/517 408/143 409/141 409/141P 409/231 409/233



Family:

Publication number	Publication date	Application number	Application date
CN102029407 A	20110427	CN201010293519	20100921
CN102029407 B	20141008	CN201010293519	20100921
DE602010003703 D1	20130117	DE201060003703T	20101005
EP2308635 A1	20110413	EP20100186594	20101005
EP2308635 B1	20121121	EP20100186594	20101005
JP2011079078 A2	20110421	JP20090232290	20091006
JP5644082 B2	20141224	JP20090232290	20091006
US2011081216 AA	20110407	US20100899172	20101006
US8827609 BB	20140909	US20100899172	20101006

Priority:

JP20090232290 20091006 EP20100186594 20101005

Probable Assignee: JTEKT CORP

Assignee(s): (std): HORI NOBUMITSU ; JTEKT CORP ; NAKASHIMA KUNIMICHI ; OGURA KAZUNARI ; OKAWA YUJI ; SHIBATA TAKAMASA

Inventor(s): (std): HORI NOBUMITSU ; SHIBATA TAKAMASA ; OKAWA YUJI ; NAKASHIMA KUNIMICHI ; OGURA KAZUNARI

; NAKAJIMA KUNIMICHI ; TAKAMASA SHIBATA ; KAZUNARI OGURA ; NOBUMITSU HORI ; YUJI OKAWA ; KUNIMICHI NAKASHIMA

Inventor(s): NAKASHIMA KUNIMICHI OSAKA SHI ; SHIBATA TAKAMASA OSAKA SHI ; OKAWA YUJI OSAKA SHI ; OGURA KAZUNARI OSAKA SHI ; HORI NOBUMITSU OSAKA SHI

Agent(s): TBK; TBK PATENT; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

395) Family number: 2818705 (DD238004A)

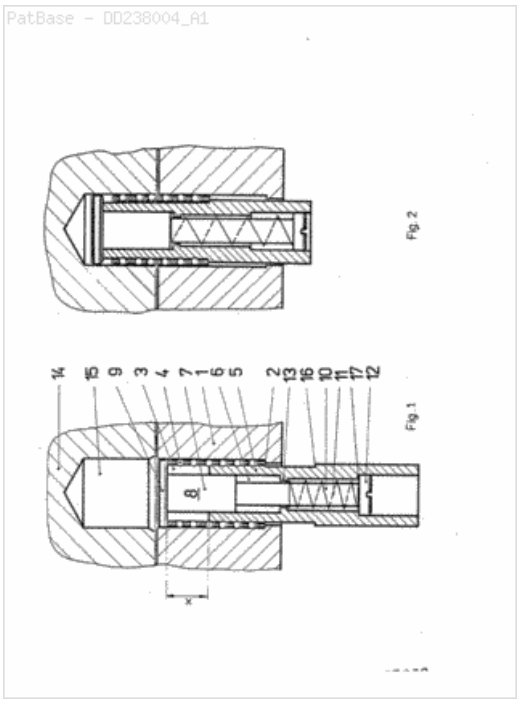
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Title: LAGEFIXIERUNG FUER POISTIONSVERAENDERLICHE BAUGRUPPEN, INSBESONDERE WERKSTUECKTRAEGER LOCATION FIXING FOR POISTIONSVERAENDERLICHE ASSEMBLIES, IN PARTICULAR WORKPIECE CARRIER (Machine translation)

Abstract: Source: DD238004A [DE] [Source: Claim 1] 1. Lagefixierung fuer positionsveraenderliche Baugruppen, insbesondere Werkstuecktraeger, die von einer Basisbaugruppe, beispielsweise dem Maschinentisch eines Bearbeitungszentrums aufgenommen werden, mit in der Basisbaugruppe angeordneten waelzgefuehrten kraftbetaetigten Indexbolzen, die zur Lagebestimmung mit einem Teil der vorgespannten Waelzfuehrung in koaxiale Bohrungen des Werkstuecktraegers eintreten, gekennzeichnet dadurch, dass der Indexbolzen (5) ein in Richtung seiner Offenstellung unter Krafteinwirkung stehendes axial bewegliches Fixierelement (8) aufnimmt, das werkstuecktraegerseitig einen die Waelzfuehrung (4) stirnflaechig umschreibenden und mit dieser in Kontakt stehenden Flansch (9) aufweist, hinter dem der Indexbolzen (5) in Offenstellung zunaechst um einen Verschiebebetrag (x) zuruecksteht.

Machine translation: [Source: claim 1] 1 location fixation for position variable components, in particular workpiece carriers, which are recorded by a base construction group, for example, the machine table of a machining centre with rolling run motorised index pins arranged in the base Assembly, that occur to the orientation with a part of prestressed rolling leadership in coaxial holes of the workpiece carrier marked by the fact that the index pin (5) takes a standing towards its open position under load axially movable fastening element (8), that a workpiece carrier-side the rolling guide has (4) write to stirnflaechig and related to this contact flange (9), behind the index pin (5) in the open position first to a shift (x) zurueckstehl.

Classifications:
International (IPC 8-9): B23Q1/26 (Advanced/Invention); B23Q1/26 (Core/Invention)
International (IPC 1-7): B23Q1/26



Family:

Publication number	Publication date	Application number	Application date
DD238004 A1	19860806	DD19850276983	19850604

Priority:
DD19850276983 19850604

Probable Assignee: WERKZEUGMASCH HECKERT VEB

Assignee(s): (std): WERKZEUGMASCH HECKERT VEB

Assignee(s): VEB WERKZEUGMASCHINENKOMBINAT FRITZ HECKERT KARL MARX STADT DD

Inventor(s): (std): FRITZSCHE WOLFGANG ; NEUBER DIETER ; ROHLEDER ERNST ; WEGENT HELMUT

Inventor(s): WEGENT HELMUT DD ; ROHLEDER ERNST DD ; NEUBER DIETER DD ; FRITZSCHE WOLFGANG DD

396) Family number: 4738706 (US4513366A)

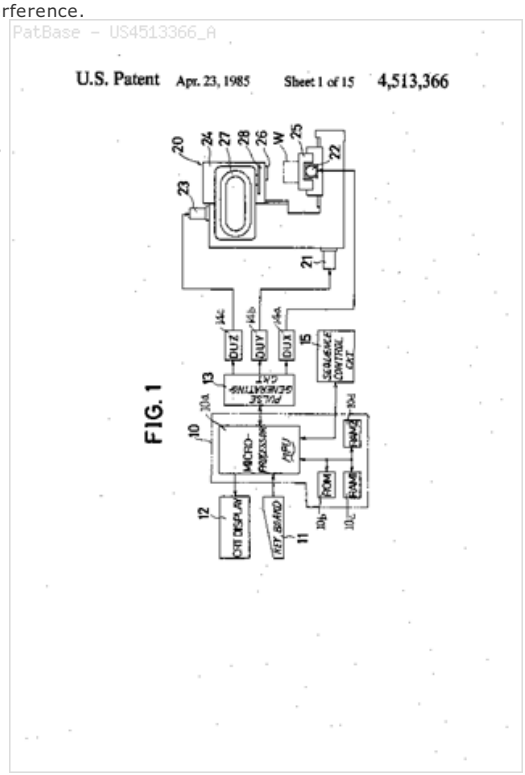
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Title: MENU PROGRAMMED MACHINE TOOL NUMERICAL CONTROLLER WITH AN INTERFERENCE CHECKING FUNCTION

Abstract: A numerical controller for a machining center comprising a microprocessor connected to a data input device, a CRT display device and a data storage device. The microprocessor prepares an NC program for a workpiece to be machined, based upon machining information manually input by the use of the data input device and stored in the data storage device. The debugging of the prepared NC program is then executed, wherein the microprocessor obtains by calculation a workpiece interference space defined outwardly from the outer periphery of the workpiece, based upon workpiece blank shape and

dimension data and workpiece mounting position data stored in the data storage device. The microprocessor further calculates, based upon the NC program, a tool path along which a tool spindle of the machining center would be moved relative to a work table in accordance with the NC program. The microprocessor ascertains based upon the tool path, a tool interference space, defined outwardly from the outer periphery of each tool, and the workpiece interference space, whether or not the tool interference space would enter the workpiece interference space in any rapid feed movement if relative movement between the tool spindle and the work table were effected in accordance with the NC program. When detecting the entry of the tool interference space into the workpiece interference space, the microprocessor displays on the CRT screen a message informing an operator of the occurrence of an interference.

Classifications:
International (IPC 8-9): G05B19/19 G05B19/4061 G05B19/4068 G05B19/4093 (Advanced/Invention);
G05B19/19 G05B19/406 G05B19/4093 (Core/Invention)
International (IPC 1-7): G05B19/18 G05B19/19 G05B19/403 G05B19/405 G05B23/02 G05B9/02
CPC: Y10T82/2502 G05B19/4061 G05B2219/35287 G05B2219/49157
European: G05B19/4061 S05B219/35287 S05B219/49157
US: 318/563 318/568 318/568.1 364/167 364/171 364/184 364/188 364/191 364/192 364/474 364/475 700/178 700/184 700/79 700/83 700/86 700/87 82/118 82/2B



Family:

Publication number	Publication date	Application number	Application date
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EP0089561 A2	19830928	EP19830102369	19830310
EP0089561 A3	19851113	EP19830102369	19830310
EP0089561 B1	19900613	EP19830102369	19830310
JP1784403 C3	19930831	JP19820045945	19820323
JP4071202 B4	19921113	JP19820045945	19820323
JP58163001 A2	19830927	JP19820045945	19820323
US4513366 A	19850423	US19830475509	19830315

Priority:

JP19820045945 19820323

Probable Assignee: TOYODA MACHINE WORKS LTD

Assignee(s): (std): TOYODA MACHINE WORKS LTD

Assignee(s): TOYODA KOKI KK ; TOYODA KOKI K K ; TOYODA KOKI K K KARIYA AICHI JP ; TOYODA KOKI KABUSHIKI KAISHA ; TOYODA KOKI KABUSIKI KAISHA

Inventor(s): (std): DOI SHIGERU ; DOI YOSHIO ; MUNEKATA KENICHI ; SUZUKI ISAO

Inventor(s): SUZUKI ISAO OKAZAKI SHI AICHI KEN JP ; DOI YOSHIO KARIYA SHI AICHI KEN JP ; DOI SHIGERU NAGOYA SHI AICHI KEN JP

Designated states: DE FR GB SE

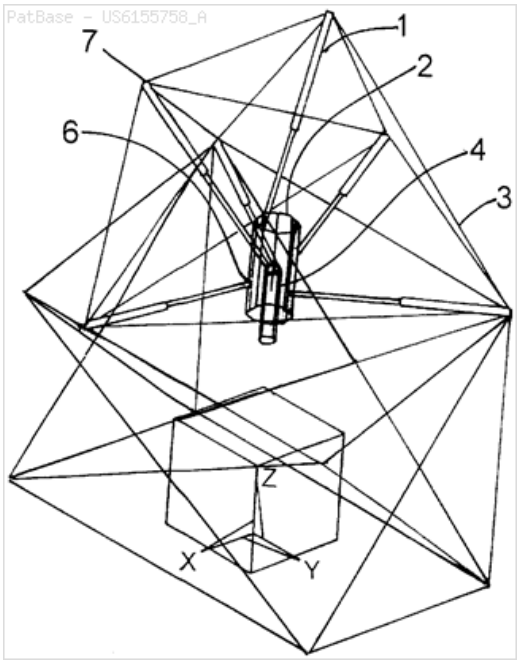
397) Family number: 30388707 (US6155758A)

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Title: HEXAPODAL MACHINING CENTER

Abstract: In known hexapodal machining centers, a movable support is supported and the individual struts are articulated on the support in one plane. For permitting a greater movability of the support, especially in the rotational degrees of freedom, and for improving the absorption of the forces, a hexapodal machining center having a stationary frame and a movable support is provided, in the case of which the six connecting struts of adjustable length are articulated on the support. Three articulation points respectively define a common plane of application so that two separate planes are defined. Also, the articulation of the struts on the frame is effected in two separate planes of application.

Classifications:
International (IPC 8-9): B23C1/06 B23Q1/00 B23Q1/01 B23Q1/25 B23Q1/44 B23Q1/54 B25J17/02 (Advanced/Invention);
B23C1/00 B23Q1/00 B23Q1/25 B25J17/02 (Core/Invention)
International (IPC 1-7): B23C1/06 B23P21/00 B23Q1/01 B23Q1/25 B23Q1/44 B23Q1/54 B23Q39/02 B25J1/02 B25J11/00
CPC: B25J9/0057 B25J9/006 B23Q1/015 B23Q1/5462 B25J17/0266 Y10T74/20317 Y10T409/307672 Y10T409/308512 Y10T409/309576
European: B23Q1/01B B23Q1/54B3 B25J17/02F2
US: 409/201 409/216 409/235 74/490.03 901/22 901/23 901/41



Family:

Publication number	Publication date	Application number	Application date
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DE19636100 A1	19980312	DE19961036100	19960905
DE59702668 D1	20001228	DE19975002668	19970718
EP0925145 A1	19990630	EP19970932838	19970718
EP0925145 B1	20001122	EP19970932838	19970718
ES2152689 T3	20010201	ES19970932838T	19970718
JP2000505006 T2	20000425	JP19980512151T	19970718
JP3357075 B2	20021216	JP19980512151T	19970718
RU2160657 C2	20001220	RU19990104285	19970718
RU99104285 A	20010527	RU19990104285	19970718
US6155758 A	20001205	US19990261523	19990303
WO9809769 A1	19980312	WO1997EP03861	19970718

Priority:

DE19961036100 19960905 DE19975002668 19970718 WO1997EP03861 19970718

Probable Assignee: FRAUNHOFER GES

Assignee(s): (std)**:** NDTEN FORSHUNG EH F ; FRAUNKHOFER GEZELL SHAFT TSUR ; WIELAND FRANK ; SCHWAAR MICHAEL ; NEUGEBAUER REIMUND ; FRAUNHOFER GES ; FRAUNHOFER GES FORSCHUNG

Assignee(s): FRAUNHOFER GES ZUR FOERDERUNG DER ; FRAUNHOFER GES ZUR FOERDERUNG DER ANGEWAND ; FRAUNHOFER GES ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG EV ; FRAUNHOFER GES ZUR FORDERUNG DER ANGEWANDTEN FORSC ; FRAUENHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWA ; FRAUENHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E V ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWAN ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E V ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E V 80636 MUENCHEN DE ; FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG E V ; FRAUNKHOFER-GEZELL'SHAFT TSUR FERDERUNG DER ANGEVANDTEN FORSHUNG EH.F. ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWAND ; FRAUNHOFER GES ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV ; NDTEN FORSHUNG EHF

Inventor(s): (std)**:** NEUGEBAUER REIMUND ; NEUGEBAUER REIMUND PROF DR ING ; NOJGEBAUEHR RAJMUND ; SCHWAAR MICHAEL ; SCHWAAR MICHAEL DR ING ; VILAND FRANK ; WIELAND FRANK ; WIELAND FRANK DIPL ING ; SHVAR MIKHEL

Inventor(s): SHVAR MIKHEL' ; WIELAND FRANK DIPL ING 09113 CHEMNITZ DE ; SCHWAAR MICHAEL DR ING 09232 HARTMANNSDORF DE ; NEUGEBAUER REIMUND PROF DR ING HABIL ; NEUGEBAUER REIMUND PROF DR ING HABIL 01189 DRESDEN

Designated states: AT BE CH DE DK ES FI FR GB GR IE IT JP LI LU MC NL PT RU SE US

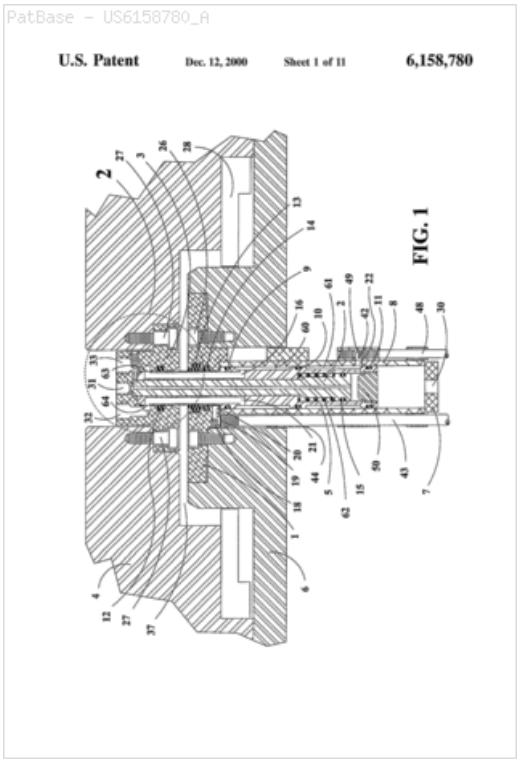
398) Family number: 14929708 (US6158780A)

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Title: Coupling for use in supplying air pressure to an air driven pump on a pallet

Abstract: A coupling for use in supplying air pressure to an air driven pump on a pallet is disclosed. The male half of the coupling is affixed to a pallet changing station and the female half is suspended from a pallet. Suspension of the female half from the pallet enables the male and the female half to couple despite misalignment. The male half includes two pistons and the female half includes a power port, a vent port and a central port. The power port is connected to an air driven hydraulic pump and the control port is connected to a pilot on a four-way valve. The hydraulic pump operates vides contained on the pallets. The number of vices operable is only limited by the capacity of the hydraulic reservoir located in the pallet.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q7/14 (Advanced/Invention);
B23Q1/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): F16L25/00
CPC: B23Q1/0009 B23Q7/1426
European: B23Q1/00B B23Q7/14K
US: 269/25 269/309 285/101 285/302 285/9.2 285/92



Family:

Publication number	Publication date	Application number	Application date
US6158780 A	20001212	US19980143793	19980831

Priority:

US19980143793 19980831

Probable Assignee: AUTOMATION ENHANCEMENTS UNLIMITED

Assignee(s): (std)**:** AUTOMATION ENHANCEMENTS UNLIMI ; AUTOMATION ENHANCEMENTS UNLTD

Assignee(s): AUTOMATION ENHANCEMENTS UNLIMITED

Inventor(s): (std)**:** SCHALDACH KURT

399) Family number: 68579710 (US2018043439A)

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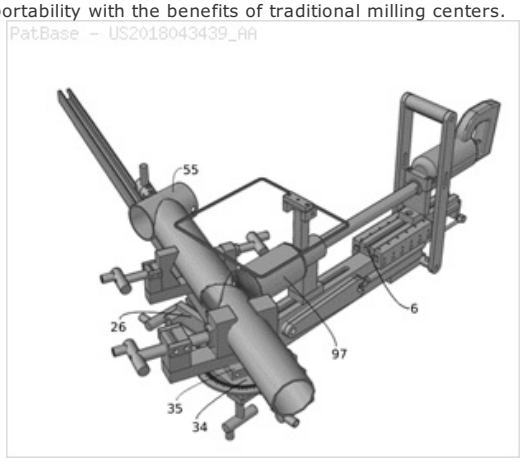
Title: MODULAR TUBING NOTCHER SYSTEM

Abstract: A machining assembly which allows for precise and repeatable machining operations-primarily tube notching-to be carried out by an operator in various situations, and is specifically designed for hollow-form parting without use of a mandrel in prototyping and small-scale production. This system allows operators to cut copes in both typical and atypical materials, and offers the ability to produce double end-coped workpieces quickly. Additionally, the preferred embodiment can be equipped for use as a light-duty milling machine which incorporates portability with the benefits of traditional milling centers.

Classifications:

International (IPC 8-9): B23B47/28 B25B1/10 B25B1/20 B25B1/24 B25B5/00 B25B5/10 B25B5/14 (Advanced/Invention)

CPC: B23B47/281 B25B5/147 B23B2247/10 B23B2260/03 B23B2215/72 B25B1/103 B25B1/20 B25B1/205 B25B1/2415 B25B1/2463 B25B5/003 B25B5/006 B25B5/102 B25B5/103



Family:

Publication number	Publication date	Application number	Application date
US2018043439 AA	20180215	US20160236340	20160812
US10245653 BB	20190402	US20160236340	20160812

Priority:

US20160236340 20160812

Probable Assignee: SUHLING ROBERT JAMES

Assignee(s): (std)**:** SUHLING ROBERT JAMES

Inventor(s): (std)**:** SUHLING ROBERT JAMES

Agent(s): LESLEY A WALLERSTEIN LLC

400) Family number: 56929710 (RU2012156210A)

Title: Machining center with a dust extraction system (Machine translation)

Abstract: Source: RU2012156210A **Machine translation:** Machining center with dust extraction system consisting of a base with a slide mounted thereon, is moved along the base by passing the "screw-nut rolling" column of the table, moving along the slide, the tool magazine mounted on the bracket, characterized in that equipped with high speed spindle, which is a rotor rotating inside the stator in two radial bearings and axial electromagnetic support, and to ensure safe operation provided support for the rotor-catchers and measuring sensors, radial and axial, which converts signals from the control computer to drive current in windings than the magnetomotive force is regulated, the rotor returns to the original position, furthermore, machining center equipped with a dust removal system of a working area comprising a removable dust receptacle configured to fit the shape of the workpiece, and to maximize the fence released from the treatment of dust which articulation means allowing to select the optimum absorption of dust duct connected to the inlet of the cyclone comprising a housing consisting of a cylindrical and conical parts and is located at an upper peripheral portion of the gas stream and entering the axial outlet of the purified gas and the loudspeaker in its lower part coupled with the axial outlet nozzle purified gas impingement and comprises a conical washer mounted in its large base lower base of the loudspeaker, and the cavity formed by the washer and the impingement surfaces of the column is connected with a bypass outlet

Classifications:
International (IPC 8-9): B23Q3/155 (Advanced/Invention)

Family:

Publication number	Publication date	Application number	Application date
RU2012156210 A	20140627	RU20120156210	20121225

Priority:

RU20120156210 20121225

Probable Assignee: KOCHETOV OLEG SAVELIEVICH

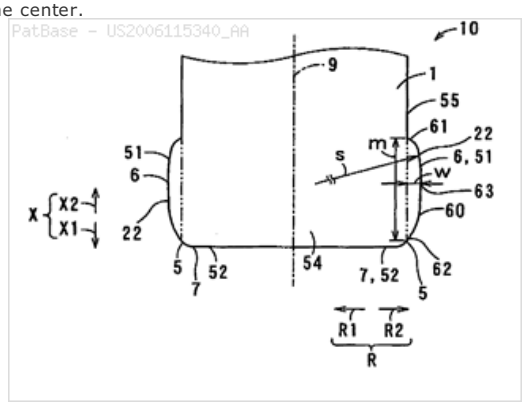
Assignee(s): (std): KOCHETOV OLEG SAVELIEVICH

401) Family number: 32158712 (US2006115340A)

Title: CUTTING INSERT AND MILLING TOOL

Abstract: A milling tool includes a cutting tool insert, roughly plate-shaped and having a rake face on an upper face and a flank on a side face and a main cutting edge at an intersection ridge line part at the intersection of the rake face and the flank, fitted in the periphery of a substantially cylindrical holder removably and so that an axial rake angle of the cutting edge ridge line of the main cutting edge is positive. When the cutting tool insert is rotated about the axis of rotation of the holder, the shape of the locus of rotation of the main cutting edge in a section parallel to the axis of rotation is made an approximate circular arc shape swelling outward with progress from the ends to the center.

Classifications:
International (IPC 8-9): B23C1/00 B23C3/00 B23C5/00 B23C5/10 B23C5/20 B26D1/00 (Advanced/Invention);
B23C5/20 (Advanced/Non-invention);
B23C1/00 B23C3/00 B23C5/00 B23C5/10 B23C5/16 B26D1/00 (Core/Invention);
B23C5/16 (Core/Non-invention)
International (IPC 1-7): B23C5/10 B23C5/20
CPC: Y10T407/1906 Y10T407/1908 Y10T407/22 Y10T407/23 Y10T407/235 B23C5/10 B23C3/28 B23C5/109 B23C5/2213 B23C2200/123 B23C2200/203 B23C2200/208 B23C2200/246 Y10T409/303808 Y02P20/52
European: B23C3/28 B23C5/10 B23C5/10F B23C5/22B1B L23C200/12B L23C200/20B L23C200/20F L23C200/24B
US: 407/113 407/114 407/114P 407/114S 407/33 407/34 407/34S 407/66 409/132 409/132P



Family:

Publication number	Publication date	Application number	Application date
JP2005177978 A2	20050707	JP20040342340	20041126
JP2008207332 A2	20080911	JP20080099697	20080407
JP2011255503 A2	20111222	JP20110183812	20110825
JP4823266 B2	20111124	JP20080099697	20080407
JP4859364 B2	20120125	JP20040342340	20041126
JP5312538 B2	20131009	JP20110183812	20110825
US2006115340 AA	20060601	US20050173950	20050630
US2009103992 AA	20090423	US20080246734	20081007
US7452167 BB	20081118	US20050173950	20050630
US7637700 BB	20091229	US20080246734	20081007

Priority:

JP20030398186 20031127 JP20040342340 20041126 US20050173950 20050630
JP20080099697 20080407 US20080246734 20081007 JP20110183812 20110825

Probable Assignee: KYOCERA CORP

Assignee(s): (std): KYOCERA CORP

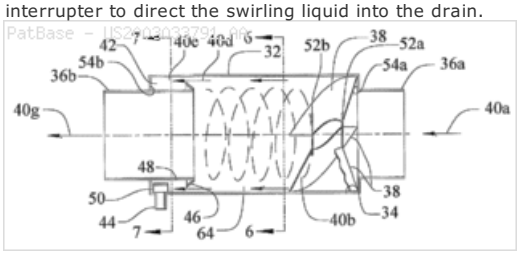
Inventor(s): (std): NISHIO MITSUHIRO ; KOJIMA YOSHIHIDE ; HATTA KAORU

Agent(s): HOGAN AND HARTSON LLP

402) Family number: 28086714 (US2003033791A)

Title: CYCLONIC SEPARATOR FOR MIST COLLECTORS

Abstract: A separator adapted to be placed in a mist collection system prior to the final air cleaning stage, and adapted to remove a substantial portion of the mist from the air, includes stationary vanes in a cylindrical housing to establish a cyclonic flow therethrough, an annular flow restriction collar to establish a liquid collection area at the downstream end of the housing, a drain for discharge of the liquid from the collection area, and a flow interrupter to direct the swirling liquid into the drain.



Classifications:
International (IPC 8-9): B01D45/00 B01D45/12 B01D45/16 B04C3/00 B04C3/06 B05B15/12 B23Q11/00 B23Q11/10 (Advanced/Invention); B01D45/00 B01D45/12 B04C3/00 B05B15/12 B23Q11/00 B23Q11/10 (Core/Invention)
International (IPC 1-7): B01D45/12
CPC: B23Q11/1069 B04C3/00 B04C3/06 B23Q11/0057 B23Q11/10 B05B14/40 B05B14/45 B01D45/16
European: B01D45/16 B04C3/00 B04C3/06 B05B15/12F B05B15/12F9 B23Q11/00F4 B23Q11/10 L05B15/12F99B
US: 55/396 55/396P 55/423 55/426 55/455 55/455S 55/456 55/456S 55/457 55/466

Family:

Publication number	Publication date	Application number	Application date
US2003033791 AA	20030220	US20010930770	20010815
US2006266012 AA	20061130	US20030606149	20030625
US7311744 BB	20071225	US20030606149	20030625

Priority:

US20010930770 20010815 US20030606149 20030625

Probable Assignee: FILTRA SYSTEMS CO LLC

Assignee(s): (std): ELLIOTT MICHAEL R

Assignee(s): FILTRA SYSTEMS CO ; FILTRA SYSTEMS CO INC ; FILTRA SYSTEMS CO LLC ; TROY FILTERS LTD ; AUTO MAT OF BELOIT INC

Inventor(s): (std): ELLIOTT MICHAEL R

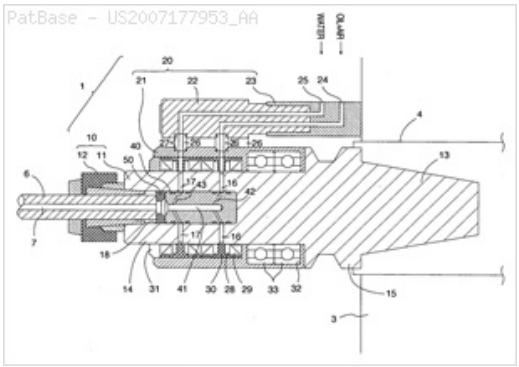
Inventor(s): ELLIOTT MICHAEL

Agent(s): KEITH FRANTZ

403) Family number: 34956714 (US2007177953A)

Title: TOOL HOLDER

Abstract: In a tool holder, when oil supplied via an oil supply passage and an oil introducing passage reaches an atomizing space, the oil is atomized by an air flow of carrier gas consisting of compressed air, and then water supplied from a water supply passage and a water introducing passage is formed into a water drop in the atomizing space by an air flow of oil containing compressed air to generate the water drop with oil film in which the oil film is formed on a surface of the water drop. Since the water drop with oil film is supplied to a work piece through a top nozzle and an in-tool passage, the water drop with oil film is generated at an extremely close location to a tool, and therefore, responsiveness when supplying the water drop with oil film to the work piece can be enhanced.



Classifications:
International (IPC 8-9): B05B7/04 B05B7/26 B23B31/02 B23B31/10 B23Q11/00 B23Q11/10 B23Q3/12 (Advanced/Invention); B05B7/04 B05B7/24 B23B31/02 B23B31/10 B23Q11/00 B23Q11/10 B23Q3/00 (Core/Invention)
CPC: B23Q2220/008 B23Q11/10 B23B31/02 B23B2250/12 B23Q11/1046 Y10T408/458 Y10T409/304032 Y10T409/309408 Y02P70/169
European: B23B31/02 B23Q11/10 B23Q11/10F2 L23B250/12
US: 408/60 408/60S 409/136 409/136P 409/232

Family:

Publication number	Publication date	Application number	Application date
CN100513068 C	20090715	CN200710006370	20070201
CN101028690 A	20070905	CN200710006370	20070201
DE102007001220 A1	20070816	DE200710001220	20070105
DE102007001220 B4	20150212	DE200710001220	20070105
JP2007203412 A2	20070816	JP20060025287	20060202
JP4609893 B2	20110112	JP20060025287	20060202
US2007177953 AA	20070802	US20070701381	20070202
US7293943 BA	20071113	US20070701381	20070202

Priority:

JP20060025287 20060202

Probable Assignee: DAIDO METAL CO LTD

Assignee(s): (std): DAIDO METAL CO ; DAIDO METAL CO LTD ; DATONG METAL INDUSTRY CO LTD ; DATONG METAL IND CO LTD

Assignee(s): DAIDO METAL COMPANY LTD ; DATONG METAL IND CO ; DATONG METAL INDUSTRY CO

Inventor(s): (std): HIDEYUMI MATSUMURA ; HIROSHI MATSUMURA HIDEYUMI YOS ; HIROSHI YOSHIMURA ; MATSUMURA HIDEYUMI ; YOSHIMURA HIROSHI

Inventor(s): MATSUMURA HIDEYUMI YOSHIMURA HIROSHI

Agent(s): BROWDY AND NEIMARK PLLC 624 NINTH STREET NW

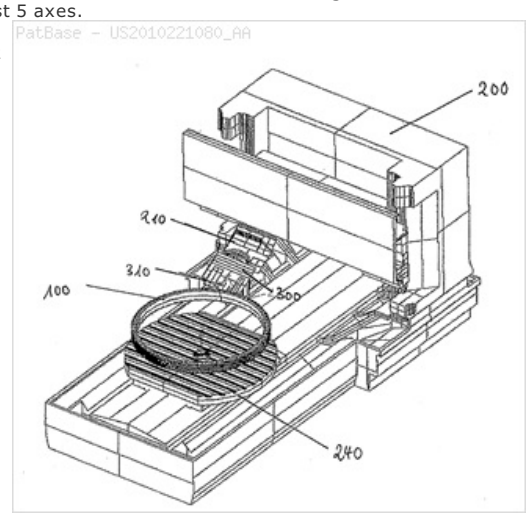
404) Family number: 46531718 (US2010221080A)

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Title: DEVICE FOR GENERATION MACHINING A WORKPIECE CLAMPED IN A MACHINE TOOL AND A METHOD FOR MANUFACTURING A WORKPIECE HAVING A GEARING

Abstract: The present invention relates to a device, a method and a machine tool for machining a workpiece clamped in the machine tool, the device comprising a hobbing tool for removing material of the workpiece for shaping a rollable profile, in particular a gearing, on the workpiece by hob milling, and a hobbing tool receiving means for receiving the hobbing tool, the device particularly comprising a milling head fixing means which is suitable to fix the device in a receiving means of the milling head of the machine tool, the machine tool comprising at least 5 axes.

Classifications:
International (IPC 8-9): B23C1/12 B23F17/00 B23F23/00 B23F23/12 B23F5/04 B23F5/20 B23F5/22 B23F5/24 B23Q1/48 B23Q3/155 B23Q3/157 (Advanced/Invention);
B23C1/00 B23F23/00 B23F5/00 B23Q1/25 B23Q3/155 B23Q3/157 (Core/Invention)
CPC: Y10T409/10159 Y10T483/1705 Y10T483/1733 B23F5/04 B23F5/22 B23F5/24 B23F17/00 B23F23/003 B23F23/1237 Y10T409/101908
European: B23F17/00 B23F23/00A B23F23/12E B23F5/04 B23F5/22 B23F5/24
US: 409/11 409/11S 409/13 409/13P 483/18 483/30 483/30S



Family:

Publication number	Publication date	Application number	Application date
CN101811206 A	20100825	CN201010128228	20100209
CN101811206 B	20141001	CN201010128228	20100209
DE102009008122 A1	20100812	DE200910008122	20090209
DE102009008122 B4	20120405	DE200910008122	20090209
DE502010011018 D1	20160317	DE201050011018T	20100209
EP2216118 A2	20100811	EP20100153084	20100209
EP2216118 A3	20140813	EP20100153084	20100209
EP2216118 B1	20160203	EP20100153084	20100209
ES2564528 T3	20160323	ES20100153084T	20100209
IN00113KO2010 A	20120525	IN2010KO00113	20100208
JP2010179456 A2	20100819	JP20100026272	20100209
JP5661294 B2	20150128	JP20100026272	20100209
US2010221080 AA	20100902	US20100702837	20100209

Priority:

DE200910008122 20090209 EP20100153084 20100209

Probable Assignee: DECKEL MAHO PFRONTEN GMBH

Assignee(s): (std): DECKEL MAHO PFRONTEN GMBH

Inventor(s): (std): HANSEN UWE CARSTEN ; LOCHBIHLER THOMAS ; NEUMAIER JOSEF ; THOMAS LOCHBIHLER ; JOSEF NEUMAIER ; UWE CARSTEN HANSEN

Agent(s): MERH IP MATIAS ERNY REICHL HOFFMANN PATENTANWAELTE PARTG MBB; MERH IP MATIAS ERNY REICHL HOFFMANN; MERH IP MATIAS ERNY REICHL HOFFMANN PATENTANWAELTE PARTG MBB; OLIFF AND BERRIDGE PLC

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

405) Family number: 48858718 (US2011107573A)

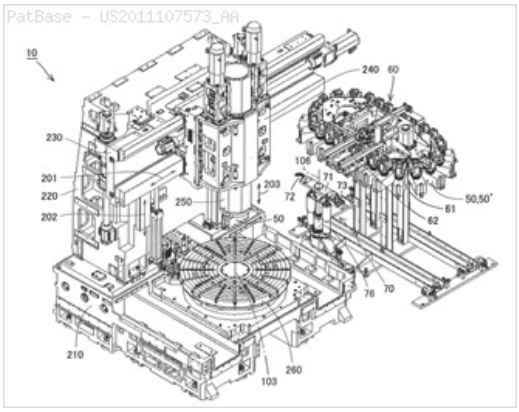
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Title: MACHINE TOOL AND TOOL HOLDER

Abstract: A machine tool having a turning function and a milling function includes a spindle, a spindle housing supporting the spindle in a rotatable manner, a main clamp provided at the spindle, an auxiliary clamp provided at the spindle housing, and a double arm with a first gripper and a second gripper. The auxiliary clamp clamps a tool holder together with the main clamp during fixing a fixed tool. The double arm exchanges a tool holder grasped at the first gripper for another tool holder grasped at the second gripper by rotating and sliding movements. The auxiliary clamp is arranged at a position not interfering with the double arm that moves during exchanging tool holders. By such a configuration, a machine tool achieving a clamping force sufficient to withstand the load during a turning process, and that allows tool exchange in a short period of time, and a tool holder employed in such a machine tool, can be provided.

Classifications:
International (IPC 8-9): B23B11/00 B23B27/00 B23B29/04 B23B3/06 B23B31/02 B23B31/12 B23B31/26 B23C5/26 B23C9/00 B23P23/02 B23Q11/08 B23Q3/12 B23Q3/155 B23Q3/157 B23Q5/20 (Advanced/Invention);

B23Q3/157 (Advanced/Non-invention)
CPC: B23Q3/15766 B23Q11/08 B23Q11/0883 B23B11/00 B23B3/065 B23B2270/60 B23Q3/12 B23Q3/1552 B23Q3/15513 B23B31/261 B23Q5/20 Y10T82/2589 Y10T409/30952 B23B29/04 B23B29/046 B23B31/265 B23B2270/14 B23Q3/15573 B23Q3/15713 Y10T29/5112 Y10T29/5168 Y10T82/2511 Y10T409/30448 Y10T483/115 Y10T483/17 Y10T483/1705 Y10T483/1714 Y10T483/1724
European: B23B29/04 B23B29/04C B23B31/26B2 B23Q3/155N3 B23Q3/157C L23B270/14 L23B270/60
US: 1/1 29/27.00AP 29/27A 29/50 29/50S 409/144 483/16 483/16S 483/18 483/22 483/26 483/3 82/122



Family:

Publication number	Publication date	Application number	Application date
CN201863032 U	20110615	CN201020607772U	20101110
DE102010043667 A1	20110512	DE201010043667	20101110
JP2011101916 A2	20110526	JP20090257150	20091110
JP5374771 B2	20131225	JP20090257150	20091110
US2011107573 AA	20110512	US20100900853	20101008
US2014331463 AA	20141113	US20140330877	20140714
US8814769 BB	20140826	US20100900853	20101008
US9333608 BB	20160510	US20140330877	20140714

Priority:

JP20090257150 20091110 US20100900853 20101008 US20140330877 20140714

Probable Assignee: DMG MORI SEIKI CO LTD

Assignee(s): (std): DMG MORI SEIKI CO LTD ; FUJIOKA KAZUYA ; MIYAHARA KATSUHITO ; MORI SEIKI SEISAKUSHO KK ; YASUMATSUYA KAORU ; SHINKAI YOHEI

Assignee(s): DMG MORI SEIKI CO ; MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std): MIYAHARA KATSUHITO ; YASUMATSUYA KAORU ; FUJIOKA KAZUYA ; SHINKAI YOHEI ; AMATSUYA KAORU ; YOHEI NIIMI ; KATSUKIMI MIYABARA ; ICHIYA FUJIOKA ; TANIKAORI ANSHO

Inventor(s): ANSHO TANIKAORI ; FUJIOKA ICHIYA ; MIYABARA KATSUKIMI ; NIIMI YOHEI

Agent(s): NAKAMURA GIHEI; SAKAI MASAYUKI; HORII YUTAKA; MORITA TOSHIO; FUKAMI HISAO; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP; OBLON MCCLELLAND MAIER AND NEUSTADT LLP

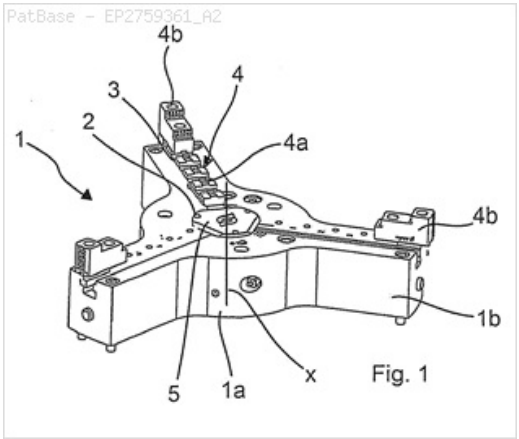
406) Family number: 57049718 (EP2759361B1)

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Title: CLAMPING OR GRIPPING ASSEMBLY, AND BASE JAW FOR USE IN A CLAMPING OR GRIPPING ASSEMBLY DISPOSITIF DE SERRAGE OU DE PREHENSION ET MORS DE BASE DESTINE A ETRE UTILISE DANS UN DISPOSITIF DE

Abstract: Source: EP2759361A3 [DE] Die Erfindung betrifft eine Spann- oder Greifeinrichtung mit einem Grundkoerper (1), der eine Spannachse (X) definiert, und mehreren Fuehrungsnuten (3) zur Aufnahme von Spannbacken (4), die in einer vorderen Stirnflaeche des Grundkoerpers (1) ausgebildet sind und radial zu der Spannachse (X) verlaufen, wobei der Grundkoerper (1) ein Basiselement (1a), in welchem jeweils ein innerer Fuehrungsnutabschnitt (3b) der Fuehrungsnuten (3) ausgebildet ist, und mehrere aussenseitig von dem Basiselement (1a) angeordnete Fuehrungselemente (1 b), in denen jeweils ein aeusserer Fuehrungsnutabschnitt (3b) der Fuehrungsnuten (3) ausgebildet ist, aufweist.

Classifications:
International (IPC 8-9): B23B31/06 B23B31/10 B23B31/16 B23Q3/02 B23Q3/06 B23Q3/08 (Advanced/Invention)
CPC: B23B31/102 B23B31/1627 B23B2231/34 B23B31/16



Family:

Publication number	Publication date	Application number	Application date
DE102013001355 A1	20140731	DE201310001355	20130128
DE102013001355 B4	20150827	DE201310001355	20130128
DE202014010376 U1	20150625	DE201420010376U	20140128
DE502014000324 D1	20160310	DE201450000324T	20140128
EP2759361 A2	20140730	EP20140152858	20140128
EP2759361 A3	20141001	EP20140152858	20140128
EP2759361 B1	20160127	EP20140152858	20140128

ES2566140 T3	20160411	ES20140152858T	20140128

Priority:

DE201310001355 20130128 DE201420010376U 20140128 EP20140152858 20140128

Probable Assignee: SCHUNK GMBH AND CO KG

Assignee(s): (std): SCHUNK GMBH AND CO KG ; SCHUNK GMBH AND CO SPANN U GREIFTECHNIK KG

Inventor(s): (std): DAMANG MARKUS ; KOCH ALEXANDER ; SCHOBER BENJAMIN

Agent(s): PAUL AND ALBRECHT PATENTANWALTSSOZIETAET; PAUL AND ALBRECHT PATENTANWAELTE PARTG MBB; ALBRECHT RALF; LEHMANN MARIA ISABEL

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

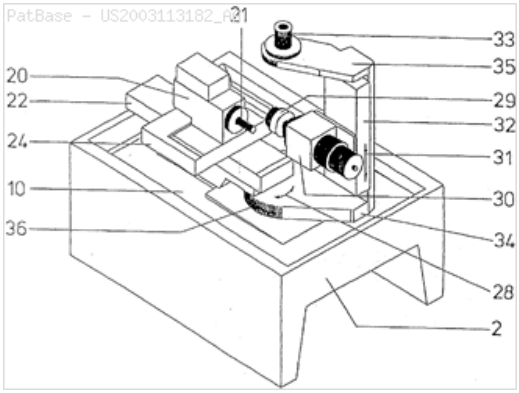
407) Family number: 28666719 (US2003113182A)

© PatBase

Title: MACHINING CENTER

Abstract: The invention relates to a machining center provided with a workpiece machining tool. Said machine tool comprises: an essentially horizontal working plate (10) which is supported by a machine tool stand (2); a workpiece support (20) which is accommodates a workpiece (2) and which is placed on the working plate (10); a machining head (30) which accommodates a machining tool (29) and which is mounted on a vertical machining column (32) that can pivot around a vertical axis (37) by means of a rotary plate (36), said rotary plate being arranged underneath the working plate (10) and integrated in the machine stand (2), and; a first carrying arm (34) for the machining column (32). One end of said carrying arm is connected in a fixed manner to the rotary plate (36), and the other end is laterally guided out over the working plate (10) in such a manner that the machining column (32) mounted there can be pivoted around the working plate (10). A holding device is provided that comprises a bearing (33), which is arranged above the machining head (30) in the axial extension of the axis (37) of the rotary plate (36), and on which a second carrying arm (35) for the machining column (32) is mounted that is joined to said machining column (32).

Classifications:
International (IPC 8-9): B23P23/00 B23Q1/00 B23Q1/01 B23Q1/48 B23Q11/08 B24B41/02 B24B5/04 (Advanced/Invention); B23Q1/00 B23Q1/25 B23Q11/08 B24B41/00 B24B5/00 (Core/Invention)
International (IPC 1-7): B23Q1/00 B23Q1/00 B23Q1/01 B23Q1/10 B23Q1/25 B23Q1/48 B23Q1/52 B23Q1/70 B23Q11/08 B23Q37/00 B24B3/00 B24B41/02
CPC: Y10T409/104134 Y10T409/30392 Y10T409/307672 Y10T409/309576 B23Q11/0891 B23Q1/012 B23Q1/015 B23Q1/4828 B23Q11/08 B24B5/04 B24B41/02
European: B23Q1/01A B23Q1/01B B23Q1/48C B23Q11/08 B23Q11/08K B24B41/02 B24B5/04
US: 409/134 409/201 409/235 409/235P 409/27 451/1



Family:

Publication number	Publication date	Application number	Application date
AT267068 E	20040615	AT20010933696T	20010314
DE10012445 A1	20010927	DE20001012445	20000315
DE50102326 D1	20040624	DE20015002326	20010314
EP1265727 A2	20021218	EP20010933696	20010314
EP1265727 B1	20040519	EP20010933696	20010314
ES2221899 T3	20050116	ES20010933696T	20010314
JP2003526525 T2	20030909	JP20010566852T	20010314
JP4695322 B2	20110608	JP20010566852T	20010314
US2003113182 AA	20030619	US20020221906	20020913
US6752573 BB	20040622	US20020221906	20020913
WO0168314 A2	20010920	WO2001EP02856	20010314
WO0168314 A3	20020808	WO2001EP02856	20010314

Priority:

DE20001012445 20000315 DE20015002326 20010314 WO2001EP02856 20010314

Probable Assignee: HALLER HUBERT

Assignee(s): (std): HALLER HUBERT

Assignee(s): HAWEMA WERKZEUGSCHLEIFMASCHINEN GMBH

Inventor(s): (std): HALLER HUBERT

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT JP LI LU MC NL PT SE TR US

408) Family number: 34026720 (US2006287756A)

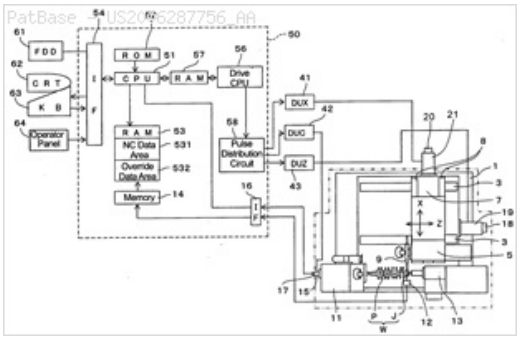
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Title: GRINDING METHOD AND APPARATUS

Abstract: In a grinding method and apparatus, a machining portion of a workpiece is ground with a grinding wheel on a trial, and shape errors in respective rotational phases of the machining portion are measured after the trial grinding. Based on the shape errors, control data defining workpiece rotational speeds for respective rotational phases of the workpiece is prepared so that the workpiece rotational speed is made to be slow for a rotational phase in which the machining portion is undercut, but to be fast for another rotational phase in which the machining portion is overcut, and the machining portion of the workpiece is ground as the rotational speed of the workpiece is controlled in accordance with the control data.

Classifications:
International (IPC 8-9): B24B49/00 B24B49/04 B24B5/00 B24B5/02 G05B19/18 G06F19/00 (Advanced/Invention);

B24B49/00 B24B49/02 B24B5/00 G05B19/18 G06F19/00 (Core/Invention)
CPC: B24B5/02 B24B49/00
European: B24B49/00 B24B5/02
US: 451/251 451/5 700/159 700/164



Family:

Publication number	Publication date	Application number	Application date
DE602006004399 D1	20090205	DE200660004399T	20060619
EP1736278 A1	20061227	EP20060115674	20060619
EP1736278 B1	20081224	EP20060115674	20060619
JP2007000945 A2	20070111	JP20050181144	20050621
US2006287756 AA	20061221	US20060454932	20060619
US7376482 BB	20080520	US20060454932	20060619

Priority:
JP20050181144 20050621

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP

Inventor(s): (std): IDO MASAHIRO

Agent(s): C IRVIN MCCLELLAND OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT PC; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT PC

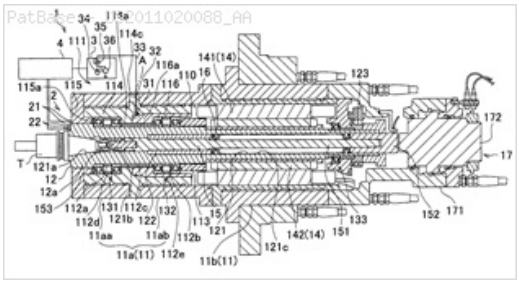
Designated states: AL BA DE HR MK YU

409) Family number: 48170721 (US2011020088A)

Title: SPINDLE DEVICE

Abstract: By controlling an amount of preload applied to a rolling bearing that supports a spindle in accordance with the change of state of the spindle in actual machining, the rotation of the spindle is controlled in an optimal state, and the service life of the bearing is extended while the required stiffness of the spindle is ensured. When a corrected preload amount falls outside a range of a preload as a controllable region, the corrected preload amount is corrected so as to fall within the range of the preload. That is, an actually controlled preload is regulated to fall within the preset range of preload. Therefore, it is possible to ensure the stiffness of the rolling bearing or prevent heating and excessive increase in contact pressure of the rolling bearing.

Classifications:
International (IPC 8-9): B23B19/02 B23Q17/00 B23Q5/04 F16C19/18 F16C19/52 F16C19/54 F16C23/10 F16C25/06 F16C25/08 F16C35/12 F16C41/02 (Advanced/Invention)
CPC: F16C2322/39 F16C19/54 F16C25/06 F16C35/12
European: F16C19/54 F16C25/06 F16C35/12
US: 384/563 384/563S 409/193 409/207 409/231 409/231P



Family:

Publication number	Publication date	Application number	Application date
CN101961792 A	20110202	CN201010216300	20100629
CN101961792 B	20140827	CN201010216300	20100629
DE602010012608 D1	20140213	DE201060012608T	20100720
EP2278181 A2	20110126	EP20100170090	20100720
EP2278181 A3	20130213	EP20100170090	20100720
EP2278181 B1	20131225	EP20100170090	20100720
JP2011020240 A2	20110203	JP20090169754	20090721
JP5560603 B2	20140730	JP20090169754	20090721
US2011020088 AA	20110127	US20100836885	20100715
US8740523 BB	20140603	US20100836885	20100715

Priority:
JP20090169754 20090721 EP20100170090 20100720

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP ; NAKASHIMA KUNIMICHI ; OKAWA YUJI ; SHIBATA TAKAMASA ; UMEKI TAKAHITO

Inventor(s): (std): UMEKI TAKAHITO ; SHIBATA TAKAMASA ; OKAWA YUJI ; NAKASHIMA KUNIMICHI ; NAKAJIMA KUNIMICHI ; KUNIMICHI NAKASHIMA ; TAKAHITO UMEKI ; YUJI OKAWA ; TAKAMASA SHIBATA

Inventor(s): SHIBATA TAKAMASA OSAKA SHI ; UMEKI TAKAHITO OSAKA SHI ; NAKASHIMA KUNIMICHI OSAKA SHI ; OKAWA YUJI OSAKA SHI

Agent(s): TBK; TBK PATENT; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP

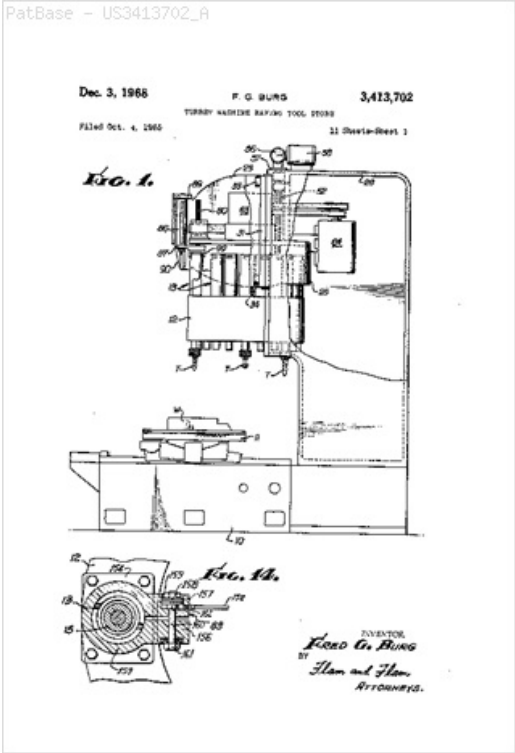
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

410) Family number: 292721 (US3413702A)

Title: TURRET MACHINE HAVING TOOL STORE

Abstract: ABSTRACT OF THE DISCLOSURE
A turret is rotatable about a vertical axis beneath the carriage that is vertically movable and supported on a frame, the turret having a series of quills that can be directly clamped one at a time to a vertically movable feed member. Such clamping also couples tool-supporting spindles through a clutch to a rotatably driven shaft. Other clamps lock the carriage to the frame, while a further clamp can lock a quill in its extended position. A still further clamp can lock the turret. Fluid actuators are used to release quill-restraining-means and to reciprocate the non-rotatable feed member. This is a continuation-in-part of application Ser. No. 435,972, filed Mar. 1, 1965, and now abandoned.

Classifications:
International (IPC 8-9): B23B39/20 B23Q39/02 (Advanced/Invention); B23B39/00 B23Q39/00 (Core/Invention)
International (IPC 1-7): B23B39/20
CPC: B23Q2220/002 B23B39/205 B23Q39/02 Y10T29/5105 Y10T408/37
European: B23B39/20B B23Q39/02
US: 29/26 29/260 29/26R 408/35



Family:

Publication number	Publication date	Application number	Application date
DE1552313 A1	19691106	DE19661552313	19660225
FR1470173 A	19670217	FR19660051317	19660228
GB1139305 A	19690108	GB19660008976	19660301
US3413702 A	19681203	US19650496242	19651004

Priority:
US19650435972 19650301 US19650496242 19651004 FR19660051317 19660228

Probable Assignee: STRIPPIT HOUDAILLE INC A DE CORP

Assignee(s): (std)**:** HOUDAILLE IND INC ; HOUDAILLE INDUSTRIES INC

Assignee(s): STRIPPIT HOUDAILLE INC ; STRIPPIT HOUDAILLE INC A DE CORP ; BURGMASTER HOUDAILLE INC ; BURGMASTER HOUDAILLE INC A CORP OF DE

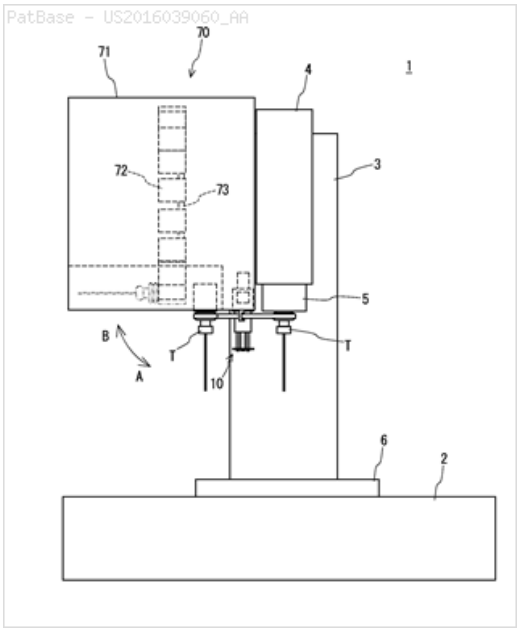
Inventor(s): (std)**:** BURG FRED G ; G BURG FRED

411) Family number: 61642722 (US2016039060A)

Title: TOOL CHANGER

Abstract: A tool changer 10 includes a tool change arm 40 having tool holding portions 42, 52 at ends thereof, a support shaft supporting the tool change arm 40, a rotation mechanism including a rotation drive motor 25 and rotating the tool change arm 40 about an axis of the support shaft, a forward/backward movement mechanism including a forward/backward movement drive motor 13 and moving the tool change arm 40 forward and backward along the support shaft, and a mount base 11 having the rotation drive motor 25, the forward/backward movement drive motor 13 and the support shaft mounted thereon. The tool changer has a restraining member 60 provided thereon which restrains movement of the tool change arm 40 in a direction along the support shaft by engaging with the tool change arm 40 positioned at an original position.

Classifications:
International (IPC 8-9): B23Q11/00 B23Q3/157 (Advanced/Invention); B23Q3/155 (Advanced/Non-invention)
CPC: B23Q3/15713 Y10T483/1755 B23Q3/1554 B23Q11/00 B23Q2003/155428 B23Q2003/155439 Y10S483/902 Y10T483/11 B23Q3/1574 Y10T483/1767
US: 483/39



Family:

Publication number	Publication date	Application number	Application date
CN105364602 A	20160302	CN201510478583	20150806
CN105364602 B	20190312	CN201510478583	20150806
DE102015215122 A1	20160211	DE201510215122	20150807
JP2016036870 A2	20160322	JP20140161170	20140807
JP6411125 B2	20181024	JP20140161170	20140807
US2016039060 AA	20160211	US20150819004	20150805
US9969040 BB	20180515	US20150819004	20150805

Priority:

JP20140161170 20140807

Probable Assignee: DMG MORI CO LTD

Assignee(s): (std)**:** DMG MORI CO ; DMG MORI CO LTD ; DMG MORI SEIKI CO LTD

Assignee(s): DMG MORI SEIKI CO

Inventor(s): (std)**:** NAKAZAWA SHUNSUKE ; NAKAZAWA SYUNSUKE

Agent(s): MURAKAMI SATOSHI; MILLER MATTHIAS AND HULL LLP

412) Family number: 28219723 (US2002079292A)

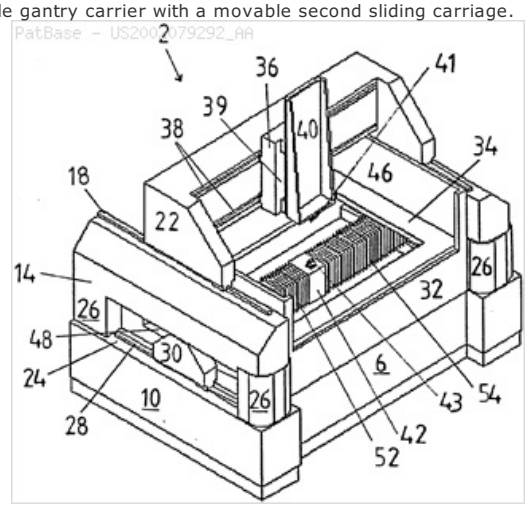
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Title: CUTTING EROSION MACHINE TOOL

Abstract: A machine tool with a machine frame is disclosed. A first tool guide is provided on the frame to guide a tool to a first guide position. The first tool guide is a movable gantry carrier with a movable first sliding carriage. The tool guide can be moved with respect to the machine frame in a first plane along a first direction and in a second direction which is orthogonal with respect to the first direction. Furthermore, a second tool guide is provided on the machine frame to guide the tool to a second guide position. The second tool guide can be moved with respect to the machine frame in a second plane along a third direction and a fourth direction which is orthogonal to the third direction, independently of the first tool guide. Finally, a tool holder is provided on the machine frame to hold the machined part. The machined part is led between the first and the second guide positions of the tool. The second tool guide is a movable gantry carrier with a movable second sliding carriage.

Classifications:

International (IPC 8-9): B23H7/02 B23Q1/00 B23Q1/01 B23Q1/03 B23Q1/56 B23Q39/02 (Advanced/Invention);
B23H7/02 B23Q1/00 B23Q1/25 B23Q39/00 (Core/Invention)
International (IPC 1-7): B23H7/02 B23H7/26 B23Q1/01 B23Q1/25 B23Q39/02
CPC: Y10T83/9292 B23H7/02 B23Q1/012 B23Q39/02
European: B23H7/02 B23Q1/01A B23Q39/02
US: 204/224M 219/69.11 219/69.12 219/69.14 83/651.1



Family:

Publication number	Publication date	Application number	Application date
DE50012933 D1	20060720	DE20005012933	20001221
EP1216779 A1	20020626	EP20000128147	20001221

EP1216779 B1	20060607	EP20000128147	20001221
ES2263432 T3	20061216	ES20000128147T	20001221
JP2002205231 A2	20020723	JP20010345665	20011112
JP3821429 B2	20060913	JP20010345665	20011112
US2002079292 AA	20020627	US20010022091	20011213
US6674040 BB	20040106	US20010022091	20011213

Priority:

EP20000128147 20001221

Probable Assignee: AGIE SA

Assignee(s): (std)**:** AGIE SA ; WEHRLI PETER

Assignee(s): AGIE S A LOSONE ; AGIE VIE DEI PIOPPI SA

Inventor(s): (std)**:** WEHRLI PETER

Designated states: CH DE ES FR GB IT LI

413) Family number: 66273724 (DE102016226319A1)

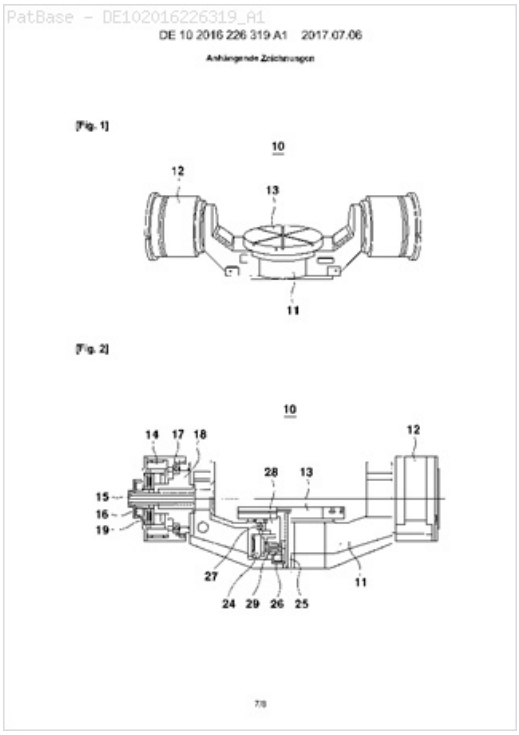
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Title: KIPPTISCH FUER EIN BEARBEITUNGSZENTRUM Table for a machining center (Machine translation)

Abstract: Source: DE102016226319A1 [DE] Die vorliegende Erfindung bezieht sich auf einen Kipptisch fuer ein Bearbeitungszentrum, wobei der Kipptisch einfach gesteuert, mit geringen Kosten hergestellt und leicht gewartet werden kann. Nach dem Kipptisch der vorliegenden Erfindung koennen Kippkoerper des Kipptisches einfach gesteuert werden und der Kipptisch kann ein verringertes Gewicht aufweisen. Ferner kann der Kipptisch nach der vorliegenden Erfindung mit geringen Kosten hergestellt werden und er kann mit von aussen angebrachten Servomotoren einfach gewartet werden.

Machine translation: The present invention refers to a table for a machining center, wherein the table is easily controlled, produced at low cost and can be easily maintained. After the table of the present invention, Kippkoerper of the tilting table can be easily controlled and the table may have a reduced weight. Furthermore, the table can be produced at low cost according to the present invention and it can be easily maintained with externally installed servo motors.

Classifications:
International (IPC 8-9): B23Q1/52 B23Q1/54 (Advanced/Invention)
CPC: B23Q5/10 B23Q1/5443



Family:

Publication number	Publication date	Application number	Application date
DE102016226319 A1	20170706	DE201610226319	20161229

Priority:

KR20150190770 20151231

Probable Assignee: HYUNDAI WIA CORP

Assignee(s): (std)**:** HYUNDAI WIA CORP

Inventor(s): (std)**:** LEE DAL HO

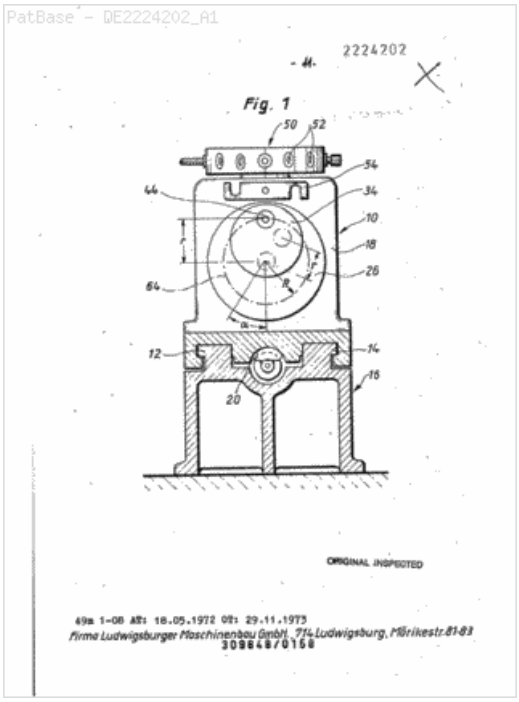
414) Family number: 18054726 (DE2224202A1)

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Title: SPINDELEINHEIT, INSBESONDERE SPINDELSTOCK EINER WERKZEUGMASCHINE SPINDLE UNIT, ESPECIALLY FOR A MACHINE TOOL HEADSTOCK (Machine translation)

Abstract: Spindeleinheit
Classifications:
International (IPC 8-9): B23Q1/48 B23Q3/157 (Advanced/Invention);
B23Q1/25 B23Q3/157 (Core/Invention)

International (IPC 1-7): B23Q1/08
CPC: B23Q1/48 B23Q3/15733
European: B23Q1/48 B23Q3/157C2B2



Family:

Publication number	Publication date	Application number	Application date
DE2224202 A1	19731129	DE19722224202	19720518

Priority:
DE19722224202 19720518

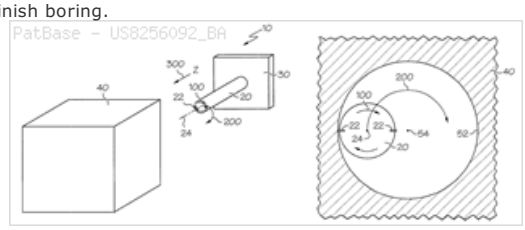
Probable Assignee: LUDWIGSBURGER MASCH BAU
Assignee(s): (std): LUDWIGSBURGER MASCH BAU
Assignee(s): LUDWIGSBURGER MASCHINENBAU GMBH 7140 LUDWIGSBURG
Inventor(s): (std): VOGELMANN ERICH
Inventor(s): VOGELMANN ERICH 7140 LUDWIGSBURG

415) Family number: 51875727 (US8256092B)

Title: METHOD FOR HELICAL BORING

Abstract: A tool may be used to form an engine cylinder bore in a compacted graphite iron workpiece using helical interpolation. The tool may be rotated about a first axis while orbiting about a second axis that is parallel to the first axis. While rotating and orbiting, the tool may be advanced into the workpiece. This helical interpolation may be used to successively engage cutting or honing elements of the tool with the workpiece. The elements may thereby be permitted to cool between each successive engagement, which may reduce wear on the tool. Various operating parameters associated with the process may have certain relationships that may be exploited in certain ways to obtain ideal results. For instance, a helical interpolation process may be used to perform an act of rough cutting on the workpiece and finish honing on the workpiece, without having to perform an intermediary step of semi-finish boring.

Classifications:
International (IPC 8-9): B21D53/00 B21K3/00 B23P13/00 (Advanced/Invention)
CPC: B23C3/02 B23B41/12 B23C2215/242 B23C2220/52 Y10T29/49231 Y10T29/49995 Y10T409/307616
European: B23B41/12 B23C3/02 L23C215/24B L23C220/52
US: 29/557 29/888.01 409/200



Family:

Publication number	Publication date	Application number	Application date
US8256092 BA	20120904	US20090362706	20090130

Priority:
US20080024678P 20080130 US20090362706 20090130

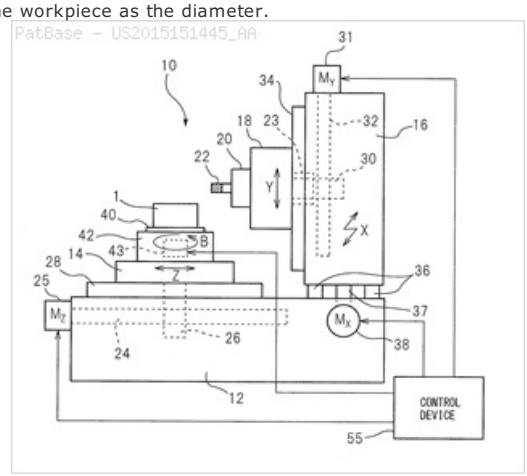
Probable Assignee: AB SANDVIK COROMANT
Assignee(s): (std): MAKINO INC ; MASON GARETH WAYNE ; OEHLUND NILS DAVID ; SANDVIK COROMANT AB ; WOODRUFF DAVID C
Assignee(s): AB SANDVIK COROMANT
Inventor(s): (std): OEHLUND NILS DAVID ; WOODRUFF DAVID C ; MASON GARETH WAYNE
Agent(s): FROST BROWN TODD LLC

416) Family number: 55480728 (US2015151445A)

Title: GROOVE-FORMING METHOD, CONTROL DEVICE FOR MACHINE TOOL AND TOOL PATH GENERATING DEVICE

Abstract: A fluting method for forming a flute in a workpiece while the workpiece is moved relative to a rotating tool by the combination of a rotating feed shaft with other feed shafts, the method comprising a machining process of relatively moving the rotating tool on a tool path that runs along the direction in which the flute extends and machining the workpiece using a rotating tool with a diameter that is smaller than the width of the flute. The machining process changes the relative position of the rotating tool with respect to the workpiece and performs machining multiple times so that the rotating tool makes internal contact with a circle that has the width of the flute being formed in the workpiece as the diameter.

Classifications:
International (IPC 8-9): B23C3/28 B23C3/32 B23C3/34 B26D3/06 (Advanced/Invention)
CPC: Y10T83/0304 A47J47/005 B23C3/28 B23C3/32 B26D3/06
US: 83/875



Family:

Publication number	Publication date	Application number	Application date
CN104487193 A	20150401	CN201280074304	20120629
CN104487193 B	20171124	CN201280074304	20120629
EP2868412 A1	20150506	EP20120880260	20120629
EP2868412 A4	20160302	EP20120880260	20120629
JP2014002270 A1	20160530	JP20140522338T	20120629
JP5818987 B1	20151118	JP20140522338T	20120629
US2015151445 AA	20150604	US20120411354	20120629
WO14002270 A1	20140103	WO2012JP66776	20120629

Priority:

WO2012JP66776 20120629

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std): MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE ; MASUMIYA YASUNORI ; SUZUKI KEITARO ; SUZUKI KYOHEI

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std): SUZUKI KYOHEI ; MASUMIYA YASUNORI ; SUZUKI KEITARO

Agent(s): MCWILLIAMS DAVID JOHN; AOKI ATSUSHI; SHIMADA TETSURO; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

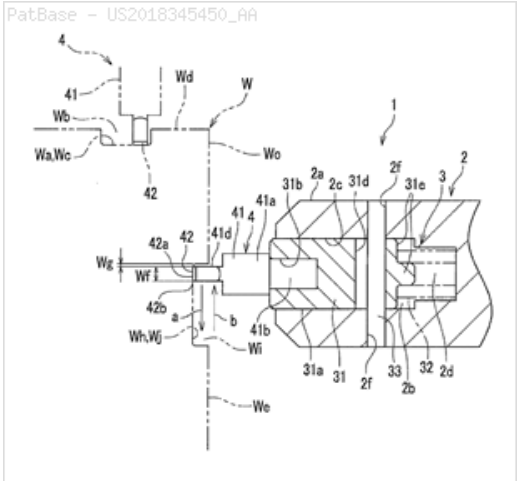
417) Family number: 72251730 (US2018345450A)

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Title: BURNISHING TOOL

Abstract: A burnishing tool uses a relatively small pressing load in burnishing. The burnishing tool for machining a target surface of a workpiece includes a base and a tip portion located on a distal end of the base. The tip portion includes a linear slide-contact portion that linearly contacts and slides on the target surface.

Classifications:
International (IPC 8-9): B23P9/02 B24B39/00 B24B39/04 B24B39/06 B24B47/02 (Advanced/Invention)
CPC: B24B39/06 B24B47/02 B24B39/006 B24B39/04



Family:

Publication number	Publication date	Application number	Application date

CN108972321 A	20181211	CN201810173740	20180302
DE102018108987 A1	20181206	DE201810108987	20180416
DE102018108987 A8	20190214	DE201810108987	20180416
JP2018202524 A2	20181227	JP20170108813	20170531
KR20180131369 A	20181210	KR20180025072	20180302
US2018345450 AA	20181206	US20180914700	20180307

Priority:

JP20170108813 20170531 KR20180025072 20180302

Probable Assignee: SUGINO MACHINE LTD

Assignee(s): (std)**:** SUGINO MACH ; SUGINO MACH LTD

Assignee(s): SUGINO MACHINE LIMITED ; SUGINO MACHINE LTD

Inventor(s): (std)**:** KAMINURA DAICHI ; FUTAMURA MASARU ; KAMIMURA DAICHI ; DAICHI KAMIMURA ; MASARU FUTAMURA

Agent(s): ISONO INT PATENT OFFICE PC

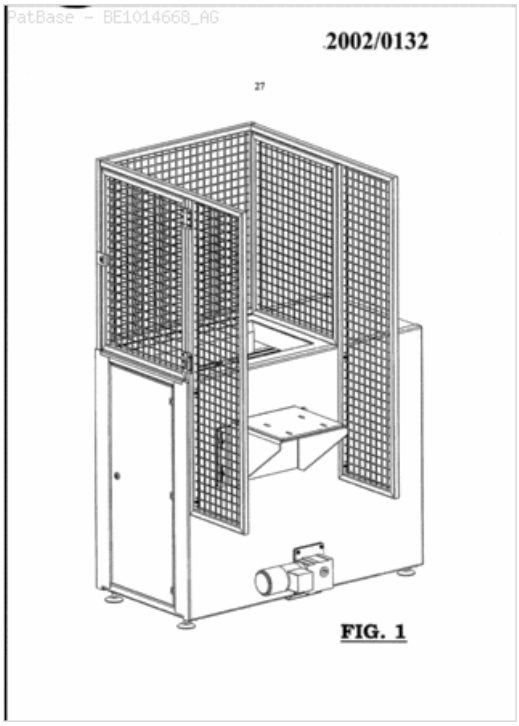
418) Family number: 30384732 (BE1014668A)

© PatBase

Title: AUTOMATION DEVICE FOR INTERACTION BETWEEN MAGAZINE, ROBOT AND PRODUCTION LINE OR MACHINE, CONTROLS INTERACTION VIA PARAMETER INTERFACE

Abstract: Interaction is controlled using a parameter interface.

Classifications:
International (IPC 8-9): G05B19/418 (Advanced/Invention); G05B19/418 (Core/Invention)
International (IPC 1-7): G05B19/418
CPC: G05B19/41815 Y02P90/04 Y02P90/08 Y02P90/14
European: G05B19/418C



Family:

Publication number	Publication date	Application number	Application date
BE1014668 AG	20040302	BE20020000132	20020227

Priority:

BE20020000132 20020227

Probable Assignee: REO ENGINEERING B A BV

Assignee(s): (std)**:** REO ENGINEERING B A BV ; REO ENGINEERING B V B A

Assignee(s): REO ENGINEERING BVBA

Inventor(s): (std)**:** JOHAN LAMBRECHT ; OSWALD REBRY ; TOM REBRY

Inventor(s): REBRY OSWALD ; REBRY TOM ; LAMBRECHT JOHAN

419) Family number: 1078734 (US3478419A)

© PatBase

Title: METHOD AND APPARATUS FOR CONDUCTING MACHINING OPERATIONS

Abstract: ABSTRACT OF THE DISCLOSURE
The disclosure introduces a new concept in machining; that of the non-captive tool. A non-captive tool is herein defined as one which may undergo bodily movement, transversely of its own axis, relative to both the tool bear-ing structure which supports the tool in working position and a tool support structure which supports the tool in a non-working position adjacent the bearing structure. The non-captive tool is unrestrained against the aforesaid bodily movement except during that time the tool is ac-tually working and, while working, the restraint imposed is due to engagement with the tool driving means. Ac-cordingly, removal of the tool driving means from engagement with the tool frees the same for bodily movement which movement may, advantageously, be inte-grated with the movement of the tool driving means out of engagement with the tool. The disclosure is directed to methods and apparatus for automatically interchanging a plurality of non-captive rotary tools between working and non-working positions; for effecting tool interchange concomitantly with respective engagement and disengagement of working and non-working tools with a constantly driven input; for effecting infinitely variable infeed of

the working tools; for automatically positioning a workpiece in accordance with pre-programmed operating cycles controlling a tool changer; for performing machining operations with a tool having a compound rotary input; and for transmitting a programmed cycle of operation from a master machining console to a plurality of slave machining centers. The working and non-working tools in accordance with a first aspect of the invention relating to a tool changer 4g are non-captively supported, in a horizontal position, on V bearings and a tool support rack, respectively. The tools are mounted on spindles which are adapted to be supported adjacent their outer ends on the support rack and at an intermediate portion thereof on the bearings. 50 The bearings are of the V type and provide non-captive support for the tool spindles supported thereon to permit both rotary and reciprocating movement of the tools. Relative vertical movement between the rack and bearings results in an interchange of tools therebetween by virtue of 55 the tools being lifted from either the bearings or the rack, depending on the direction of vertical movement. At least one flexible driving member is constantly recirculated adjacent the bearings and is mounted for vertical movement with the tool support rack for move- 60 ment into and out of driving engagement with the working tools simultaneously with the aforementioned tool interchanging operation. A linearly reciprocable cam follower is mounted adjacent each tool bearing in coaxial alignment with that gg end of the tool spindle remote from the working end; whereby reciprocating and/or advancing movement of the followers will be transmitted through one end thereof to the working tools. An elongated cone cam is positioned to engage the other ends of the followers and reciprocate 70 the same upon rotation of the cone. The cone is, additionally, mounted for axial translation to provide for controlled advance of the followers and tools engaged thereby. Simultaneous rotation and translation of the cone results in a constantly advancing reciprocating path of tool movement. A work station is positioned adjacent each of the V bearings and includes a work clamping and indexing mechanism whose sequence of operation is integrated with, and controlled by, the operating cycles undergone by the tool changing mechanism. Ass tool having a pair of telescoped spindles, each of which is adapted to receive a separate rotary input, is provided for use in certain special machining operations. A second cone cam is mounted outside the confines of the; tool changing mechanism for reciprocating one or a plurality of followers comprising the input to a closed hydraulic slave system whose output is adapted to actuate additional tools. B

Classifications:

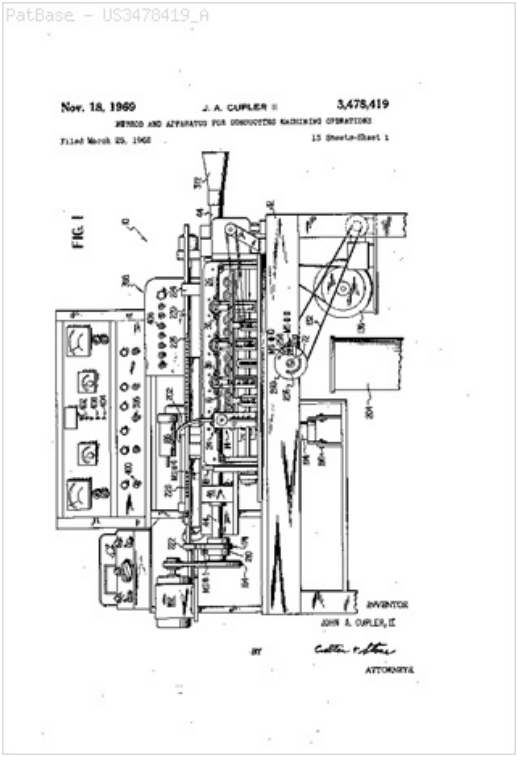
International (IPC 8-9): B23Q1/00 B23Q1/03 B23Q1/34 B23Q1/48 B23Q1/70 B23Q16/02 B23Q3/08 B23Q3/15 B23Q3/155 B23Q3/157 B23Q5/04 B23Q5/32 B23Q5/34 B43K15/02 (Advanced/Invention); B23Q1/00 B23Q1/25 B23Q1/26 B23Q16/00 B23Q3/08 B23Q3/15 B23Q3/155 B23Q3/157 B23Q5/00 B23Q5/22 B43K15/00 (Core/Invention)

International (IPC 1-7): B23B47/18 B23P13/04 B23P23/00 B23P23/04 B23Q3/155 B23Q3/157 B23Q37/00 B23Q39/02 B23Q5/26 B24B39/00 B24B39/02 F16H19/06 F16H25/04 F16H25/08

CPC: Y10T408/385 Y10T483/1729 Y10T483/1798 Y10T408/36 Y10T408/37 Y10T483/165 Y10T483/1786 Y10T483/179 B43K15/02 B23Q1/0018 B23Q1/03 B23Q1/34 B23Q1/48 B23Q1/70 B23Q3/15506 B23Q3/15526 B23Q3/157 B23Q3/15706 B23Q5/04 B23Q5/323 B23Q5/341 B23Q16/026 Y10T29/47 Y10T409/306664 Y10T408/10 Y10T483/136 Y10T483/16 Y10T74/18296 Y10T74/18304 Y10T74/2102 Y10T408/23 Y10T408/675 B23Q3/15 Y10T29/49853 Y10T29/49995 Y10T483/11 Y10T483/1748 Y10T483/1873 Y10T29/5107

European: B23Q1/00B2 B23Q1/03 B23Q1/34 B23Q1/48 B23Q1/70 B23Q16/02C4 B23Q3/15 B23Q3/155B B23Q3/155D2 B23Q3/157 B23Q3/157B B23Q5/04 B23Q5/32B B23Q5/34B B43K15/02

US: 27/568 29/2.6A 29/26A 29/441.1 29/55.7 29/557 29/568 29/90 29/90.01 408/129 408/17 408/31 408/35 408/4 408/53 409/183 451/211 483/10 483/14 483/15 483/2 483/28 483/36 483/52 483/54 483/57 483/66 74/55 74/56 74/568 74/568R



Family:

Publication number	Publication date	Application number	Application date
CA938434 A1	19731218	CA19690044842	19690306
CH557720 A	19750115	CH19690004498	19690325
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FR2004685 A1	19691128	FR19690008723	19690325
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GB1263103 A	19720209	GB19710031097	19690211
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GB1263106 A	19720209	GB19710031100	19690211
NL6904546 A	19690929	NL19690004546	19690325
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US3816890 A	19740618	US19710192669	19711026

Priority:

US19680715711 19680325 US19690871136 19690904 US19690871135 19690904 US19690871133 19690904 US19690871137 19690904 US19690868517 19691022 US19690869733 19691027 US19710121213 19710304 US19710121214 19710304 US19710192669 19711026

Probable Assignee: CUPLER II JOHN A

Assignee(s): (std): CUPLER II JOHN A ; CUPLER J ; CUPLER JOHN ; CUPLER JOHN A ; CUPLER JOHN ADWIN II
Assignee(s): JOHN A CUPLER ; JOHN ADWIN CUPLER II ; JOHN A CUPLER II ; CUPLER JOHN A LA VALE CUMBERLAND MD V ST A ; CUPLER J US

Inventor(s): (std): A CUPLER II JOHN ; CUPLER J ; CUPLER JOHN A ; CUPLER JOHN ADWIN II

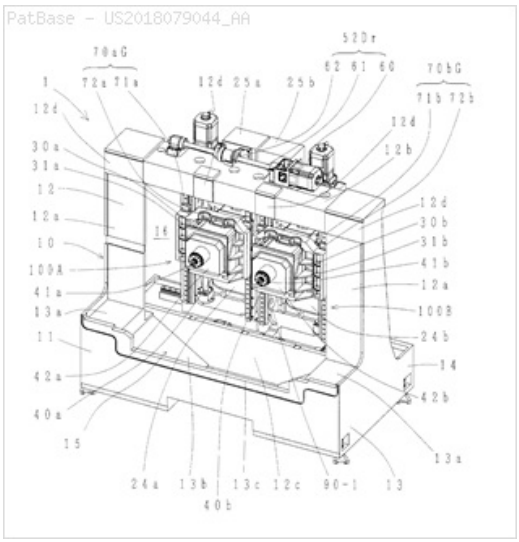
Inventor(s): JOHN A CUPLER ; JOHN A CUPLER II ; JOHN ADWIN CUPLER II ; CUPLER JOHN A LA VALE CUMBERLAND MD V ST A ; CUPLER J US

420) Family number: 63675744 (US2018079044A)

Title: MACHINE TOOL

Abstract: A machine tool includes: a plurality of machining units, each including: a first saddle movable in a right-left direction; a second saddle supported by the first saddle and movable in an up-down direction; and a spindle device supported by the second saddle and movable in a front-rear direction. The plurality of machining units are arranged in the right-left direction such that spindles provided in the respective spindle devices are parallel to each other. The machining tool further includes an X-axis moving mechanism that moves the first saddle in the right-left direction; and a control device that controls an operation of the X-axis moving mechanism during machining of a workpiece and during correction of a spindle spacing between the machining units. A plurality of the X-axis moving mechanisms are provided corresponding to the respective machining units.

Classifications:
International (IPC 8-9): B23C1/04 B23P23/00 B23Q15/00 B23Q15/18 B23Q15/22 B23Q3/157 B23Q39/00 B23Q39/02 B23Q5/04 B23Q5/34 G05B19/18 G05B19/29 G05B19/401 G05B19/404 (Advanced/Invention)
CPC: G05B19/404 B23Q15/22 B23Q39/00 G05B2219/34319 B23Q5/34 G05B19/29 B23Q2039/002 B23Q5/04 B23Q3/15539 B23Q3/15706 B23Q3/15766 Y10T409/307056 Y10T409/307168 Y10T483/1795 Y10T483/1845 B23C1/04 G05B19/4015 B23Q15/18 B23Q3/157 B23Q39/02 G05B19/18 B23Q17/2233



Family:

Publication number	Publication date	Application number	Application date
CN107405748 A	20171128	CN201680017571	20160318
EP3275592 A1	20180131	EP20160768045	20160318
EP3275592 A4	20190116	EP20160768045	20160318
JP2016152138 A1	20171012	JP20170507499T	20160318
JP6351053 B1	20180704	JP20170507499T	20160318
KR101892969 B1	20180829	KR20177024144	20160318
KR20170110643 A	20171011	KR20177024144	20160318
US2018079044 AA	20180322	US20160560940	20160318
WO16152138 A1	20160929	WO2016JP01612	20160318

Priority:
JP20150060217 20150323 WO2016JP01612 20160318

Probable Assignee: HORKOS CORP

Assignee(s): (std): HORKOS CORP

Inventor(s): (std): MOTOTAN HROSH ; MOTOTANI HIROSHI

Agent(s): KRAMER BARSKE SCHMIDTCHEN PATENTANWAELTE PARTG MBB; OKUMURA HIDEYUKI

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

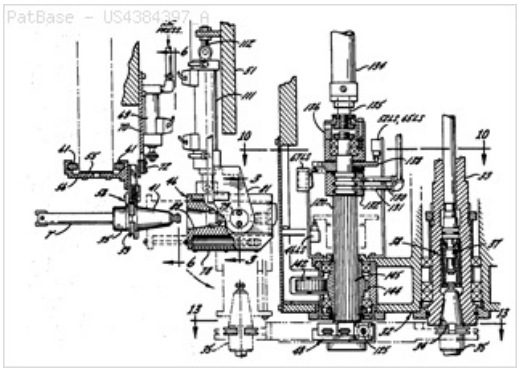
421) Family number: 1996745 (US4384397A)

Title: TOOL CHANGING MACHINING CENTER WITH SWING SPINDLE

Abstract: An improved tool changing machining center adapted for boring, drilling, milling, tapping and tool changing operations under numerical control. The machining center, which may be built in both vertical and horizontal spindle configurations, has an automatic tool changer including a tool storage matrix, a swing spindle transfer device mounted on the matrix, and a two-handed transfer arm mounted on the headstock. It operates with current commercial tapered shank toolholders and utilizes the existing power drawbolt engagement structure of the toolholders to secure them during tool change.

Classifications:
International (IPC 8-9): B23Q3/157 (Advanced/Invention); B23Q3/157 (Core/Invention)
International (IPC 1-7): B23P23/02 B23Q3/157
CPC: Y10S483/902 Y10T483/176 Y10T483/1769 Y10T483/1891 B23Q3/15773

European: B23Q3/157D
US: 29/568 414/736 483/41 483/45 483/68 483/902



Family:

Publication number	Publication date	Application number	Application date
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FR2480659 A1	19811023	FR19810008053	19810422
FR2480659 B1	19841207	FR19810008053	19810422
GB2074908 A1	19811111	GB19810012302	19810421
GB2074908 B2	19840711	GB19810012302	19810421
JP1319942 C3	19860529	JP19810061086	19810422
JP57001637 A2	19820106	JP19810061086	19810422
JP60044101 B4	19851001	JP19810061086	19810422
US4384397 A	19830524	US19800142625	19800422

Priority:
US19800142625 19800422

Probable Assignee: GIDDINGS AND LEWIS
Assignee(s): (std): GIDDINGS AND LEWIS
Assignee(s): GIDDINGS AND LEWIS INC ; GIDDINGS LEWIS INC ; CITICORP USA INC
Inventor(s): (std): JIEIMUSU NERUSON ; NELSON JAMES
Inventor(s): JEIMUSU NERUSON ; JAMES NELSON

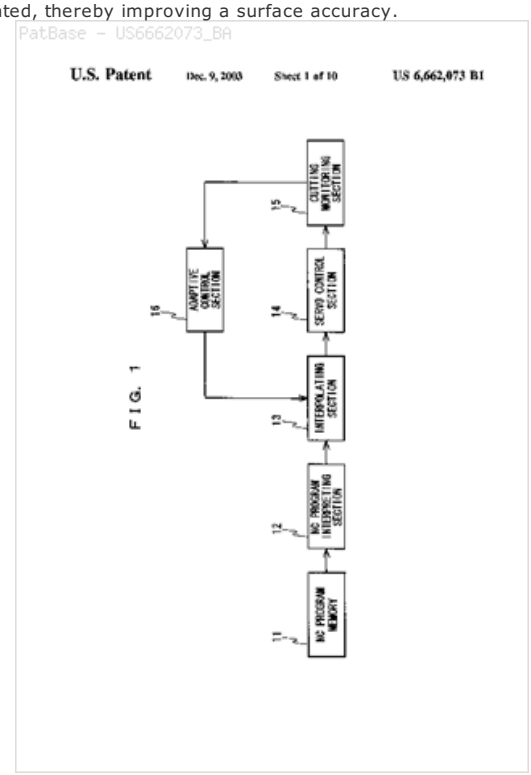
422) Family number: 16049746 (US6662073B)

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Title: APPARATUS AND METHOD FOR MACHINING SIMULATION FOR NC MACHINING

Abstract: A machining simulation is performed on a graphic data basis prior to machining. Machining simulation means (17) simulates a forced-vibration frequency and/or a load variation frequency occurring due to interrupted cutting on the basis of machining information, and numerical control command generating means (18) generates a numerical control command on the basis of the frequencies obtained from the machining simulation means (17). A spindle rotation speed can be reflected on the actual machining and the generation of a machining program under conditions optimum for the actual machining. Therefore, the interrupted-cutting forced-vibration frequency and/or load variation frequency, or harmonic frequencies thereof which are integral multiples thereof are prevented from being close to the natural frequency of a machine, a tool, a jig or a workpiece. Thus, chattering due to resonance can be prevented, thereby improving a surface accuracy.

Classifications:
International (IPC 8-9): B23Q15/12 G05B19/40 G05B19/4068 G05B19/4069 G05B23/02 G06F19/00 G06Q50/00 G06Q50/04 (Advanced/Invention);
B23Q15/00 B23Q15/007 G05B19/40 G05B19/406 (Core/Invention)
International (IPC 1-7): B23Q15/12 G05B19/40 G05B19/4068 G05B19/4069
CPC: G05B19/4069 G05B2219/34048 G05B2219/35346 G05B2219/36252 G05B2219/37534 G05B2219/41121
European: G05B19/4069 S05B219/34048 S05B219/35346 S05B219/36252 S05B219/37534 S05B219/41121
US: 700/109 700/118 700/173 700/182 700/96



Family:

Publication number	Publication date	Application number	Application date
DE60035129 D1	20070719	DE20006035129T	20000630
DE60035129 D1	20070719	DE20006035129	20000630
DE60035129 T2	20080207	DE20006035129T	20000630
EP1296210 A1	20030326	EP20000942444	20000630
EP1296210 A4	20050119	EP20000942444	20000630
EP1296210 B1	20070606	EP20000942444	20000630
JP2002003155 A1	20030826	JP20020508157T	20000630
JP4812224 B1	20111109	JP20020508157T	20000630
JP4812224 B2	20111109	JP20020508157T	20000630
US6662073 BA	20031209	US20020049628	20020222
WO0203155 A1	20020110	WO2000JP04393	20000630

Priority:

EP20000942444 20000630 WO2000JP04393 20000630

Probable Assignee: MORI SEIKI CO LTD

Assignee(s): (std)**:** FUJISHIMA MAKOTO ; FUKAYA YASUSHI ; MORI SEIKI SEISAKUSHO KK ; OKUMA MACHINERY WORKS LTD ; YAMAZAKI KAZUO

Assignee(s): OKUMA CORP ; MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std)**:** YAMAZAKI KAZUO ; FUKAYA YASUSHI ; FUKAYA ; FUJISHIMA MAKOTO ; FUJISHIMA

Agent(s): MURAKAMI SATOSHI

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT JP LU MC NL PT SE US

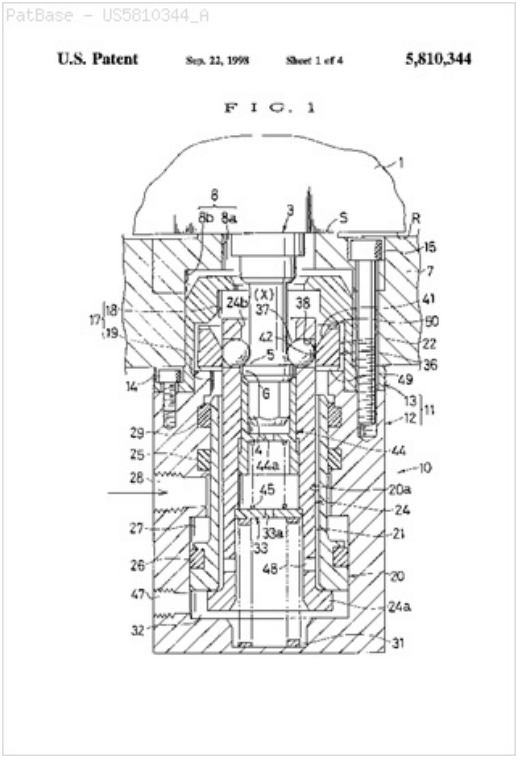
423) Family number: 11059748 (US5810344A)

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Title: Clamping apparatus

Abstract: An annular piston (20) is inserted into a lower portion of a guide bore (17) of a housing (11), and a transmission sleeve (24) is inserted into the cylindrical bore (20a) of the piston (20) with a first annular gap (21) defined therebetween. A ring-shaped operation member (36) is inserted into an upper portion of the guide bore (17) with a second annular gap (22) defined therebetween. At the time of clamping, first a pull bolt (3) is inserted into the sleeve (24) and then the sleeve (24) is driven downward by the piston (20). Thereupon, balls (37) are changed over to an engagement position (X) by the operation member (36), so that a driving force of the piston (20) can be transmitted to a workpiece (1) through the sleeve (24), the balls (37) and the pull bolt (3).

Classifications:
International (IPC 8-9): B23B31/107 B23Q1/00 B23Q3/02 B23Q3/06 B25B5/06 (Advanced/Invention);
B23B31/10 B23Q1/00 B23Q3/02 B25B5/00 (Core/Invention);
B23Q3/06 (Core/Non-invention)
International (IPC 1-7): B23Q1/00 B23Q3/02 B23Q3/06
CPC: B23B31/1071 B23Q1/0072 B25B5/061
European: B23B31/107B B23Q1/00D B23Q1/00D1 B25B5/06B
US: 269/309



Family:

Publication number	Publication date	Application number	Application date
DE69712975 D1	20020711	DE19976012975	19970409
DE69712975 T2	20021128	DE19976012975T	19970409
EP0803316 A1	19971029	EP19970400813	19970409
EP0803316 B1	20020605	EP19970400813	19970409
JP3569069 B2	20040922	JP19960100596	19960423
JP9285925 A2	19971104	JP19960100596	19960423
JP9285925 K1	19971104	JP19960100596	19960423
KR100415483 B1	20040406	KR19970012600	19970404
KR19970069235 A	19971107	KR19970012600	19970404
KR970069235 A	19971107	KR19970012600	19970404
TW323977 B	19980101	TW19970102567	19970304
US5810344 A	19980922	US19970839105	19970423

Priority:

JP19960100596 19960423

Probable Assignee: KOSMEK KK

Assignee(s): (std): COSUMECK KK ; KOSMEK KK ; KOSMEK KOBE KK ; KOSMEK LTD

Assignee(s): COSUMECK KKJP ; KABUSHIKI KAISHA KOSMEK ; KABUSHIKI KAISHA KOSMEK KOBE

Inventor(s): (std): NISHIMOTO TOSHINAO

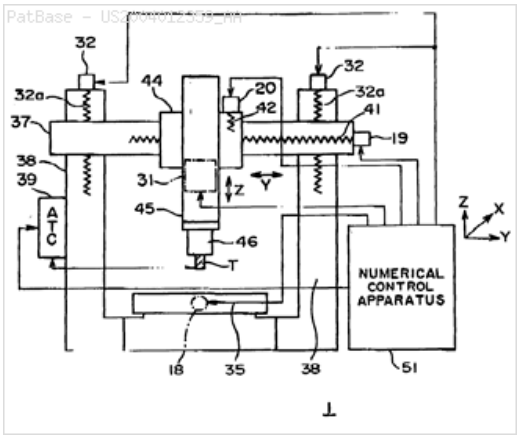
Designated states: DE FR GB IT

424) Family number: 30186749 (US2004012359A)

Title: MACHINE TOOL, TOOL, AND TOOL HOLDER

Abstract: A longer life, low cost tool and tool holder enabling change of posture with respect to a spindle, having a high machining accuracy of a workpiece, and resistant to generation of vibration or heat, provided with a working tool for processing a workpiece, a motor having an output shaft to which the working tool is connected and rotating the working tool, a first holder for holding the working tool and the motor, a mount attached to the spindle, a generator to which rotational force is transmitted from the spindle through the mount and generating electric power for driving the motor, a second holder for holding the mount ratably, holding the generator, and engaged with a nonrotating portion of the machine tool, and a posture adjustment mechanism which connects the first holder and the second holder and is able to change the posture of the working tool with respect to the spindle.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/54 B23Q15/14 B23Q3/12 B23Q5/04 B23Q5/10 (Advanced/Invention);
B23Q1/00 B23Q1/25 B23Q15/00 B23Q15/007 B23Q3/00 B23Q5/00 (Core/Invention)
International (IPC 1-7): B23Q15/14 B23Q3/12 B23Q5/04 G05B11/01
CPC: Y10S388/937 B23Q1/5406 B23Q1/0009 B23Q5/045 Y10T408/65 Y10T408/83 Y10T408/85884 Y10T408/86 Y10T408/865 Y10T408/89 Y10T409/30896 Y10T409/307672 Y10T409/309296
European: B23Q1/00B B23Q1/54A B23Q5/04D2
US: 29/40 318/140 318/146 318/147 318/560 318/567 318/569 318/574 318/600 318/727 388/937 408/124 408/146 408/159 408/186 408/187 408/199 409/201 409/224 409/230



Family:

Publication number	Publication date	Application number	Application date
JP2003001541 A2	20030108	JP20010190170	20010622
JP2006305729 A2	20061109	JP20060224595	20060821
JP3944365 B2	20070711	JP20010190170	20010622
JP4242883 B2	20090325	JP20060224595	20060821
US2004012359 AA	20040122	US20020197267	20020718
US6825630 BB	20041130	US20020197267	20020718

Priority:

JP20010190170 20010622 US20020197267 20020718 JP20060224595 20060821

Probable Assignee: TOSHIBA KIKAI KK

Assignee(s): (std): KATO YASUNORI ; KATOH KOUICHI ; SAGARA MAKOTO ; TOSHIBA MACH CO LTD ; TOSHIBA MACHINE CO LTD ; WATANABE TAKAZUMI

Assignee(s): TOSHIBA KIKAI K USHIKI KAISHA AB ; TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK

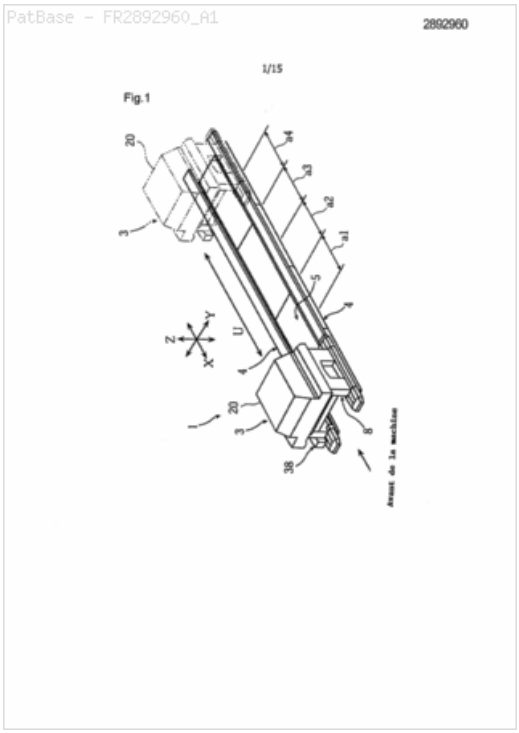
Inventor(s): (std): KATO YASUNORI ; KATOH KOUICHI ; SAGARA MAKOTO ; WATANABE TAKAZUMI ; WATANABE TAKASUMI ; KATO YASUNARI ; KATO KOICHI

425) Family number: 34468754 (FR2892960A)

Title: MACHINE TOOL E.G. VERTICAL MACHINING CENTER, FOR E.G. MACHINING LONG AND BROAD PIECE, HAS MACHINING UNIT RELATIVELY MOVABLE ALONG THREE AXIAL DIRECTIONS, AND PROTECTION MECHANISMS PROVIDED AT LEVEL OF FRONT AND REAR OPENINGS

Abstract: The tool has a machining unit (3) which supports a pin (2) to which a tool is attached such that the unit is relatively movable along three axial directions. A pair of right and left benches (4) supports the unit (3) such that the unit (3) is movable along a direction of a U axis parallel to X axis. A machining table (5) is placed between the benches and has a set of machining zones (a1 - a4) arranged in a direction of the U axis. Protection mechanisms are provided at the level of front and rear openings that are formed by frames of left and right posts (15, 16).

Classifications:
International (IPC 8-9): B23C1/12 B23Q1/26 (Advanced/Invention);
B23C1/00 B23Q1/26 (Core/Invention)
CPC: B23Q1/012 B23Q11/0891
European: B23Q1/01A B23Q11/08K



Family:

Publication number	Publication date	Application number	Application date
FR2892960 A1	20070511	FR20060055389	20061208

Priority:

FR20060055389 20061208

Probable Assignee: MORI SEIKI SEISAKUSHO KK

Assignee(s): (std)**:** MORI SEIKI SEISAKUSHO KK

Assignee(s): MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std)**:** TANOUE SHINN ; KOTAKA TOSHIAKI ; ISHIGAKI HIKARU ; FUJIWARA RYUICHI

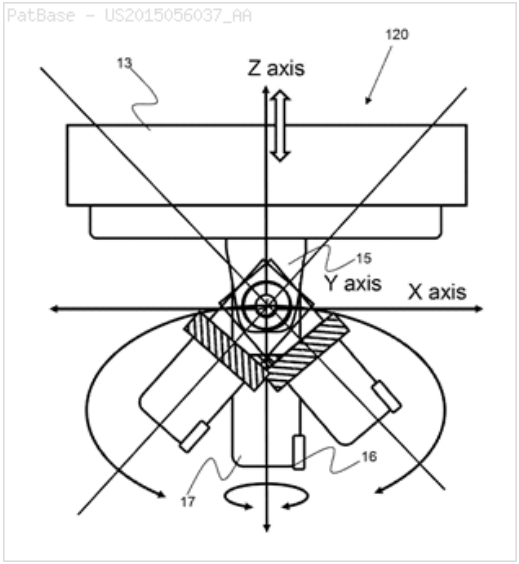
426) Family number: 58589755 (US2015056037A)

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Title: METHOD AND APPARATUS FOR SCULPTING PARTS AND PARTS MADE THEREFROM

Abstract: A sculpting machine, a method of sculpting a work-piece and work-products produced therefrom are described. A sculpting machine provides a cutting tool holder that is configured to hold a cutter in contact with a work-piece and move in two or more planes or axes of controlled motion about the work-piece to remove material. The cutter is non-spinning and is held in contact with the work-piece to carve away material, or sculpt the work-piece. The cutter may be held against the work-piece with the cutter in a fixed orientation relative to the surface of the work-piece being cut. The cutter may be moved along a straight line, curve or arc. The resulting product produced may have a much tighter tolerance and smoother surface finish than products machined with conventional techniques.

Classifications:
International (IPC 8-9): B23D5/02 B23D7/06 (Advanced/Invention)
CPC: B23D5/02 B23D7/06 Y10T428/24355 Y10T428/24479 Y10T409/500164
US: 409/289 428/141 428/156



Family:

Publication number	Publication date	Application number	Application date
US2015056037 AA	20150226	US20140217129	20140317
WO15031259 A2	20150305	WO2014US52532	20140825

Priority:

US20130869708P 20130825 US20140217129 20140317

Probable Assignee: WILSON ALEXANDER

Assignee(s): (std): WILSON ALEXANDER

Inventor(s): (std): WILSON ALEXANDER

Agent(s): HOBSON ALEX R

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

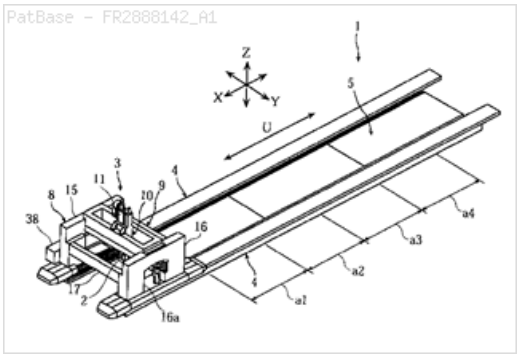
427) Family number: 34113757 (FR2888142B)

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Title: MACHINE-OUTIL

Abstract: A machine tool comprises spindle (2) attached with a tool; machining unit (3) by which the spindle is supported to be movable in X, Y, and Z axes directions; and long bed having machining areas arranged in one direction and on which the machining unit is mounted. The machining unit is movable in an arrangement direction of the machining areas and is disposed on the bed to be bridged over a machining table and supports the spindle. It further includes gate-shaped column (8), cross rail (9), cylindrical saddle (10), and ram (11). A machine tool comprises spindle attached with a tool; machining unit by which the spindle is supported to be movable in X, Y, and Z axes directions; and long bed having machining areas arranged in one direction and on which the machining unit is mounted. The machining unit is movable in an arrangement direction of the machining areas and is disposed on the bed to be bridged over a machining table and supports the spindle. It further includes gate-shaped column in which right and left column main bodies disposed on the bed are coupled by front and rear cross frames; cross rail having a rectangular shape in a plan view, between the front and rear cross frames and supported by the right and left column main bodies to be movable in the X and/or Y axis directions; cylindrical saddle supported to be movable in the X and/or the Y axis directions in the cross rail; and ram supported to be movable in the Z-axis direction in the saddle, where the spindle is attached to a lower end portion of the ram. The right and left column main bodies each have a rectangular shape. One of the column main bodies has an access opening sized to allow access to an operator. The other one of the column main bodies has a tool change window in a portion facing a tool change position, and a tool change arm can automatically change a tool attached to the spindle to a subsequent process tool held by a tool magazine through the tool change window. The cross rail has left and right flange portions supported by guide rails on upper surfaces of the right and left column main bodies.

Classifications:
International (IPC 8-9): B23C1/12 B23Q1/26 (Advanced/Invention); B23C1/00 B23Q1/26 (Core/Invention)
CPC: B23Q1/012 B23Q1/626
European: B23Q1/01A B23Q1/62A5



Family:

Publication number	Publication date	Application number	Application date
FR2888142 A1	20070112	FR20050007372	20050711
FR2888142 B1	20081017	FR20050007372	20050711

Priority:

FR20050007372 20050711

Probable Assignee: MORI SEIKI SEISAKUSHO KK

Assignee(s): (std): MORI SEIKI SEISAKUSHO KK

Assignee(s): MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std): FUJIWARA RYUICHI ; ISHIGAKI HIKARU ; KOTAKA TOSHIAKI ; TANOUE SHINN

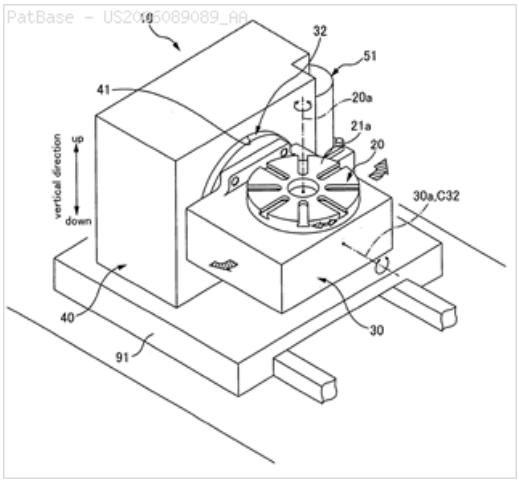
428) Family number: 32835758 (US2006089089A)

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Title: ROTARY TABLE APPARATUS

Abstract: A small-sized, lightweight rotary table apparatus is provided. The rotary table apparatus has: a support rest for rotatably supporting a rotary table; and a base for turnably supporting, in a cantilever fashion, the support rest by a shaft element, which is protrudingly formed on the support rest, being inserted into a hole provided in the base. The shaft element has formed therein a hollow section for accommodating at least a portion of a drive mechanism for rotating the rotary table.

Classifications:
International (IPC 8-9): B23B29/32 B23B7/04 B23Q1/48 B23Q1/50 B23Q1/54 B23Q16/00 B23Q16/02 B23Q16/06 B23Q16/10 B23Q3/10 B23Q7/02 B24B49/00 (Advanced/Invention); B23Q16/00 B23Q7/02 (Advanced/Non-invention)
International (IPC 1-7): B23Q3/10
CPC: Y10T74/14 B23Q1/5437 Y10T409/305824 B23Q16/025
European: B23Q1/54A B23Q1/54A9
US: 269/58 269/61 409/168 451/23 451/23P 74/813.00R 74/813R



Family:

Publication number	Publication date	Application number	Application date
CN100400228 C	20080709	CN200510113669	20051014
CN1759983 A	20060419	CN200510113669	20051014
DE602005002517 D1	20071031	DE200560002517T	20051010
DE602005002517 T2	20080626	DE200560002517T	20051010
EP1647355 A1	20060419	EP20050256297	20051010
EP1647355 B1	20070919	EP20050256297	20051010
JP2006110682 A2	20060427	JP20040301436	20041015
JP4590244 B2	20101201	JP20040301436	20041015
KR100641018 B1	20061101	KR20050095337	20051011
KR20060052163 A	20060519	KR20050095337	20051011
TW200615081 A	20060516	TW20050134715	20051004
TWI270435 B	20070111	TW20050134715	20051004
US2006089089 AA	20060427	US20050250904	20051014
US7603930 BB	20091020	US20050250904	20051014

Priority:

JP20040301436 20041015

Probable Assignee: SANKYO SEISAKUSHO CO

Assignee(s): (std)**:** SANKYO MFG ; SANKYO MFG CO LTD ; SANKYO SEISAKUSHO KK ; SANKYO SEISAKUSHO CO LTD

Assignee(s): SANKYO SEISAKUSHO CO. ; SANKYO MFG CO ; SANKYO MANUFACTURING CO ; SANKYO MANUFACTURING CO LTD

Inventor(s): (std)**:** HEIZABURO KATO ; HORI MASAAKI ; KATO HEIZABURO ; IIDA KATSUYUKI ; MASAAKI KATO HEIZABURO IIDA KA ; MASAAKI HORI ; KATSUYUKI IIDA

Inventor(s): KATO HEIZABURO IIDA KATSUYUKI HORI MASAAKI

Agent(s): ISSHIKI AND CO; EDWARDS AND ANGELL LLP; NUTTER MCCLENNEN AND FISH LLP; JOHN J

Designated states: DE FR GB IT

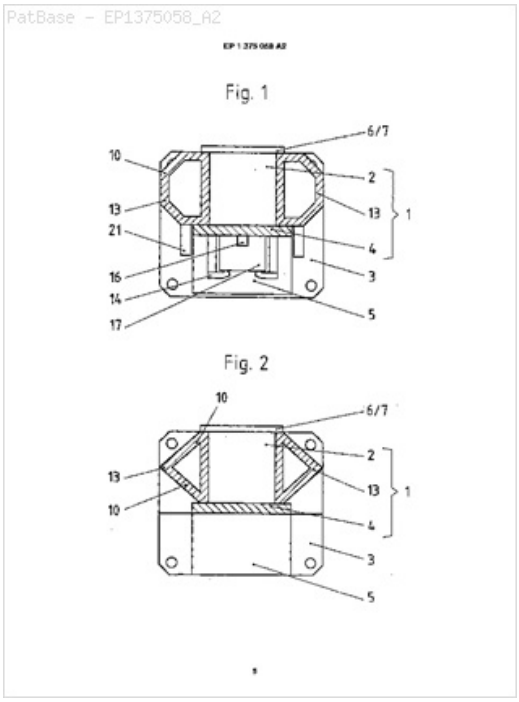
429) Family number: 30128763 (EP1375058A2)

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Title: Clamping device for a pallet device

Abstract: The workpiece clamp for a mill drill has the clamping wall of the clamp housing formed as a U-shaped hollow body with parallel hollow pillars (13) and a peripheral fixed clamping surface plate (4) to enclose three sides of a cavity. The hollow pillars are longitudinally split spaced pipe halves with a polygonal cross section.

Classifications:
International (IPC 8-9): B23Q3/10 (Advanced/Invention);
B23Q3/02 (Core/Invention)
International (IPC 1-7): B23Q3/00 B23Q3/02 B23Q3/10
CPC: B23Q3/103
European: B23Q3/10D



Family:

Publication number	Publication date	Application number	Application date
DE10218468 C1	20030626	DE20021018468	20020425
EP1375058 A2	20040102	EP20030090086	20030327
EP1375058 A3	20050119	EP20030090086	20030327
EP1375058 B1	20060906	EP20030090086	20030327

Priority:

DE20021018468 20020425

Probable Assignee: HOHENSTEIN VORRICHTUNGSBAU UND SPANNSYSTEME GMBH

Assignee(s): (std)**:** CROSS HUELLER GMBH ; HOHENSTEIN VORRICHTUNGSBAU ; HOHENSTEIN VORRICHTUNGSBAU U ; HUELLER HILLE GMBH ; WESTSAECHSISCHE HOCHSCHULE ZWI

Assignee(s): WESTSAECHSISCHE HOCHSCHULE ZWICKAU ; HOHENSTEIN VORRICHTUNGSBAU U SPANNSYSTEME GMBH ; HOHENSTEIN VORRICHTUNGSBAU UND SPANNSYSTEME GMBH

Inventor(s): (std)**:** GLEICH PETER ; KONOLD TITUS ; KRAMER WOLFGANG ; TANNER ANDREAS ; VOETISCH RALF

Designated states: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT SE SI SK TR

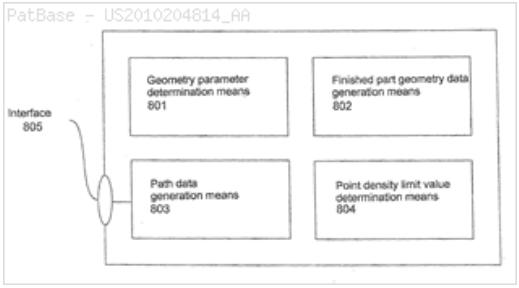
430) Family number: 46548766 (US2010204814A)

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Title: PROCESS AND APPARATUS FOR GENERATING CONTROL DATA FOR CONTROLLING A TOOL ON A MACHINE TOOL COMPRISING AT LEAST 5 AXES

Abstract: A process and an apparatus for generating control data for controlling a tool on a machine tool comprising at least 5 axes for the production of a predetermined finished part having a base body and at least one flank section protruding from the base body, finished part geometry data of the predetermined finished part geometry of the finished part being generated by means of fundamental geometry parameters and path data being generated by means of the finished part geometry data, the path data indicating the tool path along the surface of the flank section over which the tool has to travel with what tool orientation relative to the workpiece to remove material from the workpiece, the tool orientation of the tool corresponding to an orientation of a axis of rotation of the tool and the tool rotating about the axis of rotation of the tool to remove material from the workpiece.

Classifications:
International (IPC 8-9): B23F17/00 B23Q15/00 B23Q15/02 B24B1/00 B24B49/00 B24B51/00 B24B7/30 G05B19/19 G05B19/4093 G05B19/4097 G06F19/00 (Advanced/Invention); B23F23/12 (Advanced/Non-invention); B23Q15/007 G05B19/19 G05B19/4093 G05B19/4097 (Core/Invention)
CPC: Y02P90/265 G05B19/40937 G05B2219/35097 G05B2219/35103
European: G05B19/4093M S05B219/35097 S05B219/35103
US: 451/11 451/28 451/5 451/57 451/58 451/8 700/164 700/164S 700/195 700/195S 700/97 700/97P



Family:

Publication number	Publication date	Application number	Application date
CN101813930 A	20100825	CN201010123505	20100209
CN101813930 B	20141224	CN201010123505	20100209
DE102009008124 A1	20100819	DE200910008124	20090209
DE502010006335 D1	20140424	DE201050006335T	20100209
EP2221693 A2	20100825	EP20100153082	20100209
EP2221693 A3	20110504	EP20100153082	20100209
EP2221693 B1	20140312	EP20100153082	20100209

ES2455220 T3	20140415	ES20100153082T	20100209
IN00115KO2010 A	20120525	IN2010KO00115	20100208
JP2010228092 A2	20101014	JP20100026273	20100209
JP5651345 B2	20150114	JP20100026273	20100209
US2010204814 AA	20100812	US20100702886	20100209
US8615317 BB	20131224	US20100702886	20100209

Priority:

DE200910008124 20090209 EP20100153082 20100209

Probable Assignee: DECKEL MAHO PFRONTEN GMBH

Assignee(s): (std)**:** DECKEL MAHO PFRONTEN GMBH ; LOCHBIHLER THOMAS ; NEUMAIER JOSEF

Inventor(s): (std)**:** LOCHBIHLER THOMAS ; NEUMAIER JOSEF ; THOMAS LOCHBIHLER ; JOSEF NEUMAIER

Agent(s): MERH IP MATIAS ERNY REICHL HOFFMANN PATENTANWAELTE PARTG MBB; MERH IP MATIAS ERNY REICHL HOFFMANN; MERH IP MATIAS ERNY REICHL HOFFMANN; UNGRIA JAVIER; OLIFF AND BERRIDGE PLC

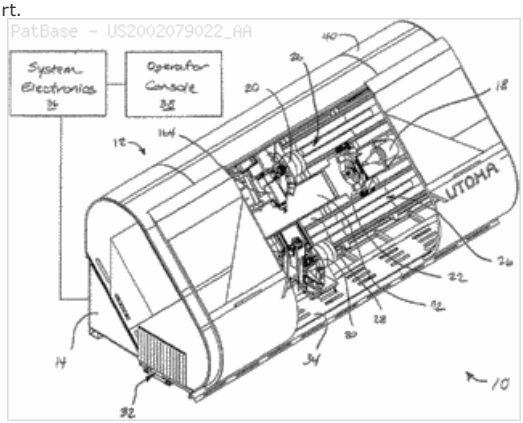
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

431) Family number: 28220766 (US2002079022A)

Title: MACHINING SYSTEMS AND METHODS FOR FORMING NON-METALLIC PARTS

Abstract: A machining system and an associated method for forming a non-metallic part including a headstock assembly and a tailstock assembly, the headstock assembly and the tailstock assembly being axially aligned along a headstock-tailstock axis, the headstock assembly and the tailstock assembly together operable for rotatably supporting the part. The system also including a base operable for movably supporting the headstock assembly and the tailstock assembly. The system further including at least one accessory carrier movably coupled to the base, the at least one accessory carrier including at least one accessory operable for assisting in the loading, stabilizing, and unloading of a workpiece. The system further including a plurality of tool changers movably coupled to the base, each of the plurality of tool changers including a plurality of tools operable for machining surfaces of the workpiece and forming the part. The system further including a controller operable for directing the machining system to form the part.

Classifications:
International (IPC 8-9): B23Q3/155 B27C7/00 B27C7/06 B27M1/08 B27M3/18 (Advanced/Invention);
B23Q3/155 B27C7/00 B27M1/00 B27M3/18 (Core/Invention)
International (IPC 1-7): B23Q15/00 B23Q16/00 B27C1/00 B27C5/00 B27G13/00
CPC: B23Q3/155 B27C7/005 B27C7/06 B27M1/08 B27M3/18
European: B23Q3/155 B27C7/00C B27C7/06 B27M1/08 B27M3/18
US: 144/218 144/382



Family:

Publication number	Publication date	Application number	Application date
US2002079022 AA	20020627	US20010032891	20011226

Priority:

US20000258432P 20001227 US20010032891 20011226

Probable Assignee: AUTOMATIC TURNING TECHNOLOGY LLC

Assignee(s): (std)**:** COLLE PAOLO M

Assignee(s): AUTOMATIC TURNING TECHNOLOGY LLC

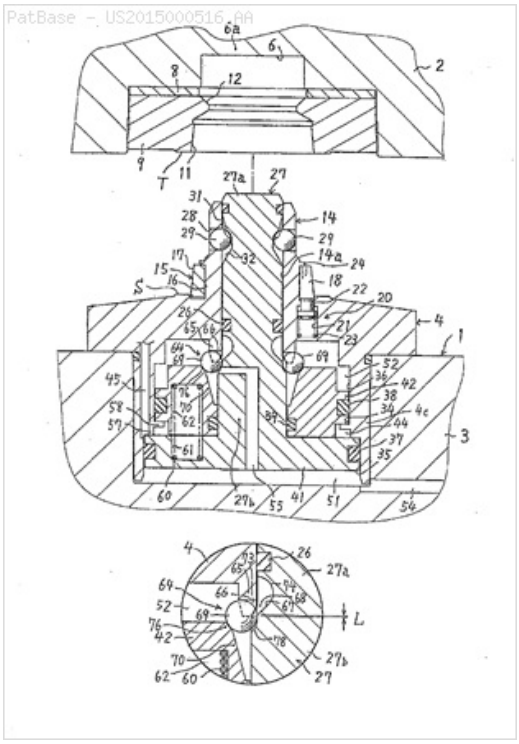
Inventor(s): (std)**:** COLLE PAOLO M

432) Family number: 54590769 (US2015000516A)

Title: CYLINDER DEVICE WITH FORCE MULTIPLIER

Abstract: An output rod (27) is inserted in a housing (4) so as to be movable vertically. A first piston (41) inserted in a lower part of the housing (4) is fixed to the output rod (27). A second piston (42) inserted on an upper side of the first piston (41) is fitted on the output rod (27) so as to be movable vertically. A lock chamber (44) is provided between the first piston (41) and the second piston (42). A first release chamber (51) is provided below the first piston (41). A second release chamber (52) is provided above the second piston (42). During force multiplication driving of the output rod (27), a pressurized fluid in the lock chamber (44) carries out the force multiplication driving with respect to the output rod (27) downward via the second piston (42) and engaging balls (69). A retaining spring (60) which biases the second piston (42) upward is provided in the lock chamber (44) between the first piston (41) and the second piston (42).

Classifications:
International (IPC 8-9): B23Q1/00 B23Q3/00 B23Q3/06 B23Q3/08 F15B15/14 F15B15/20 F15B15/26 F16J1/00
F16J10/02 (Advanced/Invention)
CPC: F16J1/005 F16J10/02 B23Q3/082 B23Q1/0081 B23Q1/009 F15B15/1409 F15B15/204
US: 92/172



Family:

Publication number	Publication date	Application number	Application date
CN104105890 A	20141015	CN201380009015	20130212
CN104105890 B	20160224	CN201380009015	20130212
DE602013005028 D1	20160324	DE201360005028T	20130212
EP2816238 A1	20141224	EP20130748942	20130212
EP2816238 A4	20150304	EP20130748942	20130212
EP2816238 B1	20160210	EP20130748942	20130212
JP2013122039 A1	20150511	JP20130525471T	20130212
JP5390047 B1	20140115	JP20130525471T	20130212
KR101653895 B1	20160902	KR20147020018	20130212
KR20140105589 A	20140901	KR20147020018	20130212
US2015000516 AA	20150101	US20130372873	20130212
US9541194 BB	20170110	US20130372873	20130212
WO13122039 A1	20130822	WO2013JP53219	20130212

Priority:

JP20120049765 20120216 EP20130748942 20130212 WO2013JP53219 20130212
JP20130525471 20130212

Probable Assignee: KOSMEK LTD

Assignee(s): (std): KOSMEK LTD

Assignee(s): KOSMEK LTD KOBE SHI

Inventor(s): (std): YOKOTA HIDEAKI ; HARUNA YOSUKE

Agent(s): KAHLER KAECK AND MOLLEKOPF; KAHLER KAECK MOLLEKOPF PARTNERSCHAFT VON PATENTANWAELTEN MBB; KNIGHTS RUPERT; HARAKENZO WORLD PATENT AND TRADEMARK; BACON AND THOMAS PLLC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

433) Family number: 71535770 (US2018299260A)

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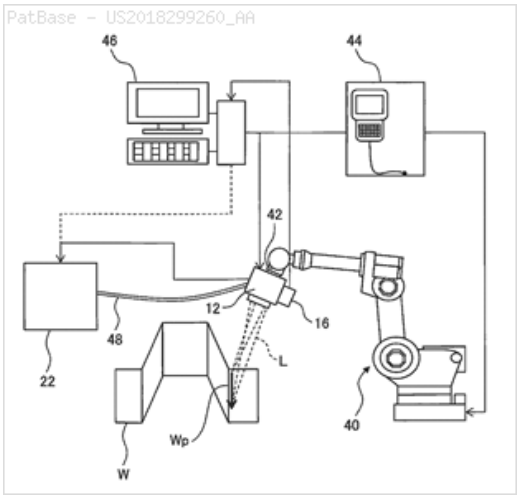
Title: LASER PROCESSING SYSTEM HAVING MEASUREMENT FUNCTION

Abstract: A laser processing system having a measurement function. The laser processing system includes a processing head configured to irradiate an object with a laser beam in a scanning manner via an optical system for processing; an illumination-light emitting section provided in the processing head, and configured to cause illumination light to be emitted from the processing head toward the object along an optical axis of the optical system for processing; a light receiving section located in a predetermined positional relationship with the illumination-light emitting section, and configured to receive a reflection of the illumination light reflected at an irradiated point on the object; and a measurement section configured to process the reflection received by the light receiving section and obtain three-dimensional measurement data of the irradiated point.

Classifications:

International (IPC 8-9): B23K26/03 B23K26/064 B23K26/08 B23K26/082 B23K26/70 G01B11/24 (Advanced/Invention)

CPC: G01B11/24 B23K26/032 B23K26/082 B23K26/0853 B23K26/0869 B23K26/0884 B23K26/21 B23K26/38 B23K26/064 B23K26/0643 B23K26/0648 B23K26/702



Family:

Publication number	Publication date	Application number	Application date
CN108723583 A	20181102	CN201810343673	20180417
DE102018002960 A1	20181018	DE201810002960	20180411
JP2018176245 A2	20181115	JP20170082131	20170418
US2018299260 AA	20181018	US20180949672	20180410

Priority:

JP20170082131 20170418

Probable Assignee: FANUC CORP

Assignee(s): (std)**:** FANUC CORP ; FANUC LTD

Inventor(s): (std)**:** NAKAMURA MINORU ; MURAKAMI YOSHINORI ; TAKAHASHI YUUKI ; TAKAHASHI YUKI

Agent(s): AOKI ATSUSHI; SHIMADA TETSURO

434) Family number: 11349773 (US5637973A)

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Title: NONCONTACTING ELECTRIC POWER TRANSFER APPARATUS, NONCONTACTING SIGNAL TRANSFER APPARATUS, SPLIT-TYPE MECHANICAL APPARATUS EMPLOYING THESE TRANSFER APPARATUS AND A CONTROL METHOD FOR CONTROLLING SAME

Abstract: PCT No. PCT/JP93/00822 Sec. 371 Date Feb. 17, 1994 Sec. 102(e) Date Feb. 17, 1994 PCT Filed Jun. 8, 1993 PCT Pub. No. WO93/26020 PCT Pub. Date Dec. 23, 1993A noncontacting power transfer apparatus, a noncontacting signal transfer apparatus, and a separate machine apparatus that uses these couplers are disclosed. The power coupler is composed of a primary side and a secondary side that are fixed to a static unit and rotatable unit of the machine apparatus, respectively, such that its output does not vary with arbitrary rotation by the rotatable unit. The signal coupler is composed of receiving side portion having a electric-to-light conversion device that converts an electric signal to an optical signal of rotational symmetry relative to the axis of rotation of the rotatable unit and a photoelectric conversion device that converts an optical signal to an electric signal. Accordingly, the rotatable unit can be supplied with power from the static unit even while rotating, and moreover, can communicate with the static unit. Further, the rotatable unit can be easily attached to the static unit and can be removed from the static unit.

Classifications:

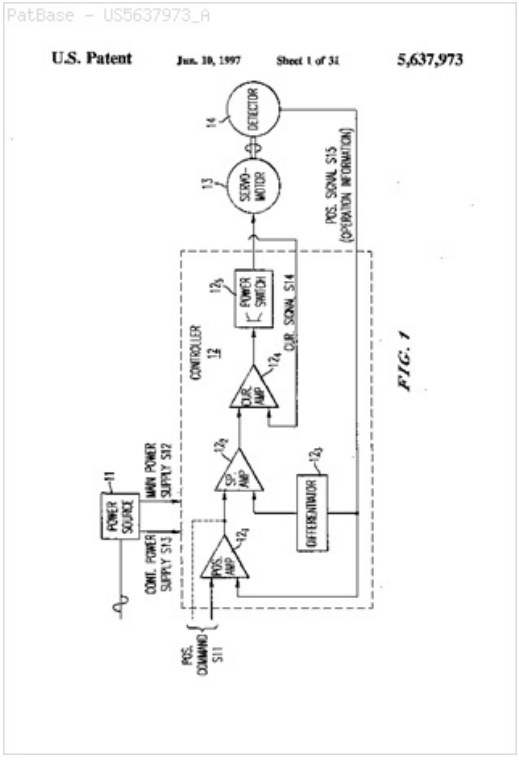
International (IPC 8-9): B23Q1/00 B23Q17/09 B23Q17/22 B23Q39/00 B23Q7/00 B25J19/00 B60L5/00 B65G43/00 G08C19/00 H01F38/14 H02J17/00 H02P29/00 H02P5/00 (Advanced/Invention); B65G43/00 H01F38/14 (Advanced/Non-invention); B23Q39/00 B23Q7/00 B25J19/00 B60L5/00 B65G43/00 G08C19/00 H01F38/14 H02J17/00 H02P29/00 H02P5/00 (Core/Invention); B65G43/00 (Core/Non-invention)

International (IPC 1-7): B23Q39/00 B23Q7/00 B23Q7/00 B23Q7/00 B25J19/00 B25J19/00 B25J19/00 B60L5/00 B65G43/00 B65G43/00 B65G43/00 G05B1/06 G05B5/00 G08C19/00 H01F23/00 H01F38/14 H02K23/44 H02P5/00

CPC: Y02T90/16 Y10S323/902 B23Q1/00 B23Q1/0009 B23Q17/09 B23Q17/2233 H01F38/14

European: B23Q1/00 B23Q1/00B B23Q17/09 B23Q17/22C H01F38/14 Y02T90/16

US: 307/104 318/16 318/480 318/492 318/538 318/556 318/640 323/355 323/902 324/166 324/207.17 324/97 336/120 336/84C 359/109 359/159 398/1 398/114



Family:

Publication number	Publication date	Application number	Application date
DE69321325 D1	19981105	DE19936021325	19930618
DE69321325 T2	19990318	DE19936021325T	19930618
EP0598924 A1	19940601	EP19930913542	19930618
EP0598924 A4	19950125	EP19930913542	19930618
EP0598924 B1	19980930	EP19930913542	19930618
EP0844627 A2	19980527	EP19980101897	19930618
EP0844627 A3	19980603	EP19980101897	19930618
EP0845793 A1	19980603	EP19980101894	19930618
EP0845794 A1	19980603	EP19980101896	19930618
EP0851441 A1	19980701	EP19980101895	19930618
JP3097319 B2	20001010	JP19920159614	19920618
JP3142570 B2	20010307	JP19940501340T	19930618
JP3259919 B2	20020225	JP19920188306	19920715
JP6006993 A2	19940114	JP19920159614	19920618
JP6036940 A2	19940210	JP19920188306	19920715
JP9149502 A2	19970606	JP19920351781	19921207
KR100309240 B1	20030806	KR19940700474	19930618
KR19940702307 A	19940728	KR19940700474	19940218
KR19947002307 A	19940728	KR19947000474	19930618
US5637973 A	19970610	US19940193009	19940217
US5770936 A	19980623	US19960725171	19961003
US5798622 A	19980825	US19960674858	19960703
US5818188 A	19981006	US19960762427	19961209
WO9326020 A1	19931223	WO1993JP00822	19930618

Priority:

JP19920159614 19920618 JP19920188306 19920715 JP19920351781 19921207
EP19930913542 19930618 WO1993JP00822 19930618 US19940193009 19940217
US19950485123 19950607 US19960674858 19960703 US19960725171 19961003
US19960762427 19961209

Probable Assignee: YASKAWA ELECTRIC CORP

Assignee(s): (std)**:** HAMAMOTO HIROYUKI ; HIRAGA YOSHIJI ; HIRAI JUNJI ; HIROSE KENJI ; YASKAWA DENKI SEISAKUSHO KK ; YASKAWA DENKI KITAKYUSHU KK ; YASKAWA ELECTRIC CORP ; NOMURA KENJI ; NITTA YUJI

Assignee(s): YASKAWA DENKI KITAKYUSHU FUKUOKA JP KK ; YASKAWA DENKI KK ; KABUSHIKI KAISHA YASKAWA DENKI ; KABUSHIKI KAISHA YASKAWA DENKI KITAKYUSHU FUKUOKA ; KABUSHIKI KAISHA YASKAWA DENKI KITAKYUSHU FUKUOKA JP

Inventor(s): (std)**:** HARAGA YOSHIJI ; HIRAGA YOSHIJI ; HIRAI ATSUYUKI ; HIRAI JUNJI ; HIROSE KENJI OKYO PLANTS ; NITTA YUJI ; NITTA YUJI TOKYO PLANTS ; HIROSE KENJI ; NOMURA KENJI ; HAMAMOTO HIROYUKI ; NOMURA KENJI TOKYO PLANTS K K ; NITTA YUJI TOKYO PLANTS K K YA ; HIROSE KENJI OKYO PLANTS K K Y ; HIRAI JUNJI TOKYO PLANTS K K Y ; HIRAGA YOSHIJI TOKYO PLANTS K ; HAMAMOTO HIROYUKI TOKYO PLANTS

Inventor(s): HIRAGA YOSHIJI TOKYO PLANTS YASKAWADENKI IRUMA SHI SAITAMA 358 JP KK ; HIROSE KENJI 0OKYO PLANTS YASKAWA DENKI IRUMA SHI SAITAMA 358 JP KK ; HIRAI JUNJI TOKYO PLANTS YASKAWA DENKI IRUMA SHI SAITAMA 358 JP KK ; NITTA YUJI TOKYO PLANTS YASKAWADENK SAITAMA 358 JP KK ; HAMAMOTO HIROYUKI TOKYO PLANTS K K ; HAMAMOTO HIROYUKI TOKYO PLANTS KK ; NOMURA KENJI TOKYO PLANTS K K YASKAWA DENKI ; NOMURA KENJI TOKYO PLANTS K K YASKAWA DENKI IRUMA ; NOMURA KENJI TOKYO PLANTS K K YASKAWA DENKI IRUMA SHI SAITAMA 358 JP ; NOMURA KENJI TOKYO PLANTS YASKAWA DENKI KK ; NOMURA KENJI TOKYO PLANTS YASKAWA DENKI IRUMA SHI SAITAMA 358 JP KK ; HIROSE KENJI 0OKYO PLANTS K K YASKAWA DENKI ; HIROSE KENJI 0OKYO PLANTS K K YASKAWA DENKI IRUMA ; HIROSE KENJI 0OKYO PLANTS K K YASKAWA DENKI IRUMA SHI SAITAMA 358 JP ; HIROSE KENJI 0OKYO PLANTS YASKAWA DENKI KK ; NITTA YUJI TOKYO PLANTS K K YASKAWADENK SAITAMA 35 ; NITTA YUJI TOKYO PLANTS K K YASKAWADENK SAITAMA 358 JP ; NITTA YUJI TOKYO PLANTS K K YASKAWADENKI ; NITTA YUJI TOKYO PLANTS YASKAWADENKI KK ; NOMOMURA KENJI ; HIRAI JUNJI TOKYO PLANTS K K YASKAWA DENKI ; HIRAI JUNJI TOKYO PLANTS K K YASKAWA DENKI IRUMA S ; HIRAI JUNJI TOKYO PLANTS K K YASKAWA DENKI IRUMA SHI SAITAMA 358 JP ; HIRAI JUNJI TOKYO PLANTS YASKAWA DENKI KK ; HIRAGA YOSHIJI TOKYO PLANTS K K YASKAWA DENKI ; HIRAGA YOSHIJI TOKYO PLANTS K K YASKAWADENKI IRUMA ; HIRAGA YOSHIJI TOKYO PLANTS K K YASKAWADENKI IRUMA SHI SAITAMA 358 JP ; HIRAGA YOSHIJI TOKYO PLANTS YASKAWA DENKI KK

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT JP KR LI LU MC NL PT SE US

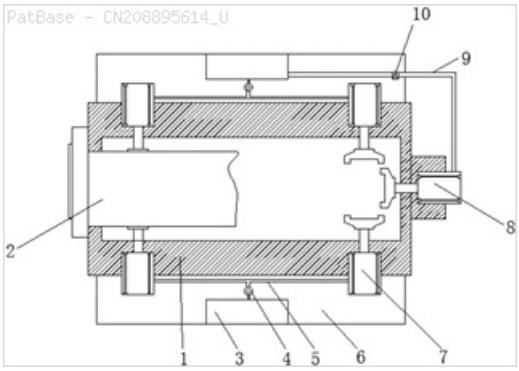
435) Family number: 74473776 (CN208895614U)

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Title: A machining center automatic alignment automobile exhaust treatment parts with a jig (Machine translation)

Abstract: Source: CN208895614U **Machine translation:** The utility model discloses a machining center automatic alignment automobile exhaust treatment accessories, jig, including clamp head, the clamp head along the width direction of the one side edge of the welded L-shaped frame, the jig table along the longitudinal direction of the two side edges of the welded transverse plate, the transverse plate fixed to the oil tank, the jig table along the longitudinal direction of the two sides fitted with HSA hydraulic clamping cylinder. The utility model by measuring the workpiece cylindrical head for data collection, and then transmitted to the microprocessor signal receiver, and then by the microprocessor control of the first valve and the second oil outlet valve of the hydraulic clamping cylinder and work to control the HSA HSA hydraulic hydraulic support cylinder operation, the workpiece automatically find the positive fixed by clamping, automatic alignment fixed.

Classifications:
International (IPC 8-9): B23Q17/00 B23Q3/06 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
CN208895614 U	20190524	CN201821292819U	20180813

Priority:

CN201821292819U 20180813

Probable Assignee: SHIJIAZHUANG HEBEI DACHENG TAIWAN MACHINERY CO LTD

Assignee(s): SHIJIAZHUANG HEBEI DACHENG TAIWAN MACHINERY CO LTD

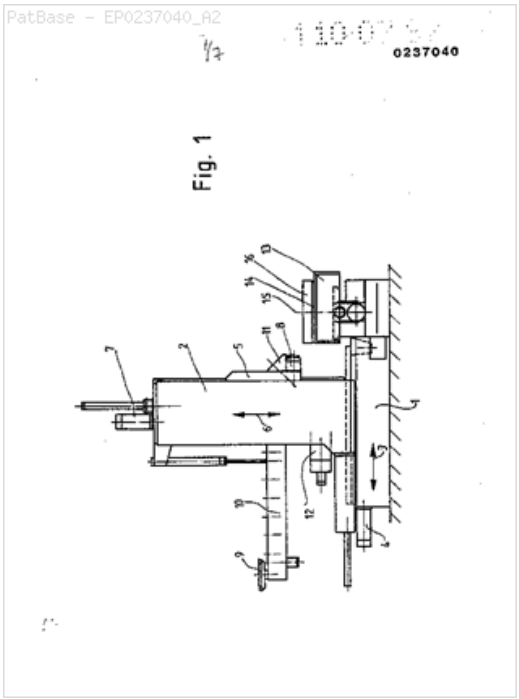
436) Family number: 4649777 (EP0237040A2)

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Title: Tool for tool changing machines.

Abstract: The tool (9) is provided for tool-changing machines and has a holder (20) which is provided with a peripheral groove (75) for gripper parts of a gripping device. In addition, the holder (20) has a tapered shank (19) with which it can be inserted into a receptacle (18) of a work spindle (8). In the working position, the tool (9) on the holder (20) covers the peripheral groove (75) and is axially supported directly on the work spindle (18) and also detachably fastened to it. For the tool change, the tool (9) can be displaced axially relative to the holder (20) into a position clearing the peripheral groove (75). Tools (9) which are designed for high cutting capacities and are also large and heavy can be reliably attached to the work spindle (8), in the course of which the holder (20) centres the tool (9). For the tool change, the tool (9) is displaced so that the gripping device can take hold of the holder (20).

Classifications:
International (IPC 8-9): B23C5/26 (Advanced/Invention)
International (IPC 1-7): B23C5/26 B23Q3/00 B23Q3/157
CPC: B23C5/26
European: B23C5/26



Family:

Publication number	Publication date	Application number	Application date
BRPI8701141 A	19880105	BR1987PI01141	19870312
DE3608141 A1	19870917	DE19863608141	19860312
DE3608141 C2	19900208	DE19863608141	19860312
EP0237040 A2	19870916	EP19870103461	19870310
EP0237040 A3	19890614	EP19870103461	19870310

Priority:

DE19863608141 19860312

Probable Assignee: HELLER GEB GMBH MASCHF

Assignee(s): (std)**:** HELLER GEB GMBH MASCHF

Assignee(s): GEBR HELLER MASCHINENFABRIK GMBH ; GEBR HELLER MASCHINENFABRIK GMBH 7440 NUERTINGEN DE

Inventor(s): (std)**:** MAIER HEINZ ; HELLER MASCHF GM GEB ; GEBR HELLER MASCHINENFABRIK GM

Inventor(s): HEINZ MAIER ; GEBR HELLER MASCHINENFABRIK GMBH ; VERZICHT DES ERFINDERS AUF NENNUNG

Designated states: AT CH DE FR GB IT LI SE

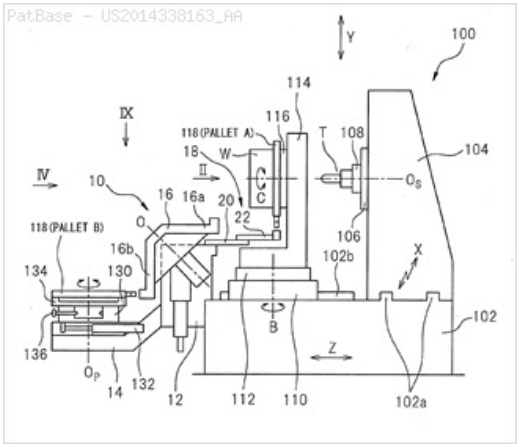
437) Family number: 53203782 (US2014338163A)

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Title: PALLET CHANGER FOR A MACHINE TOOL, A PALLET CHANGING METHOD AND A MACHINE TOOL

Abstract: The method that exchanges pallets (118) between a table (116) and a pallet loading station (14) of a machine tool is configured so that the lower edge (122) of a pallet (A) installed on the table (116) is grasped by the leading edge portion (17) of a first arm (16a) of the exchanging arm (16) and the one side (122) of a pallet (B), which is disposed on the pallet loading station (14), that will become the lower edge when the pallet is installed on the table (116) is grasped by the leading edge portion (17) of a second arm (16b) of the exchanging arm (16), and the exchanging arm (16) is rotated 180 degrees around an inclined axis (O) that extends 45 degrees upward from a horizontal axis in a vertical plane that contains the axis of rotation (Os) of the main axis (108).

Classifications:
International (IPC 8-9): B23Q1/66 B23Q7/00 B23Q7/04 B23Q7/14 B65G25/04 (Advanced/Invention)
CPC: B65G25/04 Y10T29/5124 Y10T29/5196 Y10T409/30532 Y10T409/306048 B23Q7/043 B23Q7/048 B23Q7/1431 B23Q7/1494 B23Q1/66 B23Q7/04 Y10T29/5176
US: 1/1 29/56.5 414/332 414/806



Family:

Publication number	Publication date	Application number	Application date
CN103796793 A	20140514	CN201180073463	20110916
CN103796793 B	20170215	CN201180073463	20110916
EP2756919 A1	20140723	EP20110872376	20110916
EP2756919 A4	20150722	EP20110872376	20110916
EP2756919 B1	20190327	EP20110872376	20110916
JP2013038568 A1	20150323	JP20130533450T	20110916
JP5855114 B1	20160209	JP20130533450T	20110916
US2014338163 AA	20141120	US20110344822	20110916
US9434037 BB	20160906	US20110344822	20110916
WO13038568 A1	20130321	WO2011JP71283	20110916

Priority:

WO2011JP71283 20110916

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std): MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE ; TSUCHIYA YUICHIRO ; OZONE KENTARO

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std): OZONE KENTARO ; TSUCHIYA YUICHIRO

Agent(s): THUM BERNHARD; AOKI ATSUSHI; SHIMADA TETSURO; MORRISON AND FOERSTER LLP; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

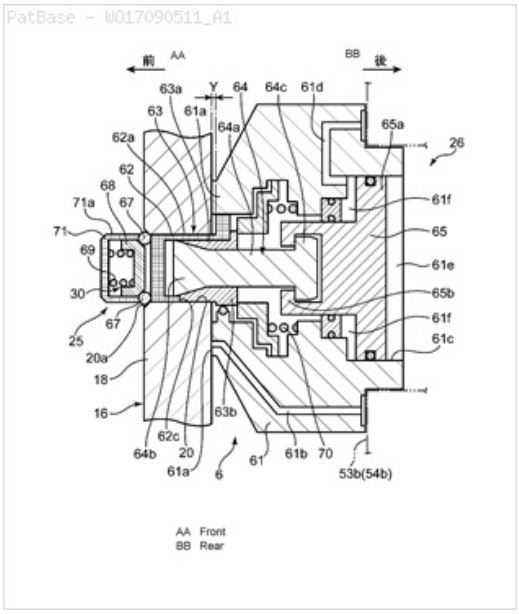
438) Family number: 65836783 (WO17090511A1)

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Title: WORKPIECE CLAMPING DEVICE

Abstract: This workpiece clamping device is provided with: an abutting member having a planar workpiece abutting surface along a vertical surface; a grip part provided so as to protrude from the workpiece abutting surface in the horizontal direction and brought into pressure contact with the inner peripheral surface of a clamping hole of the workpiece in an expanded diameter state; a clamping rod that expands the diameter of the grip part and brings the workpiece into close contact with the workpiece abutting surface by retreating in the direction opposite the protruding direction of the grip part; a drive part for causing reciprocal movement of the clamping rod; and a temporary holding mechanism that includes a locking part locked to a peripheral portion of the clamping hole at the front side of the grip part. In a state in which the clamping rod is moved forward, the locking part is disposed in a range in which the distance in the axial direction from the workpiece abutting surface is equal to or greater than the axial length of the clamping hole and less than or equal to the total value of the axial length and the maximum movement distance of the clamping rod.

Classifications:
International (IPC 8-9): B23Q3/06 (Advanced/Invention)
CPC: B23Q3/06



Family:

Publication number	Publication date	Application number	Application date
CN108602166 A	20180928	CN201680067924	20161117
JP2017094444 A2	20170601	JP20150228817	20151124
JP6341186 B2	20180613	JP20150228817	20151124
MX2018006326 A1	20180829	MX20180006326	20161117
WO17090511 A1	20170601	WO2016JP84134	20161117

Priority:

JP20150228817 20151124 WO2016JP84134 20161117

Probable Assignee: MAZDA MOTORS CORP

Assignee(s): (std)**:** MAZDA MOTOR ; MAZDA MOTORS CORP

Assignee(s): MAZDA MOTOR CORP

Inventor(s): (std)**:** NISHIMORI YASUO ; ENOMOTO TOMOAKI ; OKAMOTO YOSHIYUKI ; YASUO NISHIMORI ; YOSHIYUKI OKAMOTO ; TOMOAKI ENOMOTO

Agent(s): KOTANI ETSUJI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

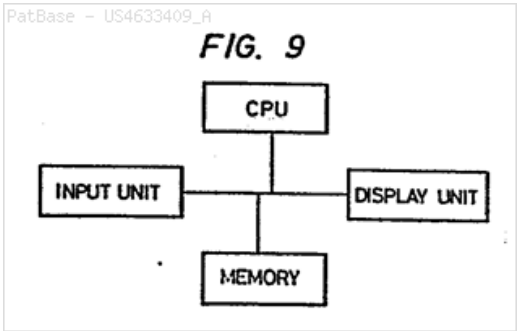
439) Family number: 13677786 (US4633409A)

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Title: NUMERICAL CONTROL DEVICE

Abstract: A numerical control device stores dimensional details of a workpiece, a chuck, and a tailstock as coordinate data items in a memory, computes the positions and shapes of the workpiece, the chuck, and the tailstock based on the coordinate data items, and displays the workpiece, the chuck, and the tailstock as graphic patterns on a display unit based on the computed results. The computation is simplified by using coordinates of a relative coordinate system as the coordinate data items for graphic display.

Classifications:
International (IPC 8-9): G05B19/4061 G05B19/4068 G05B19/4069 G05B19/4093 (Advanced/Invention);
G05B19/406 G05B19/4093 (Core/Invention)
International (IPC 1-7): G05B19/405 G05B19/406 G05B19/4061 G05B19/4068 G05B9/00 G06F15/46
CPC: Y10T82/2502 G05B19/40932 G05B2219/35314 G05B2219/45136 Y02P90/265
European: G05B19/4093G1 S05B219/35314 S05B219/45136
US: 318/568 318/568.1 364/171 364/184 364/474 700/178 700/180 700/183 82/118 82/2B



Family:

Publication number	Publication date	Application number	Application date
DE3481942 D1	19900517	DE19843481942	19840523
EP0129092 A2	19841227	EP19840105877	19840523
EP0129092 A3	19860416	EP19840105877	19840523
EP0129092 B1	19900411	EP19840105877	19840523
EP0129092 B2	19970409	EP19840105877	19840523
JP2663931 B2	19971015	JP19950307883	19951127
JP4017443 B4	19920326	JP19830090273	19830523
JP59229615 A2	19841224	JP19830090273	19830523

JP8211920 A2	19960820	JP19950307883	19951127
US4633409 A	19861230	US19840613472	19840523

Priority:

JP19830090273 19830523 JP19950307883 19951127

Probable Assignee: MITSUBISHI DENKI KK

Assignee(s): (std)**:** MITSUBISHI ELECTRIC CORP

Assignee(s): MITSUBISHI DENKI K K ; MITSUBISHI DENKI K K TOKIO TOKYO JP ; MITSUBISHI DENKI KABUSHIKI KAISHA ; MITSUBISHI DENKI KK

Inventor(s): (std)**:** SEKIKAWA KATSUHIDE MITSUBISHI ; SEKIKAWA KATSUHIDE

Inventor(s): SEKIKAWA KATSUHIDE MITSUBISHI DENKI K K ; SEKIKAWA KATSUHIDE MITSUBISHI DENKI K K NAGOYA SHI ; SEKIKAWA KATSUHIDE MITSUBISHI DENKI KK

Designated states: DE FR GB

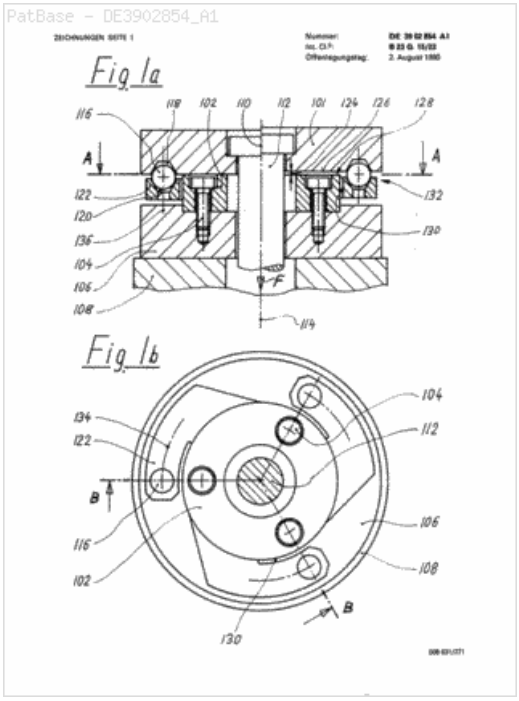
440) Family number: 7840790 (DE3902854A1)

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Title: Production apparatus with change pallets

Abstract: Workpieces are to be mounted on change pallets in an orientation station and are to be orientated with regard to certain dimensional features relative to the change pallets in such a way that the workpieces, after the transfer of the change pallets to a machining station, assume an extremely accurate, predetermined position there. Ultra-precise positioning of the workpiece can be achieved by applying a new positioning technique, working free of play and in an extremely accurate manner, for the pallet positioning as well as by applying a method according to which the systematic errors of all members affecting the accuracy (e.g. concentricity errors of the bearing arrangement of rotary tables) are determined and are compensated for during the orientation of the workpiece in the orientation station. Used during workpiece exchange by means of pallets with especially high demands on the orientation accuracy, e.g. during the exchange of gears to be accurately machined on gear-cutting machines.

Classifications:
International (IPC 8-9): B23Q1/36 B23Q16/00 B23Q16/08 (Advanced/Invention); B23Q1/26 B23Q16/00 (Core/Invention)
International (IPC 1-7): B23F23/00 B23Q15/22 B23Q16/08 B23Q3/02 B23Q7/00 B65D19/44
CPC: B23Q1/36 B23Q16/00 B23Q16/08
European: B23Q1/36 B23Q16/00 B23Q16/08



Family:

Publication number	Publication date	Application number	Application date
DE3902854 A1	19900802	DE19893902854	19890201

Priority:

DE19893902854 19890201

Probable Assignee: GEDIB INGENIEURBUERO U INNOVAT

Assignee(s): (std)**:** GEDIB INGENIEURBUERO U INNOVAT

Assignee(s): GEDIB INGENIEURBUERO U INNOVATIONS BERATUNG GMBH 5 ; GEDIB INGENIEURBUERO U INNOVATIONS BERATUNG GMBH 5920 BAD BERLEBURG DE

Inventor(s): (std)**:** BALD HUBERT ; HEDRICH MARTIN

Inventor(s): HEDRICH MARTIN 5920 BAD BERLEBURG DE

441) Family number: 30897792 (US5037074A)

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Title: Work-holding fixture for clamping a workpiece in position on a work-holding table

Abstract: A work-holding fixture for clamping a workpiece in position on a work-holding table has a guide shoe (1) and an associated clamping dog (2) which is designed as rocking lever (21) and has extensions (24) which are arranged in the center area and are supported on the guide shoe. A clamping screw (36) is provided at the free end of the clamping dog (2). The recesses (8, 9) are provided in such a way as to be continuous over the length of the guide shoe (1) and are integral parts of a T-slot-shaped cross-sectional configuration of the guide shoe (1). The clamping dog (2) has a curved form in which the free ends of the gripping leg (22) and of the clamping leg (23) are arranged higher than the extensions (24). The

extensions have a roughly elliptical cross-section with an orientation of the large axis roughly in the longitudinal direction of the clamping dog (2). The clamping dog has a return spring (30) acting against the clamping direction. For fixing the guide shoe (1) to the work-holding table, only one fixing screw (11) is provided to which one or more apertures (10) in the front region of the guide shoe (1) are allocated.

Classifications:
International (IPC 8-9): B23Q3/06 B25B5/10 F16B2/10 F16B35/00 F16B35/04 F16C11/06 (Advanced/Invention);
B23Q3/06 B25B5/00 F16B2/02 F16B35/00 F16B35/04 F16C11/06 (Core/Invention)
International (IPC 1-7): B23Q3/02 B23Q3/06 B23Q3/6 F16B35/00
CPC: B25B5/104 B25B5/108 F16B2/10 B60G7/005 B60G2204/416 B60G2204/44 B60G2204/4404 B60G2206/427 B60G2206/91 F16B35/005 F16B35/044 F16C11/0619 F16C2326/05
European: B25B5/10E B25B5/10E3 B60G7/00B F16B2/10 F16B35/00B F16B35/04B2 F16C11/06C L60G204/416 L60G204/44 L60G204/4404 L60G206/427 L60G206/91
US: 269/238 269/93 269/94

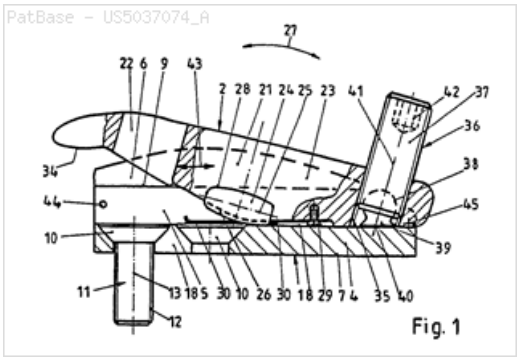


Fig. 1

Family:

Publication number	Publication date	Application number	Application date
AT95101 E	19931015	AT19900106360T	19900403
DE59002875 D1	19931104	DE19905002875	19900403
DE8904096 U1	19900913	DE19890004096U	19890404
DE8910814 U1	19900201	DE19890010814U	19890911
EP0391346 A1	19901010	EP19900106360	19900403
EP0391346 B1	19930929	EP19900106360	19900403
ES2047185 T3	19940216	ES19900106360T	19900403
US5037074 A	19910806	US19900505249	19900403

Priority:

DE19890004096U 19890404 DE19890010814U 19890911 DE19890010814U 19890911
DE19890010814U 19890911 EP19900106360 19900403 EP19900106360 19900403
EP19900106360 19900403 DE19905002875 19900403

Probable Assignee: LENZKES KARL HEINZ

Assignee(s): (std): LENZKES KARL HEINZ

Assignee(s): LENZKES KARL HEINZ 58762 ALTENA DE ; LENZKES KARL HEINZ 5990 ALTENA DE

Inventor(s): (std): LENZKES KARL HEINZ

Inventor(s): LENZKES KARL HEINZ 58762 ALTENA DE

Designated states: AT CH DE ES FR GB IT LI NL SE

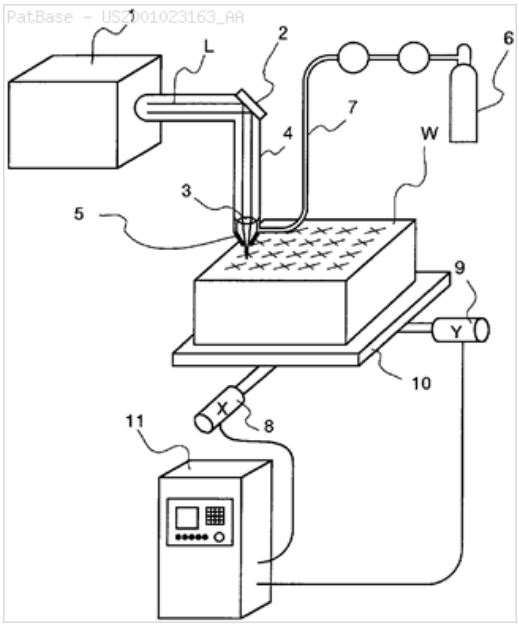
442) Family number: 28104795 (US2001023163A)

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Title: SCRAPING APPARATUS AND SCRAPING METHOD

Abstract: A scraping apparatus in which a scraping process is performed on a surface of a work to be machined to form recesses thereon by converging a laser beam outputted from a laser oscillator by a converging lens and irradiating the converged laser beam onto the work relatively moving to the laser beam for removing some portions by being melted or evaporated from the surface thereof.

Classifications:
International (IPC 8-9): B23D79/00 B23K26/00 B23K26/08 B23K26/36 (Advanced/Invention);
B23K26/00 B23K26/08 (Core/Invention)
International (IPC 1-7): B23D79/00 B23D79/02 B23K26/00 B23K26/08 B23K26/18 B24B1/00 B24B7/30
CPC: B23K26/361 B23K26/3576 F16C33/103
European: B23K26/00J2C B23K26/36E
US: 219/121.69 219/121.85 451/28 451/28P 451/53 451/908 451/908S



Family:

Publication number	Publication date	Application number	Application date
CA2246141 AA	19990726	CA19982246141	19980827
DE19836330 A1	19990805	DE19981036330	19980811
FR2774012 A1	19990730	FR19980012306	19981001

FR2774012 B1	20030606	FR19980012306	19981001
JP11207477 A2	19990803	JP19980012632	19980126
TW531461 B	20030511	TW19980111015	19980708
US2001023163 AA	20010920	US19980119937	19980721
US6769962 BB	20040803	US19980119937	19980721

Priority:

JP19980012632 19980126 CA19982246141 19980827

Probable Assignee: MITSUBISHI DENKI KK

Assignee(s): (std)**:** KINBARA ; MITSUBISHI ELECTRIC CORP

Assignee(s): TANAKA HISAO ; USUI AKARU ; KINBARA ET AL ; KINBARA YOSHIHIDE ; MITSUBISHI DENKI K K ; MITSUBISHI DENKI K K TOKIO TOKYO JP ; MITSUBISHI DENKI KK

Inventor(s): (std)**:** KANEHARA YOSHIHIDE ; KINBARA YOSHIHIDE ; TANAKA HISAO ; USUI AKARU ; USUI AKIRA

Inventor(s): USUI AKARU TOKIO TOKYO JP ; TANAKA HISAO TOKIO TOKYO JP ; KINBARA YOSHIHIDE TOKIO TOKYO JP

Agent(s): FETHERSTONHAUGH AND CO

443) Family number: 71117800 (JP2018161723A)

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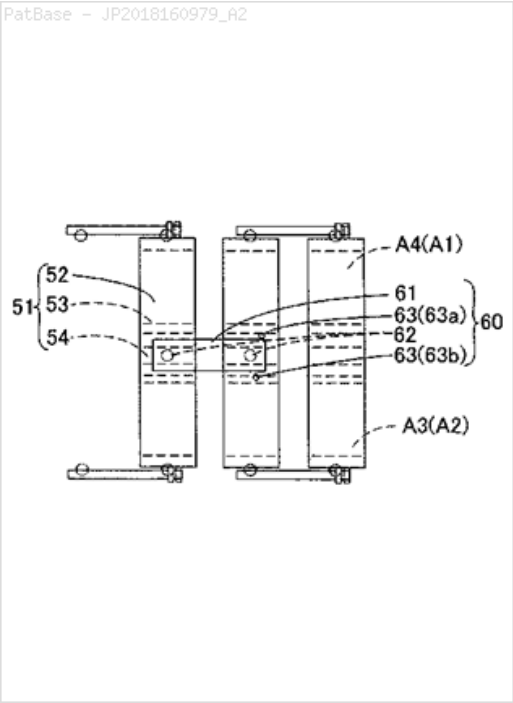
Title: SLEWING GEAR

Abstract: PROBLEM TO BE SOLVED: To provide a small-sized and low-cost slewing gear.SOLUTION: A slewing gear (slewing spindle device 20) includes: a slewing body part 22; a fixing body part 23 for rotatably supporting the slewing body part 22 around a slewing axis; a slewing axis area 57 including a slewing axis D; and separation areas 58A1-58A4 that are areas different from the slewing axis area 57 and that are away from the slewing axis D. At least one of an electric wiring path 26 and a fluid piping path 28, which are directed toward the slewing body part 22 from the fixing body part 23, is inserted through the separation areas 58A1-58A4. The electric wiring path 26 and the fluid piping path 28 are not inserted through the slewing axis area 57.SELECTED DRAWING: Figure 5A

Classifications:

International (IPC 8-9): B23B19/00 B23Q1/00 B23Q1/70 B23Q11/00 B23Q11/10 B23Q16/02 F16G13/16 H02G11/00 H02G3/04 (Advanced/Invention)

CPC: H02G3/0475 B23Q1/70 B23Q11/00 B23Q11/10



Family:

Publication number	Publication date	Application number	Application date
DE102018104960 A1	20180913	DE201810104960	20180305
JP2018149609 A2	20180927	JP20170045572	20170310
JP2018158410 A2	20181011	JP20170056621	20170322
JP2018160979 A2	20181011	JP20170056622	20170322
JP2018161723 A2	20181018	JP20170060526	20170327

Priority:

JP20170045572 20170310 JP20170056621 20170322 JP20170056622 20170322 JP20170060526 20170327

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

Assignee(s): N A

Inventor(s): (std)**:** ANDO YOSHIAKI ; IMAEDA DAISUKE ; IWAI HIDEKI ; KANEBAKO TAKANORI ; KONDO TAKASHI ; NIIMI MASATOSHI ; WAKASUGI NAOYA ; YAMATO HIROKI

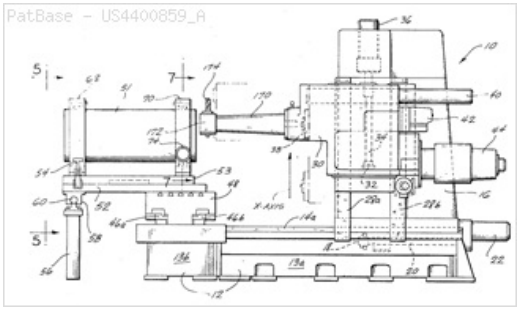
444) Family number: 2361801 (US4400859A)

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Title: MACHINING CENTERS FOR MACHINING TUBULAR WORKPIECES

Abstract: A machining center for machining the interior of an elongate tubular workpiece includes a bed on which a rotatably indexable member is slidably mounted for movement on the bed along a first axis. Removably fastened on the indexable member in spaced parallelism are a first and second hollow bore spindles each engaging the exterior surface of a tubular workpiece whose interior is to be machined. The first spindle is rotatably driven to rotate the tubular workpiece about its axis responsive to machine tool control system commands slidably mounted on the bed for movement thereon along a path perpendicular to the path of member movement in an upright. Extending from the upright parallel to the axis of upright movement for insertion into the workpiece bore is an arm which is movable along the upright along a vertical direction. At the distal end of the arm is a right angle, high speed rotary driven cutting tool carrying spindle. By manipulating rotational movement of the tubular workpiece and by manipulating the translational movement of the arm, the upright and the bed, interior machining of the workpiece can easily be facilitated.

Classifications:
International (IPC 8-9): B23Q1/48 B23Q1/62 B23Q1/76 B23Q3/10 (Advanced/Invention);
B23Q1/00 B23Q1/25 B23Q3/02 (Core/Invention)
International (IPC 1-7): B23Q1/14
CPC: Y10T29/5114 Y10T82/12 Y10T409/304424 Y10T409/305656 Y10T409/308456 B23Q1/4857 B23Q1/621 B23Q1/763 B23Q3/105
European: B23Q1/48E1 B23Q1/62A B23Q1/76B B23Q3/10G
US: 29/27C 409/143 409/165 409/215 82/1.2



Family:

Publication number	Publication date	Application number	Application date
CA1170027 A1	19840703	CA19810389949	19811112
US4400859 A	19830830	US19800219529	19801223

Priority:
US19800219529 19801223 CA19810389949 19811112

Probable Assignee: KEARNEY AND TRECKER CORP
Assignee(s): (std): KEARNEY AND TRECKER CORP
Assignee(s): WOYTHAL ROBERT T ; FINET PHILIP J ; KEARNEY AND TRECKER A CORP OF WI CORP
Inventor(s): (std): WOYTHAL ROBERT T ; FINET PHILIP J
Agent(s): SWABEY MITCHELL HOULE MARCOUX AND SHER

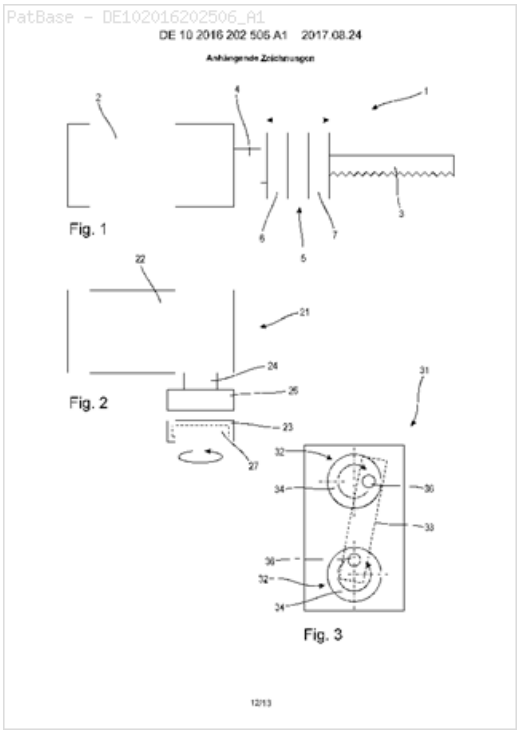
445) Family number: 66715801 (DE102016202506B4)

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Title: TRENNEINRICHTUNG UND VERFAHREN ZUR TRENNENDEN BEARBEITUNG EINES WERKSTUECKS

Abstract: Source: DE102016202506B4 [DE] Die Erfindung betrifft eine Trenneinrichtung zur Durchfuehrung eines Trennvorgangs an einem Werkstueck, mit einer Fuehrungseinrichtung (2; 22; 32; 42), der eine erste Magnetanordnung (6; 26; 36; 46) zugeordnet ist, sowie mit einem Bearbeitungsmittel (3; 23; 33; 43), das mit wenigstens einer Schneide fuer eine trennende Werkstueckbearbeitung ausgebildet ist und dem eine zweite Magnetanordnung (7; 27; 37; 47) zugeordnet ist, wobei die beiden Magnetanordnungen (6, 7; 26, 27; 36, 37; 46, 47) fuer eine kontaktlose uebertragung von Stuetzkraeften und Bearbeitungskraeften zwischen der Fuehrungseinrichtung (4; 24; 34; 44) und dem Bearbeitungsmittel (3; 23; 33; 43) ausgebildet sind und wobei eine der ersten und zweiten Magnetanordnungen (6, 7; 26, 27; 36, 37; 46, 47) wenigstens einen Magneten, insbesondere Permanentmagneten, und die andere der ersten und zweiten Magnetanordnungen (6, 7; 26, 27; 36, 37; 46, 47) wenigstens einen Supraleiter umfasst.

Classifications:
International (IPC 8-9): B23D49/16 B23D51/16 B23Q5/027 B24B23/04 (Advanced/Invention)
CPC: B23D51/025 B24B27/08 B24B45/006 B23D47/005



Family:

Publication number	Publication date	Application number	Application date
DE102016202506 A1	20170824	DE201610202506	20160218
DE102016202506 B4	20180322	DE201610202506	20160218

Priority:

DE201610202506 20160218

Probable Assignee: FESTO AND CO AG KG

Assignee(s): (std): FESTO AND CO AG KG

Inventor(s): (std): BERNER GEORG ; KRICHEL SUSANNE ; SCHAUZ STEPHAN ; STEGMEYER ELVIRA

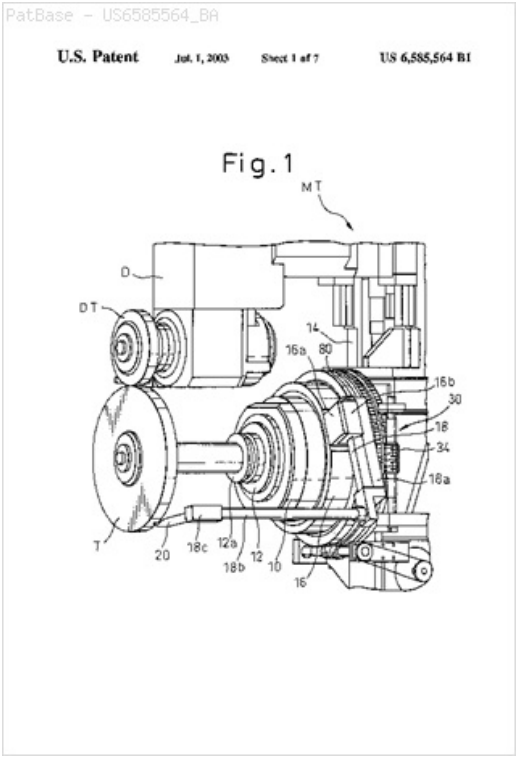
446) Family number: 28820803 (US6585564B)

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Title: MACHINE TOOL DEVICE AND ITS WORKING FLUID FEED DEVICE

Abstract: The present invention relates to a machine tool system and a machining liquid supply device for machining a workpiece by a tool such as a grinding wheel or a milling cutter, and solves the problem of how to supply the machining liquid optimally to an area where the tool engages with the workpiece. In order to solve this problem, the present invention is so configured that during the machining of a workpiece with a tool (T) detachably mounted on a spindle (12) of a machine tool (MT), the machining liquid supply device (18) for supplying a machining liquid to a machining area of the tool (T) is provided with an opening end at the forward end of a machining liquid supply nozzle (20), and can give the movements in a radial direction and a circumferential direction through 360 degrees with respect to the axis of the spindle (12) about the spindle head (12) having the spindle (12) through a rotational supporting body (16) by means of linear movement means (80) and rotating movement means (30), respectively.

Classifications:
International (IPC 8-9): B23Q11/10 B24B5/02 B24B55/02 (Advanced/Invention);
B23Q11/10 B24B5/00 B24B55/00 (Core/Invention)
International (IPC 1-7): B23Q11/10 B24B19/00 B24B5/02 B24B55/02
CPC: B23Q11/1084 B24B55/02 B24B5/02
European: B23Q11/10 B24B5/02 B24B55/02
US: 451/10 451/11 451/450 451/7



Family:

Publication number	Publication date	Application number	Application date
DE69935533 D1	20070426	DE19996035533T	19991115
DE69935533 D1	20070426	DE19996035533	19991115
DE69935533 T2	20071011	DE19996035533T	19991115
EP1151823 A1	20011107	EP19990974187	19991115
EP1151823 A4	20040602	EP19990974187	19991115
EP1151823 B1	20070314	EP19990974187	19991115
JP2001036150 A1	20030527	JP20010535354T	19991115
JP4036646 B1	20080123	JP20010535354T	19991115
JP4036646 B2	20080123	JP20010535354T	19991115
US6585564 BA	20030701	US20010889046	20010710
WO0136150 A1	20010525	WO1999JP06369	19991115

Priority:

EP19990974187 19991115 WO1999JP06369 19991115

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std): MAKINO MILLING CO LTD ; MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE ; HIRAMOTO KAZUYUKI ; TADA KEIGO

Assignee(s): MAKINO MILLING CO ; MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std): HIRAMOTO KAZUYUKI ; TADA KEIGO

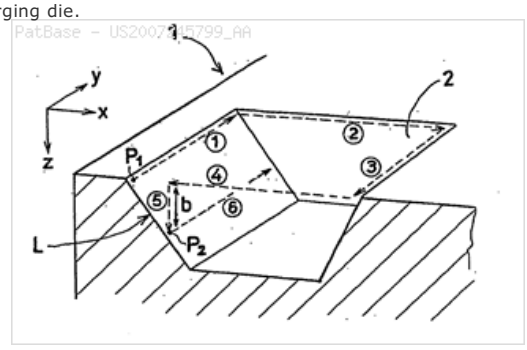
Agent(s): TSURUTA JUNICHI; NISHIYAMA MASAYA; HIGUCHI SOTOJI; ISHIDA TAKASHI

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT JP LU MC NL PT SE US

447) Family number: 32026803 (US2007245799A)

Title: METHOD FOR PRODUCING FORGING DIE, FORGING DIE AND FORGED ARTICLE

Abstract: A forging die production method comprising a cutting step which employs, as a cutting tool, a ball end mill having a surface which has undergone a hardening treatment and in which a forging die material is cut under conditions where a length of tool extension L (mm), radius R (mm) of a cutting edge of the ball end mill, spindle speed A (rpm) and feed rate B (mm/min) satisfy $(B/A)^2 x(L/(2xR))=0.01$ to 0.05. A forging die is produced through the forging die production method. A forged article is produced through forging by use of the produced forging die.



Classifications:
International (IPC 8-9): B21C3/18 B21D37/20 B21J13/02 B21K5/20 B23C3/00 B23C3/20 B23C5/00 B23C5/10 B23P15/24 (Advanced/Invention); B23C5/00 B23C5/10 (Advanced/Non-invention); B21J13/02 B21K5/00 B23C3/00 B23C5/00 B23C5/10 B23P15/24 (Core/Invention)
International (IPC 1-7): B21J13/02 B23C3/00 B23C5/10
CPC: Y10T409/303808 B21K5/20 B21J13/02 B23C3/20 B23C5/1009 B23P15/24 B23C5/20
European: B21J13/02 B21K5/20 B23C3/20 B23C5/10B B23P15/24
US: 409/132 72/356 72/356S 72/467 72/467P 76/107.1 761/71

Family:

Publication number	Publication date	Application number	Application date
CN100445001 C	20081224	CN200480037884	20041217
CN1894066 A	20070110	CN200480037884	20041217
JP2005199421 A2	20050728	JP20040364386	20041216
JP2011073139 A2	20110414	JP20110011169	20110121
JP2011073140 A2	20110414	JP20110011170	20110121
JP4819352 B2	20111124	JP20040364386	20041216
JP5370896 B2	20131218	JP20110011169	20110121
KR100845873 B1	20080714	KR20067011993	20041217
KR20060101771 A	20060926	KR20067011993	20041217
US2007245799 AA	20071025	US20040583041	20041217
US7930954 BB	20110426	US20040583041	20041217
WO05058532 A1	20050630	WO2004JP19464	20041217

Priority:

JP20030418939 20031217 US200405340 98P 20040105 JP20040364386 20041216
US20040583041 20041217 WO2004JP19464 20041217 WO2004JP19464 20060616
JP20110011169 20110121 JP20110011170 20110121

Probable Assignee: SHOWA DENKO KK

Assignee(s): (std): ASAKAWA JUN ; SHOWA DENKO KK

Assignee(s): SHOWA DENKO K K ; SHOWA DENKO KABUSHIKI KAISHA

Inventor(s): (std): ASAKAWA ATSUSHI ; ASAKAWA JUN

Agent(s): SUGHRUE MION PLLC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

448) Family number: 57764806 (IN03403MU2014A)

Title: AN IMPROVED METHOD OF THREAD GRINDING

Abstract: The improved method of thread grinding is described by the present invention. The method for internal or external thread grinding proposed by the present invention comprises the steps of; dressing the grinding wheel (1) to obtain a desired thread profile by the hard part tool (2) mounted on hard part tool holder (6); grinding the workpiece by dressed grinding wheel (1) wherein the Y-axis of the quill (7) is parallel to the workpiece; the said Y- axis of the quill (7) makes an angle beta with X- axis of the grinding wheel (9) wherein; the angle beta is 90 degrees. The required thread profile of the workpiece is achieved before the actual grinding operation by dressing the grinding wheel with a hard part tool made of diamond/hard graphite material and follows the trajectory path (same as work piece).
Classifications:
International (IPC 8-9): B23G1/36 B24B19/02 (Advanced/Invention)

Family:

Publication number	Publication date	Application number	Application date
IN03403MU2014 A	20141107	IN2014MU03403	20141027

Probable Assignee: VISHNU VASUDEO MUJUMDAR

Assignee(s): VISHNU VASUDEO MUJUMDAR

Inventor(s): VISHNU VASUDEO MUJUMDAR

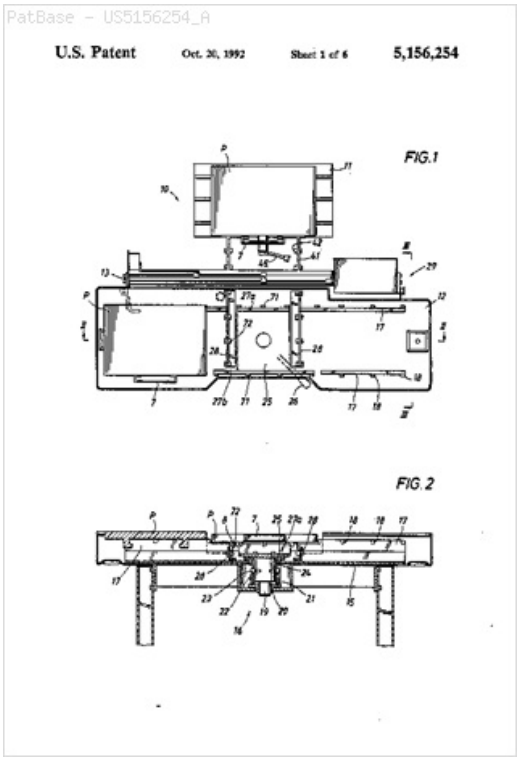
449) Family number: 5176807 (US5156254A)

Title: MANUAL PALLET CHANGER

Abstract: A manual pallet changer for performing a loading operation and an unloading operation for a pallet between a

table of a machine tool and a pallet magazine comprising a clamp for clamping the pallet to the table of the machine tool. The pallet magazine connected to the machine tool by an opening and closing joint, the pallet magazine as a whole being rotatable about a supporting point of the opening and closing joint; and the pallet magazine having first guide rails arranged alone a longitudinal direction of the pallet magazine in two rows; second guide rails arranged along a direction different from the longitudinal direction in two rows; movable guide rails arranged along the longitudinal direction in two rows, the movable guide rails being movable between an upper position and a lower position; and a lift for moving up and down the movable guide rails.

Classifications:
International (IPC 8-9): B23Q7/00 B23Q7/14 (Advanced/Invention); B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q7/00 B65G47/00
CPC: Y10T29/5196 B23Q7/1431 B23Q7/005
European: B23Q7/00K B23Q7/14K2
US: 198/346.1 29/33P



Family:

Publication number	Publication date	Application number	Application date
EP0436034 A1	19910710	EP19900910918	19900718
EP0436034 A4	19920311	EP19900910918	19900718
JP1997140 C3	19951208	JP19890188780	19890724
JP3055141 A2	19910308	JP19890188780	19890724
JP7022864 B4	19950315	JP19890188780	19890724
US5156254 A	19921020	US19920827532	19920124
WO9101196 A1	19910207	WO1990JP00922	19900718

Priority:
JP19890188780 19890724 WO1990JP00922 19900718 US19900592680 19901004

Probable Assignee: KITAMURA MACHINERY CO LTD
Assignee(s): (std): KITAMURA MACHINERY CO LTD
Assignee(s): KITAMURA MACH CO LTD ; KITAMURA MACHINERY CO
Inventor(s): (std): KITAMURA KOICHIRO EKINAN CH ; YAMADA SHIGERU KITAMURA MACHIN ; YAMADA SHIGERU ; KITAMURA KOICHIRO
Inventor(s): KITAMURA KOICHIRO 11 5 EKINAN 3 CHOME ; YAMADA SHIGERU KITAMURA MACHINERY CO
Designated states: DE FR GB IT KR US

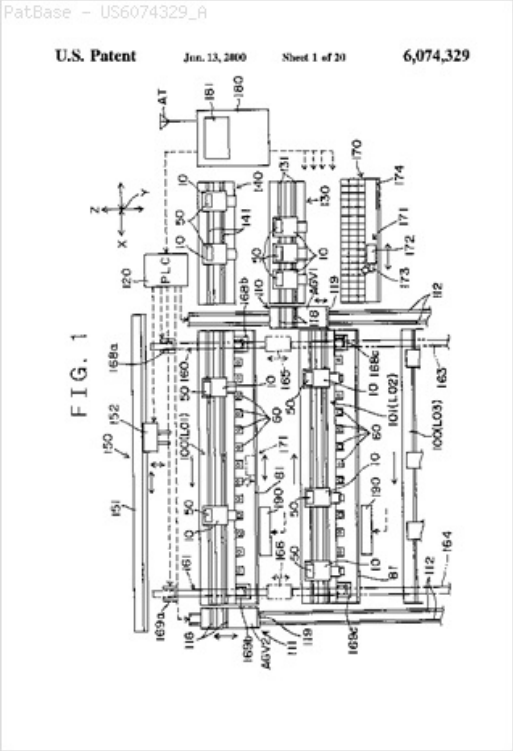
450) Family number: 12303811 (US6074329A)

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Title: FLEXIBLE MANUFACTURING SYSTEM AND CONTROL METHOD THEREFOR

Abstract: Each of plural workpiece transfer units 10 input from on end of a machining line 100 in turn is fed toward the other end thereof in a first horizontal direction by a linear motor. In this transfer process, the workpiece transfer unit 100 is indexed to the front of predetermined some of plural spindle heads 60 arranged along the machining line 100, in turn. At an indexed position of the workpiece transfer unit 10, a workpiece supporting device movably mounted on the workpiece transfer unit 10 in two direction mutually perpendicular to the first horizontal direction, performs the machining operation on a workpiece in accordance with an NC program with respect to a tool T attached to a tool spindle 66 of the spindle head 60. At generally the same time when the workpiece transfer unit 10 starts a transfer feed toward the next spindle head 60 after finishing the machining operation by one of the spindle heads 60, the tool spindle 66 of the next spindle head 60 is started to rotate.

Classifications:
International (IPC 8-9): B23P23/00 B23Q39/04 B23Q41/02 G05B19/418 (Advanced/Invention); B23P23/00 B23Q39/00 B23Q41/02 G05B19/418 (Core/Invention)
International (IPC 1-7): B23P23/00 B23Q3/157 B23Q39/04 B23Q41/02 B23Q5/22 B23Q7/14 G05B19/418
CPC: Y10T29/5124 Y10T29/5136 Y10T29/5196 Y10T483/16 Y10T483/165 Y10T483/1736 G05B19/41865 G05B19/41815 Y02P90/08 Y02P90/20 Y02P90/04
European: G05B19/418C G05B19/418P
US: 198/346.1 29/33.00P 29/33P 29/563 29/564 483/14 483/15 483/31



Family:

Publication number	Publication date	Application number	Application date
DE69828947 D1	20050317	DE19986028947	19981221
DE69828947 D1	20050317	DE19986028947T	19981221
DE69828947 T2	20060119	DE19986028947T	19981221
EP0924584 A2	19990623	EP19980124354	19981221
EP0924584 A3	19990922	EP19980124354	19981221
EP0924584 B1	20050209	EP19980124354	19981221
JP11179637 A2	19990706	JP19970351033	19971219
JP3632413 B2	20050323	JP19970351033	19971219
US6074329 A	20000613	US19980216708	19981221

Priority:

JP19970351033 19971219

Probable Assignee: TOYODA KOKI KK

Assignee(s): (std)**:** TOYODA MACHINE WORKS LTD

Assignee(s): TOYODA KOKI K K KARIYA ; TOYODA KOKI KABUSHIKI KAISHA ; TOYODA KOKI KK ; TOYODA MACH WORKS LTD

Inventor(s): (std)**:** HIRANO HIDEKAZU ; MACHIDA KAZUO ; TAKAHARA HIROYUKI

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

451) Family number: 62915811 (US2018141174A)

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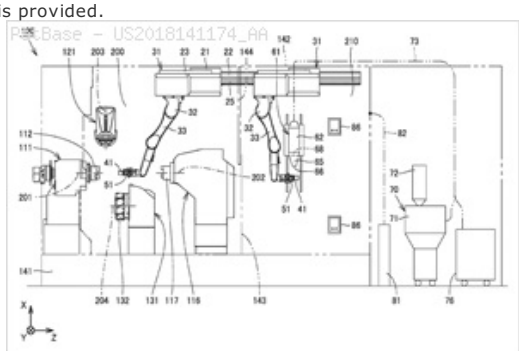
Title: MANUFACTURING MACHINE

Abstract: A manufacturing machine is capable of subtractive manufacturing and additive manufacturing for a workpiece. The manufacturing machine includes: a first headstock and a second headstock disposed in a first processing area and configured to hold a workpiece; a lower tool rest and a tool spindle disposed in the first processing area and configured to hold a tool to be used for subtractive manufacturing for the workpiece; an additive manufacturing head disposed in a second processing area; and a robot arm configured to hold a workpiece and transport the workpiece between the first processing area and the second processing area. The additive manufacturing head is configured to discharge a material toward the workpiece held by the robot arm during additive manufacturing for the workpiece. Accordingly, the manufacturing machine configured simply to be capable of subtractive manufacturing and additive manufacturing is provided.

Classifications:

International (IPC 8-9): B22F3/105 B22F3/16 B23K26/00 B23K26/08 B23K26/12 B23K26/34 B23K26/342 B23K26/354 B23P23/04 B23Q7/04 B29C67/00 B33Y30/00 B33Y40/00 (Advanced/Invention); B22F3/105 B22F3/16 B23K26/342 B29C67/00 (Advanced/Non-invention)

CPC: B33Y30/00 B22F3/1055 B22F3/24 B22F2003/1056 B22F2003/1058 B22F2999/00 C04B2235/6026 C22C1/0408 B23K26/0884 B23K26/342 B23K26/34 B23K26/354 B33Y10/00 B23K26/0861 B23P23/04 B23K26/0093 B23K26/123 B23Q7/04 B33Y40/00 Y02P10/295



Family:

Publication number	Publication date	Application number	Application date

CN107735215 A	20180223	CN201680030145	20160407
DE112016002368 T5	20180215	DE201611002368T	20160407
JP2016215346 A2	20161222	JP20150105249	20150525
JP5940712 B1	20160629	JP20150105249	20150525
US2018141174 AA	20180524	US20160576300	20160407
WO16189981 A1	20161201	WO2016JP61390	20160407

Priority:

JP20150105249 20150525 WO2016JP61390 20160407

Probable Assignee: DMG MORI SEIKI CO LTD

Assignee(s): (std): DMG MORI CO LTD ; DMG MORI SEIKI CO LTD

Assignee(s): DMG MORI CO

Inventor(s): (std): MORI MASAHIKO ; FUJISHIMA MAKOTO ; SAKAI SHIGETSUGU ; GOMI EIICHIRO ; MEZAWA YUHEI ; TAKASHIMA SHIGEYUKI ; SAKAI SHIGEJI

Agent(s): FUKAMI PATENT OFFICE PC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

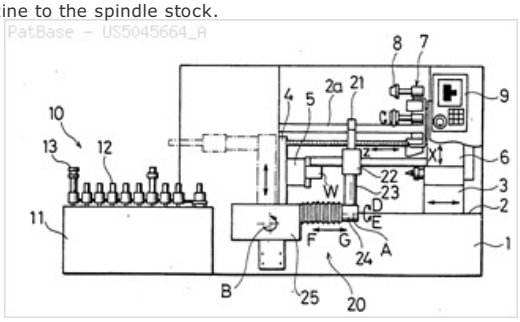
452) Family number: 19101813 (US5045664A)

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Title: Machine tool with grinding function and truing/dressing method of grinding stone using it

Abstract: A machining tool is provided with an electric discharge truing/dressing apparatus comprising a spindle stock for containing and supporting a workpiece spindle which is driven for rotation while holding a workpiece or an electrode; a tool rest which moves parallel and perpendicular to the spindle of the spindle stock and holds an electrode machining tool and a grinding wheel; a feed electricity means disposed between a workpiece supporting portion of the spindle and the tool rest; a magazine disposed at an outside area of a machining area of the tool rest and adapted to store the workpiece and the electrode; and a loading device disposed between the magazine and the spindle. The grinding wheel on the tool rest is subjected to truing/dressing by feeding the electrode from the magazine to the spindle stock.

Classifications:
International (IPC 8-9): B23H1/00 B23H5/04 B23H7/22 B23H9/00 B24B5/00 B24B53/00 (Advanced/Invention);
B23H1/00 B23H5/00 B23H7/00 B23H9/00 B24B5/00 B24B53/00 (Core/Invention)
International (IPC 1-7): B23H1/00 B23H7/22 B23H9/00 B24B5/00 B24B53/00
CPC: B23H1/00 B23H5/04 B24B5/00 B24B53/001
European: B23H1/00 B23H5/04 B24B5/00 B24B53/00B
US: 219/69.15 219/69.2



Family:

Publication number	Publication date	Application number	Application date
DE3826251 A1	19890216	DE19883826251	19880802
JP1040272 A2	19890210	JP19870194031	19870803
JP1040273 A2	19890210	JP19870194032	19870803
JP1040274 A2	19890210	JP19870194033	19870803
JP2666197 B2	19971022	JP19870194031	19870803
JP64040272 A2	19890210	JP19870194031	19870803
JP64040273 A2	19890210	JP19870194032	19870803
JP64040274 A2	19890210	JP19870194033	19870803
US5045664 A	19910903	US19900550794	19900709

Priority:

JP19870194031 19870803 JP19870194032 19870803 JP19870194033 19870803
US19880227883 19880803

Probable Assignee: YAMAZAKI MAZAK CORP

Assignee(s): (std): NAKAGAWA TAKEO ; YAMAZAKI MAZAK CORP

Assignee(s): YAMAZAKI MAZAK CORP OOGUCHI AICHI JP ; NAKAGAWA TAKEO KAWASAKI KANAGAWA JP

Inventor(s): (std): HANEDA YAE ; HATANO SAKAE ; KURITA MUNETADA ; NAKAGAWA TAKEO ; SATO KANJI ; SHIMIZU NORIHIKO ; SUZUKI KIYOSHI ; SUZUKI KYOSHI ; TAKADA YOSHIHARU ; UEMATSU TETSUTARO

Inventor(s): UEMATSU TETSUTARO TOKIO TOKYO JP ; TAKADA YOSHIHARU NAGAREYAMA CHIBA JP ; SUZUKI KIYOSHI YOKOHAMA KANAGAWA JP ; SHIMIZU NORIHIKO NAGOYA AICHI JP ; SATO KANJI AICHI JP ; NAKAGAWA TAKEO KAWASAKI KANAGAWA JP ; KURITA MUNETADA KAGAMIHARA GIFU JP ; HATANO SAKAE AICHI JP

453) Family number: 28265816 (US2002197122A)

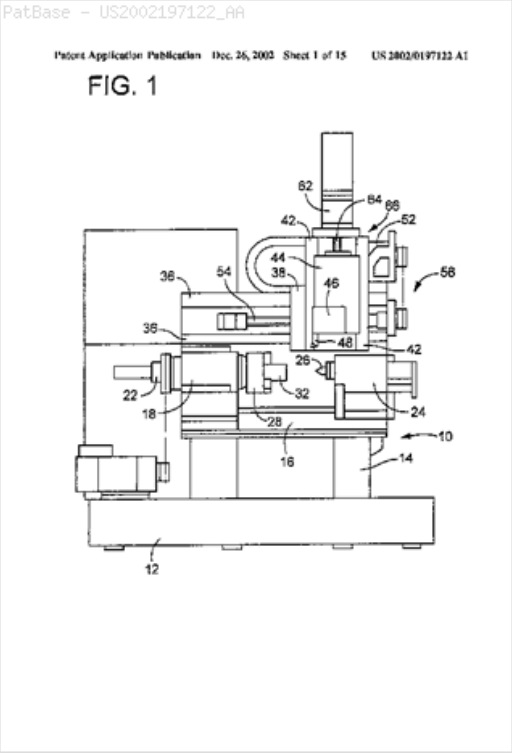
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Title: METHOD AND APPARATUS FOR CONTROLLING MOVEMENT OF CUTTING BLADE AND WORKPIECE

Abstract: A method of controlling a relative movement of a cutting blade and a workpiece which are moved relative to each other by a movement device in an operation with a machine tool. The method includes a step of bringing the cutting blade and an object into contact with each other, by moving at least one of the cutting blade and the object toward each other by the movement device, and a step of controlling the relative movement on the basis of a relative position of the cutting blade and the object which is detected by the movement device upon the contact of the cutting blade and the object with each other. The method further includes: a checking step of checking if a contact detecting device for detecting the contact of the

cutting blade and the object is in a normal condition in which the contact detecting device is capable of detecting the contact when the cutting blade and the object are brought into contact with each other; and a contact determining step of determining that the cutting blade and the object have been brought into contact with each other, in accordance with an output provided by the contact detecting device.

Classifications:
International (IPC 8-9): B23B25/06 B23B27/00 B23B29/12 B23C9/00 B23Q17/00 B23Q17/22 G05B19/401 (Advanced/Invention); B23B27/00 B23B29/00 (Core/Invention)
International (IPC 1-7): B23B25/06 B23B27/00 B23B29/12 B23B3/00 B23C1/00 B23C9/00 B23Q17/00 B23Q17/22 G05B19/401
CPC: Y10S408/71 G05B19/4015 G05B2219/37405 G05B2219/50027 Y10T82/10 Y10T82/30 Y10T408/03 Y10T408/16 Y10T408/175 Y10T408/21 B23Q17/2241 Y10T409/303752 Y10T409/303808 Y10T409/304032 Y10T409/304648 Y10T409/306832 Y10T409/307224
European: G05B19/401C S05B219/37405 S05B219/50027
US: 324/133 324/71.1 324/76.11 408/13 408/16 408/1R 408/710 408/8 409/131 409/131P 409/132 409/132P 409/136 409/147 409/147S 409/186 409/186S 409/193 700/174 700/174S 700/175 82/1.11 82/1.110S 82/11.1 82/173



Family:

Publication number	Publication date	Application number	Application date
DE60135893 D1	20081106	DE20016035893	20011010
EP1197819 A2	20020417	EP20010124144	20011010
EP1197819 A3	20050126	EP20010124144	20011010
EP1197819 B1	20080924	EP20010124144	20011010
JP2002120129 A2	20020423	JP20000310237	20001011
JP2002120130 A2	20020423	JP20000310236	20001011
JP4719345 B2	20110706	JP20000310236	20001011
US2002197122 AA	20021226	US20010972164	20011009
US2004151555 AA	20040805	US20040762505	20040123
US6758640 BB	20040706	US20010972164	20011009
US7056072 BB	20060606	US20040762505	20040123

Priority:
JP20000310236 20001011 JP20000310237 20001011 US20010972164 20011009 US20040762505 20040123

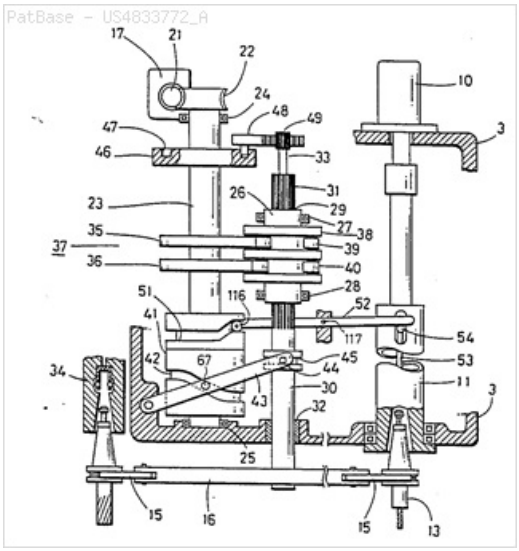
Probable Assignee: FUJI SEIKO LTD
Assignee(s): (std): FUJI BELLOWS CO LTD ; SATO GENICHI ; TOYOTA MOTOR CORP
Assignee(s): TOYOTA JIDOSHA KABUSHIKI KAISHA ; FUJI SEIKO LIMITED ; FUJI SEIKO LTD
Inventor(s): (std): GOTO EIJI ; ISOGAI KATSUMI ; ISOTANI KATSUMI ; MIZUTANI HAJIME ; SATO GENICHI ; SATO YOSHIKAZU ; SATOW YOSHIKAZU ; TAKASU YOSHIHIRO
Agent(s): TBK-PATENT; OLIFF AND BERRIDGE PLC
Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

454) Family number: 3004817 (US4833772A)

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Title: AUTOMATIC TOOL CHANGING APPARATUS

Abstract: An automatic tool changing apparatus is disclosed which has first to fourth cam mebers (37, 42, 47, 51) integral with a drive shaft (23). The cam members operate cam index mechanism (Fig. 6), shaft drive mechanism (Fig. 7), claw driving mechanism (FIGS. 8 and 9), and tool clamp-unclamp driving mechanism (FIGS. 11 and 12). The apparatus comprises a main spindle head (3), a main spindle (11) rotatably disposed in the main spindle head (3), tool magazine (8) mounted on the main spindle head (3), a first sleeve (26) rotatably supported by the main spindle head (3), a second sleeve (30) slidable in axial direction thereof and rotatable together with the first sleeve (26), a swing arm (16) disposed at one end of the second sleeve (30), tool holding claws (15) provided at the swing arm (16), claw opening and closing means (Fig. 10) disposed in the swing arm (16), a drive shaft (23) rotatably supported by the main spindle head (3) and driven by a motor (17), the four cam members (37, 42, 47, 51), the cam index mechanism (Fig. 6), the shaft drive mechanism (Fig. 7), the claw driving mechanism (FIGS. 8 and 9), and the tool clamp-unclamp driving mechanism (FIGS. 11 and 12).
Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 (Advanced/Invention); B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: Y10T483/1767 Y10T483/1769 B23Q5/347 B23Q3/15526 B23Q3/1554 B23Q3/1574
European: B23Q3/155D2 B23Q3/155D3 B23Q3/157C2B3 B23Q5/34B8
US: 29/568 483/44 483/45



Family:

Publication number	Publication date	Application number	Application date
DE3735384 A1	19880519	DE19873735384	19871019
DE3735384 C2	19980827	DE19873735384	19871019
GB2198375 A1	19880615	GB19870026375	19871111
GB2198375 B2	19910619	GB19870026375	19871111
GB8726375 A0	19871216	GB19870026375	19871111
JP1772034 C3	19930714	JP19860269242	19861112
JP2262936 A2	19901025	JP19900048535	19900228
JP4060777 B4	19920929	JP19860269242	19861112
JP63123646 A2	19880527	JP19860269242	19861112
KR19880005999 A	19880721	KR19870008972	19870817
KR930009403 B1	19931004	KR19870008972	19870817
US4833772 A	19890530	US19870100355	19870923

Priority:

JP19860269242 19861112 JP19900048535 19900228

Probable Assignee: BROTHER IND LTD

Assignee(s): (std)**:** BROTHER IND LTD

Assignee(s): BROTHER KOGYO K K ; BROTHER KOGYO K K NAGOYA AICHI JP ; BROTHER KOGYO KABUSHIKI KAISHA ; BROTHER KOGYO KK ; BROTHER KOGYO NO 35 9 CHOME HORITA DORI MIZUHO KU ; BROTHER KOGYO NO 35 9 CHOME HORITA DORI MIZUHO KU NAGOYA JAPAN A CORP OF JAPAN KK

Inventor(s): (std)**:** NOMURA HIROAKI ; KOBAYASHI MITSUO

Inventor(s): HIROAKI NOMURA ; KOBAYASHI MITSUO YOKKAICHI MIE JP ; MITSUO KOBAYASHI ; NOMURA HIROAKI ICHINOMIYA AICHI JP

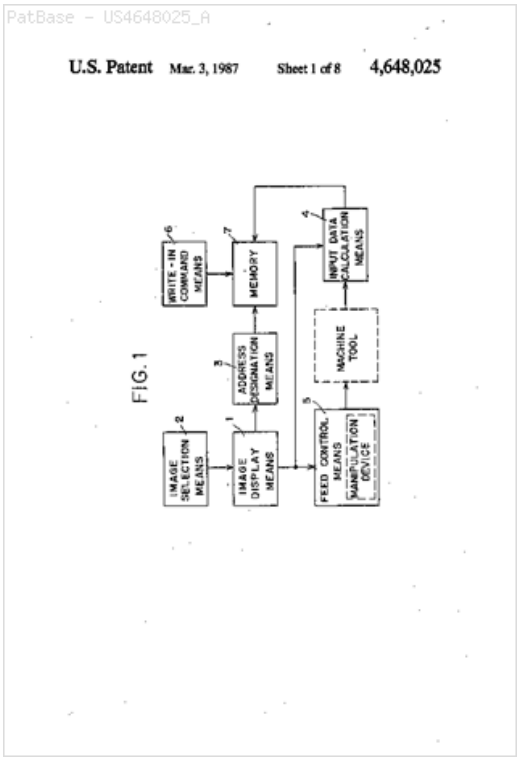
455) Family number: 3524819 (US4648025A)

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Title: Interactive numerical controller for a machine tool

Abstract: A numerical controller for a grinding machine is provided with a memory device, a data processor, a data input device, a display device and a manual pulse generator. After the setting positions of a grinding wheel carrier, a tail stock and the like of the grinding machine are changed in connection with the replacement of a grinding wheel with new one and the change in kind of workpieces, the input device is manipulated to display a desired one of images on the display device. The manual pulse generator is then operated to move components such as the grinding wheel carrier and a work table to a state indicated by the displayed image, and a storage command switch of the input device is depressed. In response to this depression, the data processor reads the present positions of the components in the state displayed on the display device and calculates based upon the read present positions data which is used in numerically controlling a machining operation of the grinding machine. The data processor carries out such calculation using one of equations determined depending upon the state being displayed on the display device and then, stores the calculated data in a storage area of the memory device determined by the state being displayed on the display device.

Classifications:
International (IPC 8-9): G05B19/409
G05B19/4093 (Advanced/Invention)
International (IPC 1-7): G05B19/18 G05B19/403 G05B19/405 G05B19/406 G05B19/408 G05B19/409 G06F15/46
CPC: G05B19/409
European: G05B19/409
US: 451/11 451/5 51/165.71 700/164



Family:

Publication number	Publication date	Application number	Application date
DE3586515 D1	19920924	DE19853586515	19850604
DE3586515 T2	19930107	DE19853586515T	19850604
DE3586515 T3	19990812	DE19853586515T	19850604
EP0164686 A2	19851218	EP19850106925	19850604
EP0164686 A3	19870930	EP19850106925	19850604
EP0164686 B1	19920819	EP19850106925	19850604
EP0164686 B2	19990407	EP19850106925	19850604
JP2050631 C3	19960510	JP19840120604	19840611
JP5045968 B4	19930712	JP19840120604	19840611
JP60263211 A2	19851226	JP19840120604	19840611
US4648025 A	19870303	US19850742118	19850606

Priority:
JP19840120604 19840611

Probable Assignee: TOYODA KOKI KK

Assignee(s): (std)**:** TOYODA MACHINE WORKS LTD

Assignee(s): TOYODA KOKI K K KARIYA AICHI JP ; TOYODA KOKI KABUSHIKI KAISHA ; TOYODA KOKI KK

Inventor(s): (std)**:** SAKAKIBARA YASUJI ; YONEDA TAKAO

Inventor(s): YONEDA TAKAO TOYOAKE SHI AICHI KEN JP ; SAKAKIBARA YASUJI HEKINAN SHI AICHI KEN JP

Designated states: DE FR GB

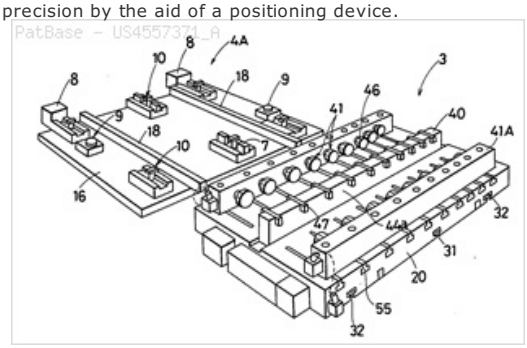
456) Family number: 17834820 (US4557371A)

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Title: Work-clamp pallet for machine tool

Abstract: The present invention relates to a work-clamp pallet used to clamp workpieces on a table of a machine tool to improve the working efficiency of the machine tool. This is achieved by shortening the time for exchanging workpieces on the table and for positioning workpieces on the table along both X and Y axes. A large number of workpieces are positioned on a work-clamp pallet along the Y-axis by the aid of a standard frame secured to a base block and along the X-axis by the aid of positioning stoppers projecting from the standard frame. The workpieces are clamped against the standard frame by clamping devices disposed at least on one side of the standard frame. The positioning and clamping a large number of workpieces on the base block is done outside the machine and, when the machine has stopped a machining over, a work-clamp pallet is transferred onto the table in exchange for that with finished workpieces which is removed. The work-clamp pallet can be positioned longitudinally as well as laterally with a high precision by the aid of a positioning device.

Classifications:
International (IPC 8-9): B23Q3/06 B23Q3/10 B23Q3/18 B23Q7/14 B25B1/18 (Advanced/Invention);
B23Q3/02 B23Q3/06 B23Q3/18 B23Q7/14 B25B1/00 (Core/Invention)
International (IPC 1-7): B23Q3/00 B23Q3/06 B23Q3/08 B23Q3/18 B23Q41/02 B23Q7/00 B65G47/00
CPC: B23Q3/061 B23Q3/103 B23Q7/1426 B25B1/18
European: B23Q3/06C B23Q3/10D B23Q7/14K B25B1/18
US: 198/803.01 198/803.3 198/867.05 198/867.08 269/25 294/87.1



Family:

Publication number	Publication date	Application number	Application date
DE3226731 A1	19830203	DE19823226731	19820716
FR2509649 A1	19830121	FR19820012200	19820712
GB2123721 A1	19840208	GB19830023986	19830907
GB2123721 B2	19860514	GB19830023986	19830907
GB8323986 A0	19831012	GB19830023986	19830907
JP58013943 U1	19830128	JP19810106968U	19810717
US4557371 A	19851210	US19820394871	19820702

Priority:

JP19810106968U 19810717 GB19820020864 19820719 GB19830023986 19830907

Probable Assignee: AIOI SEIKI KK

Assignee(s): (std): AIOI SEIKI KK

Assignee(s): ALOL SEIKI K K ; AIOI SEIKI K K ; AIOI SEIKI KABUSHIKI KAISHA

Inventor(s): (std): YONEZAWA KEITARO

Inventor(s): KEITARO YONEZAWA

457) Family number: 62055820 (US2016096227A)

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Title: MAIN SPINDLE DEVICE OF MACHINE TOOL

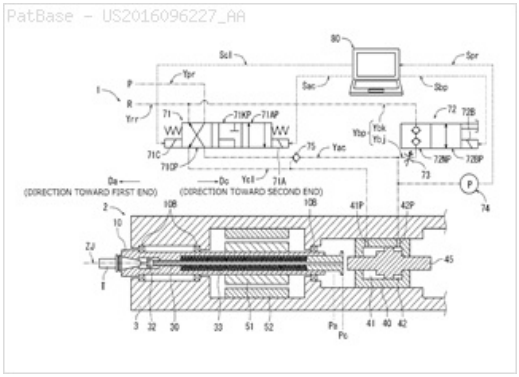
Abstract: A main spindle device includes: a main spindle; a rod accommodated in the main spindle, the rod being capable of moving to an unclamp position in a direction toward the first end, and when the main spindle is holding a tool, being capable of moving to a clamp position in a direction toward a second end; a biasing unit that biases the rod in the direction toward the second end with respect to the main spindle and that biases the rod to the clamp position when a collet is holding the tool; and a biasing force detector that detects a biasing force of the biasing unit which biases the rod in the direction toward the second end after the rod is moved in the direction toward the first end with respect to the main spindle to the unclamp position by force larger than the biasing force of the biasing unit.

Classifications:

International (IPC 8-9): B23B19/02 B23B31/00 B23B31/24 B23B31/26 B23B31/30 B23Q1/00 B23Q17/00 B23Q5/04 (Advanced/Invention)

CPC: B23B31/302 B23Q17/005 B23B2231/26 B23B2270/025 B23B31/26 B23B31/261 B23B2231/50 B23Q1/70 Y10T409/309464

US: 1/1 409/233



Family:

Publication number	Publication date	Application number	Application date
CN105478806 A	20160413	CN201510592094	20150917
CN105478806 B	20190301	CN201510592094	20150917
DE102015116347 A1	20160407	DE201510116347	20150928
JP2016074050 A2	20160512	JP20140205001	20141003
JP6492502 B2	20190403	JP20140205001	20141003
US2016096227 AA	20160407	US20150861164	20150922
US9796025 BB	20171024	US20150861164	20150922

Priority:

JP20140205001 20141003

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP

Assignee(s): N A

Inventor(s): (std): NAKASHIMA KUNIMICHI ; ARAI YOSHIHIRO ; TSUZUKI TOSHIYUKI ; HORI NOBUMITSU ; FURUHATA TETSURO ; NAKAJIMA KUNIMICHI

Agent(s): OBLON MCCLELLAND MAIER AND NEUSTADT LLP

458) Family number: 19798822 (US2002028628A)

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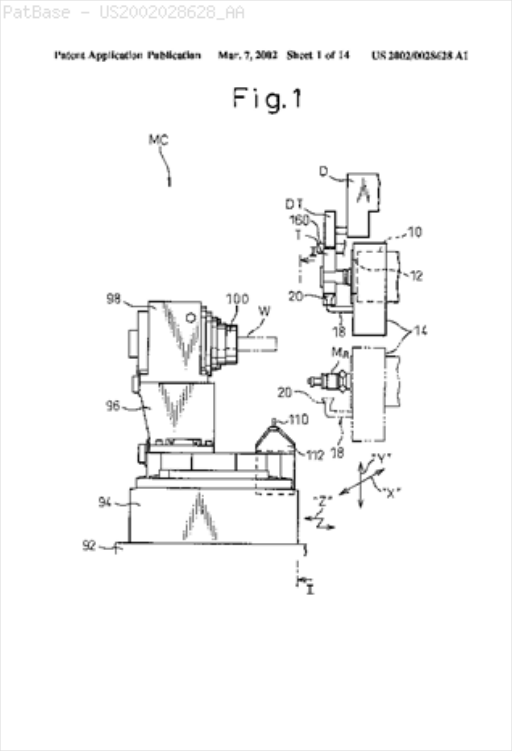
Title: MACHINING CENTER AND METHOD OF CHANGING TOOLS THEREOF

Abstract: The invention provides a machining center for machining a workpiece by moving a grinding wheel and the workpiece relative to each other in the X, Y and Z directions. The machining center has a main spindle for removably mounting a grinding wheel, a spindle head for rotationally supporting the main spindle, a table for mounting the workpiece, a column for movably supporting the spindle head, and tool dressing means having a dresser spindle, provided over the spindle head to move in the vertical direction toward and away from the grinding wheel mounted to the main spindle, for mounting a dresser for truing or dressing the outer peripheral surface of the grinding wheel.

Classifications:

International (IPC 8-9): B23P23/00 B23Q17/22 B23Q3/155 B23Q3/157 B24B17/10 B24B53/013 B24B53/05 B24B53/053 B24B55/02 B24B57/02 B24B7/10 (Advanced/Invention);

B23P23/00 B23Q17/22 B23Q3/155 B23Q3/157 B24B17/00 B24B53/00 B24B53/04 B24B55/00 B24B57/00 B24B7/00 (Core/Invention)
International (IPC 1-7): A63F13/04 B23P23/00 B23Q17/22 B23Q3/155 B24B49/00 B24B5/00 B24B53/04 B24B53/053 B24B53/07 B24B53/095 B24B55/02 B24B57/02 C12N5/10
CPC: Y10T483/174 B24B7/10 B23Q3/15773 B24B17/10 B24B53/013 B24B53/053 B24B57/02
European: B23Q3/157D B24B17/10 B24B53/013 B24B53/053 B24B57/02 B24B7/10
US: 125/11.03 451/449 451/5 451/72 483/33



Family:

Publication number	Publication date	Application number	Application date
DE60103823 D1	20040722	DE20016003823	20010904
DE60103823 D1	20040722	DE20016003823T	20010904
DE60103823 T2	20050707	DE20016003823T	20010904
EP1184134 A2	20020306	EP20010307520	20010904
EP1184134 A3	20020619	EP20010307520	20010904
EP1184134 B1	20040616	EP20010307520	20010904
JP2002066850 A2	20020305	JP20000267842	20000904
JP3844420 B2	20061115	JP20000267842	20000904
US2002028628 AA	20020307	US20010946091	20010904
US6666748 BB	20031223	US20010946091	20010904

Priority:

JP20000267842 20000904

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std): MAKINO MILLING MACHINE ; TAKAYAMA NAOSHI ; TADA KEIGO ; TANIKAWA NAOZUMI ; MORIGUCHI KAZUTOYO ; FUKUHARA TSUYOSHI ; HIRAMOTO KAZUYUKI ; HOSHI TAKASHI

Assignee(s): MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE CO LTD TOKIO TOKYO ; MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std): FUKUHARA TAKESHI ; FUKUHARA TSUYOSHI ; HIRAMOTO KAZUYUKI ; HOSHI TAKASHI ; KAZUTOYO MORIGUCHI ; KAZUYUKI HIRAMOTO ; KEIGO TADA ; MORIGUCHI KAZUTOYO ; NAOSHI TAKAYAMA ; NAOZUMI TANIKAWA ; TADA KEIGO ; TAKASHI HOSHI ; TAKAYAMA NAOSHI ; TANIGAWA NAOZUMI ; TANIKAWA NAOZUMI ; TSUYOSHI FUKUHARA

Agent(s): TSURUTA JUNICHI; NISHIYAMA MASAYA; HIGUCHI SOTOJI; ISHIDA TAKASHI

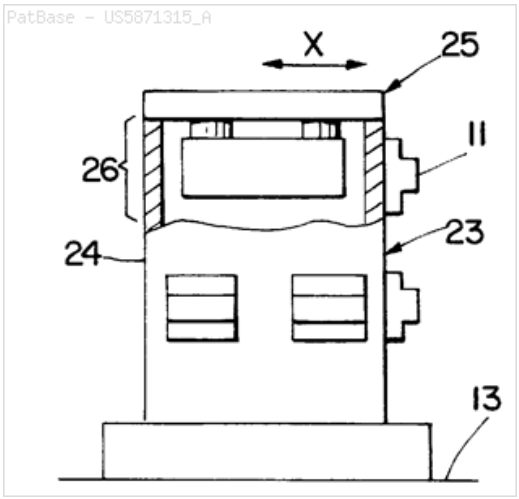
Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

459) Family number: 11447822 (US5871315A)

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Title: TOMBSTONE FIXTURE

Abstract: A tombstone fixture for supporting workpieces has a stiffened tooling column.
Classifications:
International (IPC 8-9): B23Q1/01 B23Q11/00 B23Q3/02 (Advanced/Invention); B23Q1/00 B23Q11/00 (Core/Invention)
International (IPC 1-7): B23Q1/01 B23Q11/00 B23Q3/02
CPC: Y10S269/90 B23Q11/0032 B23Q1/015 Y10T409/30868 Y10T409/309016
European: B23Q1/01B B23Q11/00D
US: 269/900 409/219 409/225



Family:

Publication number	Publication date	Application number	Application date
CA2315698 AA	20000621	CA19982315698	19981218
CN1091671 C	20021002	CN19988013363	19981218
CN1284020 A	20010214	CN19988013363	19981218
DE69807529 D1	20021002	DE19986007529	19981218
DE69807529 D1	20021002	DE19986007529T	19981218
DE69807529 T2	20030116	DE19986007529T	19981218
EP1049563 A1	20001108	EP19980964807	19981218
EP1049563 A4	20010516	EP19980964807	19981218
EP1049563 B1	20020828	EP19980964807	19981218
US5871315 A	19990216	US19970996245	19971222
WO9932257 A1	19990701	WO1998US27076	19981218

Priority:

US19970996245 19971222 WO1998US27076 19981218

Probable Assignee: UNOVA IP CORP

Assignee(s): (std)**:** UNOVA IND AUTOMATION SYS INC

Assignee(s): UNOVA IP CORP ; SPECIAL VALUE INVESTMENT MANAGEMENT LLC ; UNOVA IP CORP BEVERLY HILLS ; MCCALMONT PAUL E ; BANK OF AMERICA NA ; BURT DENNIS A ; CINCINNATI MILACRON INC ; KEYBANK NATIONAL ASSOCIATION ; MAGUS GMBH ; MAGUS INTELLECTUAL PROPERTY GMBH

Inventor(s): (std)**:** BURT D A ; BURT DENNIS A ; MCCALMONT P E ; MCCALMONT PAUL E ; MCCALMONT E ; BURT A

Inventor(s): P E MCCALMONT ; PE MCCALMONT ; D A BURT ; DA BURT

Agent(s): BORDEN LADNER GERVAIS LLP

Designated states: AT BE CA CH CN CY DE DK ES FI FR GB GR IE IT JP KR LU MC NL PT SE

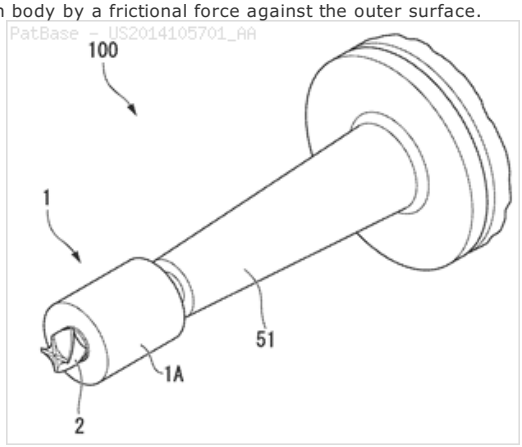
460) Family number: 52866830 (US2014105701A)

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Title: ANTI-VIBRATION MEMBER AND CUTTING TOOL

Abstract: An anti-vibration member is provided which includes a member main body having rubber elasticity or viscoelasticity and can be mounted on an outer surface of a tool main body by a frictional force against the outer surface.

Classifications:
International (IPC 8-9): B23B27/00 B23C5/00 B23C9/00 B23Q11/00 F16F13/04 (Advanced/Invention)
CPC: B23Q11/0032 F16F13/04 B23C5/003 B23C9/00 B23C2226/33 B23C2250/16 Y10T409/304312
US: 267/137 409/141



Family:

Publication number	Publication date	Application number	Application date
CN103635287 A	20140312	CN201280031718	20120713
CN103635287 B	20160817	CN201280031718	20120713
EP2732913 A1	20140521	EP20120814445	20120713
EP2732913 A4	20150826	EP20120814445	20120713
IN09848CN2013 A	20160624	IN2013CN09848	20131210
JP2013011944 A1	20150223	JP20130524705T	20120713

JP5743116 B1	20150701	JP20130524705T	20120713
KR20140004252 A	20140110	KR20137032890	20120713
US2014105701 AA	20140417	US20120125641	20120713
WO13011944 A1	20130124	WO2012JP67934	20120713

Priority:

JP20110156602 20110715 JP20130524705 20120713 WO2012JP67934 20120713

Probable Assignee: MITSUBISHI HITACHI POWER SYSTEMS LTD

Assignee(s): (std)**:** KAWASHITA RIMPEI ; MATANO KAZUYA ; MITSUBISHI HEAVY IND LTD ; MITSUBISHI HITACHI POWER SYS

Assignee(s): MITSUBISHI HITACHI POWER SYSTEMS LTD ; MITSUBISHI HEAVY INDUSTRIES LTD

Inventor(s): (std)**:** MATANO KAZUYA ; KAWASHITA RIMPEI

Agent(s): HOFFMANN EITLE; MORI RYUICHIROU ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

461) Family number: 45869830 (JP2010125559A)

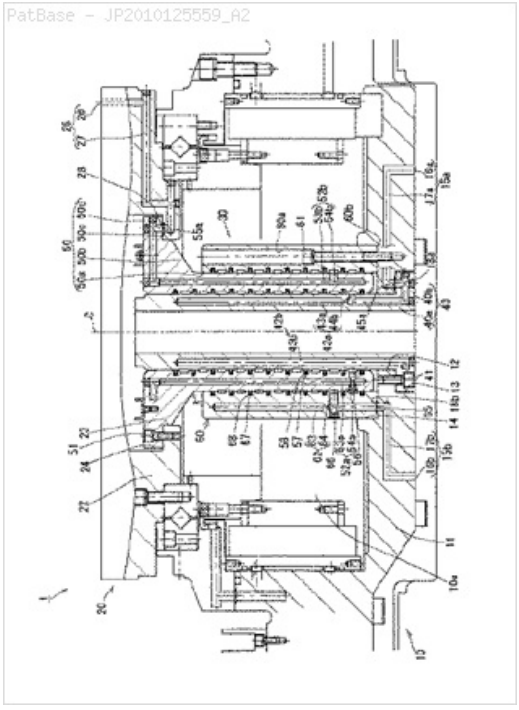
© PatBase

Title: ROTARY JOINT

Abstract: PROBLEM TO BE SOLVED: To provide a rotary joint which can supply a number of types of fluids from a table body side toward a rotary table side. SOLUTION: A distributor having a double structure is adopted that comprises a cylindrical first distributor 50 disposed concentrically at the outer circumference of a center shaft 40 and a cylindrical second distributor 60 disposed concentrically at the outer circumference of the first distributor. By this, the number of fluid ports 54a, 54b, 64 can be increased without axially extending the center shaft and the distributors. The rotary joint is particularly effective when a space in the axial direction is limited, for example, due to the structure of a machining center. Furthermore, in the rotary joint, machining of a long workpiece with highly accurate cylindricality which is generally difficult becomes unnecessary, thus contributing to improved production efficiency.

Classifications:

International (IPC 8-9): B23Q1/00 B23Q1/52 (Advanced/Invention); B23Q1/00 B23Q1/25 (Core/Invention)



Family:

Publication number	Publication date	Application number	Application date
JP2010125559 A2	20100610	JP20080302755	20081127

Priority:

JP20080302755 20081127

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

Inventor(s): (std)**:** ANDO YOSHIAKI

462) Family number: 53570836 (WO13057327A1)

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Title: MACHINE TOOL COMPRISING AN ORIENTABLE RAM

Abstract: The invention relates to a machine tool comprising an orientable ram. The machine is formed by a column, along which a carriage moves vertically, said carriage including a ram (2) that moves horizontally. In addition, an intermediate part (8) is provided between the carriage and the ram (2), which part moves along horizontal guides (7) forming part of the ram (2). A rotation mechanism is coupled to the intermediate part (8) and said mechanism comprises a radial crown (9) which is solidly connected to the intermediate part (8) and with which at least two radial pinions (10) mesh, said pinions being connected to the carriage comprising the ram (2). Moreover, the intermediate part (8) is provided with locking systems that

operate individually or together in order to retain the ram (2) in the required position.
Classifications:
International (IPC 8-9): B23Q1/48 (Advanced/Invention)
CPC: B23Q2220/006 B23Q1/4866

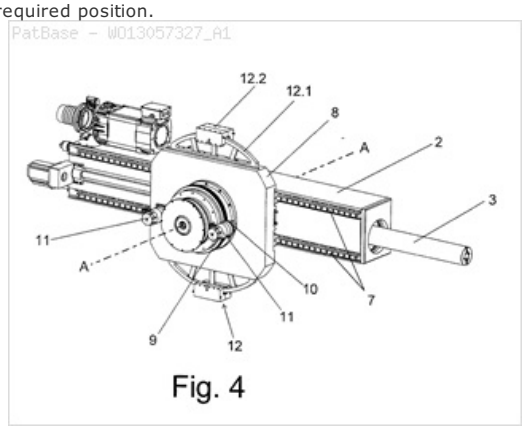


Fig. 4

Family:

Publication number	Publication date	Application number	Application date
WO13057327 A1	20130425	WO2011ES00306	20111021

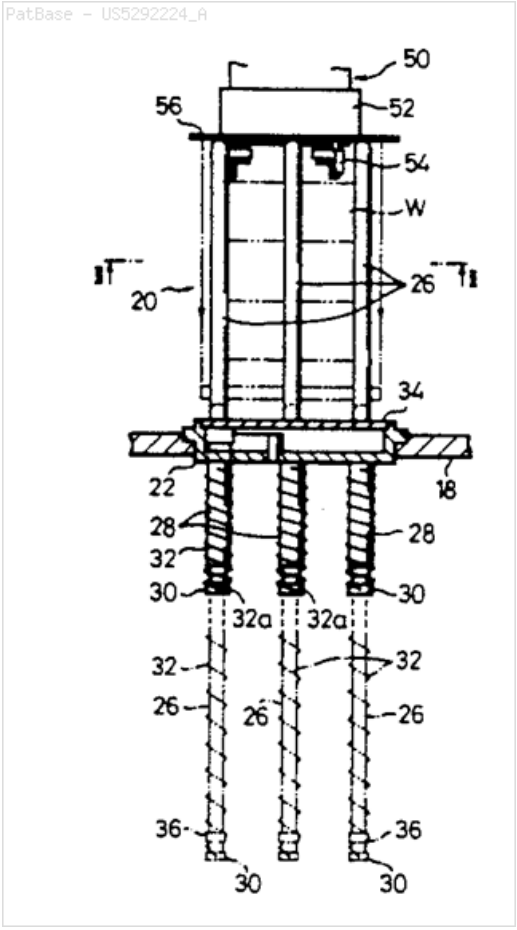
Priority:
WO2011ES00306 20111021

Probable Assignee: GORATU MAQUINAS HERRAMIENTA S A
Assignee(s): (std): AGIRRE ANDONEGUI AITOR ; GORATU MAQUINAS HERRAMIENTA S A ; UNZUETA SAN MARTIN IOSU
Assignee(s): GORATU MAQUINAS HERRAMIENTA SA ; AGIRRE ANDONEGUIAITOR
Inventor(s): (std): AGIRRE ANDONEGUI AITOR ; UNZUETA SAN MARTIN IOSU
Inventor(s): AGIRRE ANDONEGUIAITOR
Agent(s): VEIGA SERRANO MIKEL
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

463) Family number: 3361838 (US5292224A)

Title: APPARATUS FOR HOLDING STACKED WORKPIECES AND FEEDING THE SAME

Abstract: PCT No. PCT/JP91/00704 Sec. 371 Date Jan. 28, 1992 Sec. 102(e) Date Jan. 28, 1992 PCT Filed May 27, 1991 PCT Pub. No. WO91/18812 PCT Pub. Date Dec. 12, 1991.An apparatus for holding a plurality of workpieces (W) in a stack on a pallet (22), supporting the workpieces (W) in place on the pallet (22) by a plurality of workpiece support rods (26), and transporting and transferring the uppermost workpiece by a workpiece gripping hand (50) provided with gripping fingers (54) to a desired position, is provided with elastic lifting springs (32) for continuously biasing the workpiece support rods (26) upward to support the workpieces (W) stably in place by the upright work support rods (26). The workpiece gripping hand (50) grips the uppermost workpiece (W) with the gripping fingers (54) without interference, after depressing the workpiece support rods (26) with a depressing plate (56) provided on the back side of the gripping fingers (54) so that the uppermost workpiece (W) is exposed above the upper ends of the workpiece support rods (26), and then transports the workpiece (W) to a desired position. When placing the workpiece (W) on the pallet (22) by the work gripping hand (50), the gripping fingers (54) release the workpiece (W) after the workpiece support rods (26) are depressed with the depressing plate (56).
Classifications:
International (IPC 8-9): B23Q7/04 B23Q7/10 (Advanced/Invention);
B23Q7/04 B23Q7/10 (Core/Invention)
International (IPC 1-7): B23Q7/04 B23Q7/10 B65G57/00 B65G59/02 B65G61/00
CPC: Y10S414/114 B23Q7/10 B23Q7/04
European: B23Q7/04 B23Q7/10
US: 211/59.3 414/795.7 414/796.4 414/796.7 414/796.9 414/900 901/45



Family:

Publication number	Publication date	Application number	Application date
DE69114817 D1	19960104	DE19916014817	19910527
DE69114817 T2	19960605	DE19916014817T	19910527
EP0485625 A1	19920520	EP19910909840	19910527
EP0485625 A4	19930303	EP19910909840	19910527
EP0485625 B1	19951122	EP19910909840	19910527
JP2633059 B2	19970723	JP19900138574	19900530
JP2633060 B2	19970723	JP19900138575	19900530
JP4035834 A2	19920206	JP19900138574	19900530
JP4035835 A2	19920206	JP19900138575	19900530
US5292224 A	19940308	US19920820674	19920128
WO9118812 A1	19911212	WO1991JP00704	19910527

Priority:

JP19900138574 19900530 JP19900138575 19900530 WO1991JP00704 19910527

Probable Assignee: FUANATSUKU KK

Assignee(s): (std)**:** FANUC CORP ; FANUC LTD

Assignee(s): FANUC LTD YAMANASHI JP ; FUANATSUKU KK

Inventor(s): (std)**:** YASUMURA MITSUHIRO ; YASUMURA MITSUHIRO FANUC DAI ; INAGAKI SHIGEMI ; NIHEI RYO ; NIHEI RYO FANUC MANSION HARIMO ; TORII NOBUTOSHI ; NIHEI AKIRA ; INAGAKI SHIGEZO

Inventor(s): TORII NOBUTOSHI HACHIOJI SHI TOKYO 192 JP ; NIHEI RYO FANUC MANSION HARIMOMI 7 210 ; NIHEI RYO FANUC MANSION HARIMOMI 7 210 MINAMITSURU GUN YAMANASHI 401 05 JP ; YASUMURA MITSUHIRO FANUC DAI 3 VIRA KARAMATS MINAMITSURU GUN YAMANASHI 401 05 JP ; YASUMURA MITSUHIRO FANUC DAI 3 VIRA KARAMATS... ; YASUMURA MITSUHIRO FANUC DAI 3 VIRA KARAMATSU ; YASUMURA MITSUHIRO FANUC DAI 3 VIRA KARAMATS MINAM ; NIHEI RYO FANUC MANSION HARIMOMI 7 210 MINAMITSURU ; INAGAKI SHIGEMI GOTENBA SHI SHIZUOKA 412 JP

Designated states: DE IT SE US

464) Family number: 59634840 (US2016318151A)

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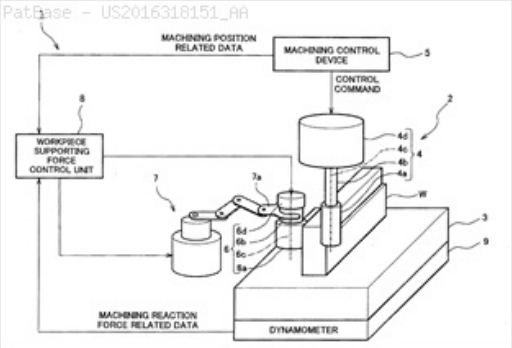
Title: LOW-RIGIDITY WORKPIECE MACHINING ASSISTANCE SYSTEM

Abstract: A machining assistance system for assisting a machining apparatus includes: a workpiece supporting force generating unit, which generates workpiece supporting force against machining reaction force that is exerted on a machining portion of a workpiece by a working tool; a supporting device, which moves the supporting force generating unit while supporting the supporting force generating unit; and a workpiece supporting force control device, which controls operation of the workpiece supporting force generating unit and operation of the supporting device based on machining reaction force related data related to the machining reaction force and machining position related data related to a machining position of the working tool, such that the workpiece supporting force generating unit exerts the workpiece supporting force on the workpiece against the machining reaction force.

Classifications:

International (IPC 8-9): B23B47/00 B23C9/00 B23Q1/76 B23Q11/00 B23Q15/007 B23Q15/12 B23Q17/00 B23Q3/00 B24B41/06

B24B47/26 B24B49/10 B24B49/16 B25J13/08 G05B19/402 G05B19/404 (Advanced/Invention)
CPC: B23C3/00 B23C9/00 B24B47/26 B24B41/06 G05B19/402 G05B2219/40154 B23B47/00 B23Q1/766 G05B2219/49048 G05B2219/49127 G05B2219/50391 G05B19/404
US: 700/114



Family:

Publication number	Publication date	Application number	Application date
EP3090832 A1	20161109	EP20140875324	20141226
EP3090832 A4	20171108	EP20140875324	20141226
JP2015098126 A1	20170323	JP20150554580T	20141226
US2016318151 AA	20161103	US20140108336	20141226
WO15098126 A1	20150702	WO2014JP06505	20141226

Priority:
JP20130269791 20131226 WO2014JP06505 20141226

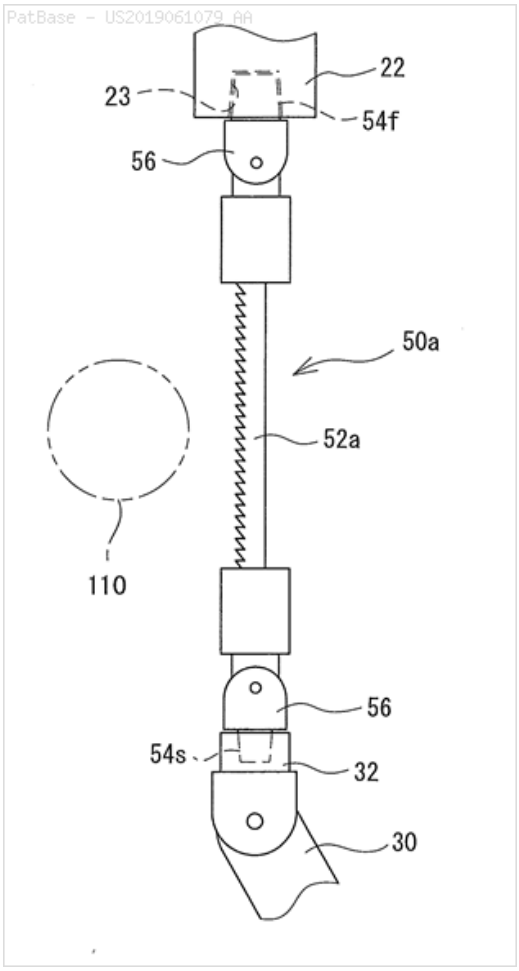
Probable Assignee: KAWASAKI JUKOGYO KK
Assignee(s): (std)**:** KAWASAKI HEAVY IND LTD
Assignee(s): KAWASAKI JUKOGYO KK
Inventor(s): (std)**:** KITAHATA TAKASHI ; KAWAHARA HIDEO
Agent(s): WITTE WELLER AND PARTNER PATENTANWAELTE MBB; PATENT CORPORATE BODY ARCO PATENT OFFICE
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

465) Family number: 73335844 (US2019061079A) © PatBase

Title: MACHINE TOOL, TOOL, AND CONTROL PROGRAM

Abstract: A machine tool including a tool holding unit and a workpiece holding unit includes: a clamper to which a part of a sub-tool, which is a separate tool from a main tool held by the tool holding unit alone, can be detachably connected; an attachment/detachment unit to which another part of the sub-tool can be detachably connected; a tool spindle that moves the clamper; an in-machine robot that moves the attachment/detachment unit; and a controller that controls driving of the tool spindle and the in-machine robot, to execute machining of a workpiece by the sub-tool.
Classifications:
International (IPC 8-9): B23B19/02 B23B25/00 B23B3/16 B23P23/02 B23Q17/00 B23Q3/00 B23Q3/155 B23Q3/157 B23Q3/16 B23Q37/00 G05B19/18 G05B19/418 (Advanced/Invention)
CPC: B23Q3/15713 B23Q37/007 B23Q2003/1558 G05B19/41845 G05B19/41825

PatBase - US2019061079 AA



Family:

Publication number	Publication date	Application number	Application date
CN109420901 A	20190305	CN201810974044	20180824
DE102018120554 A1	20190228	DE201810120554	20180823
JP2019038067 A2	20190314	JP20170161966	20170825
US2019061079 AA	20190228	US20180108678	20180822

Priority:

JP20170161966 20170825

Probable Assignee: OKUMA MACHINERY WORKS LTD

Assignee(s): (std)**:** OKUMA MACHINERY WORKS LTD

Assignee(s): OKUMA CORP

Inventor(s): (std)**:** MORIMURA SHOICHI

Agent(s): YKI INTELLECTUAL PROPERTY ATTORNEYS

466) Family number: 17737845 (US4858290A)

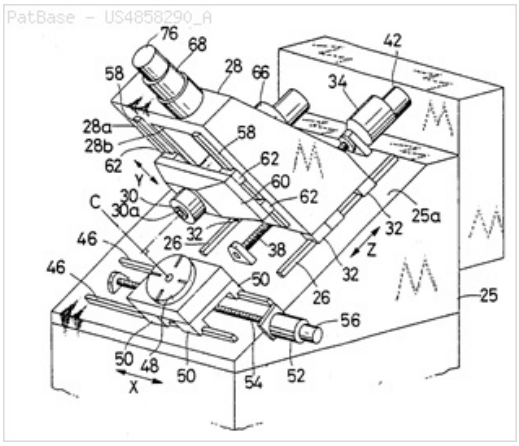
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Title: MACHINE TOOL INDEXING APPARATUS

Abstract: A machine tool having a main spindle head and an indexing table those being inclined with respect to a horizontal plane. The machine tool comprises the main spindle head, a main spindle, a reciprocation drive means and the indexing table. The main spindle is provided with a tool mount portion at one end portion thereof for mounting a tool, and the reciprocation drive means drives the main spindle head in an axial direction of the main spindle. The indexing table mounts thereon a workpiece and is angularly rotatable about its central axis. Further, an indexing apparatus is also disclosed. The apparatus comprises a base frame, an indexing table, an indexing shaft, a single drive source, a drive means, a follower member, coupling means and shifting means. The drive means is connected to the single drive source, and the follower member is connected to the indexing shaft and is engageable with the drive means for rotating the indexing shaft about its axis. The shifting means is operably provided for moving said indexing shaft in axial direction thereof in response to the drive means. The axial movement of the indexing shaft provides engagement and disengagement of the coupling means.

Classifications:

International (IPC 8-9): B23Q1/00 B23Q1/01 B23Q1/28 B23Q1/48 B23Q16/10 (Advanced/Invention);
B23Q1/00 B23Q1/25 B23Q1/26 B23Q16/00 (Core/Invention)
International (IPC 1-7): B23B29/30 B23Q1/00 B23Q16/10
CPC: B23Q1/01 B23Q16/102 Y10T29/5152 Y10T74/1441 Y10T409/305768 Y10T409/308792
European: B23Q1/01 B23Q16/10C
US: 29/35.5 409/167 409/221 74/820



Family:

Publication number	Publication date	Application number	Application date
JP63067054 U1	19880506	JP19860162430U	19861023
JP63105850 A2	19880511	JP19860252519	19861023
US4858290 A	19890822	US19870098222	19870918

Priority:

JP19860162430U 19861023 JP19860252519 19861023

Probable Assignee: BROTHER IND LTD

Assignee(s): (std)**:** BROTHER IND LTD

Assignee(s): BROTHER KOGYO KABUSHIKI KAISHA ; BROTHER KOGYO KK ; BROTHER KOGYO NO 35 9 CHOME HORITA DORI MIZUHO KU ; BROTHER KOGYO NO 35 9 CHOME HORITA DORI MIZUHO KU NAGOYA JAPAN A CORP OF JAPAN KK

Inventor(s): (std)**:** HIROSE NOBORU ; HIROSE AKIRA

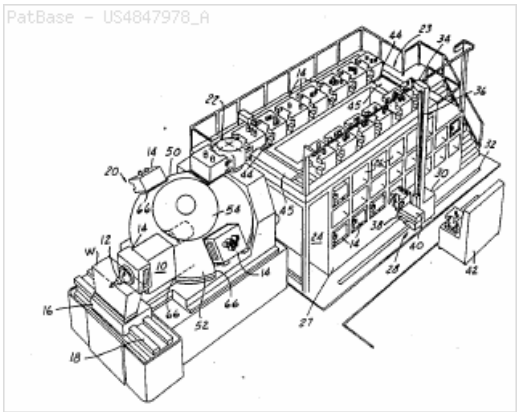
467) Family number: 3079845 (US4847978A)

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Title: TOOL HEAD CHANGER AND DRIVE MECHANISM

Abstract: A machining center for machining a variety of different workpieces. Tool heads with a wide variety of tools are transferred from a storage area and oriented and presented one at a time by a turret to a machine tool in which they are received, accurately located, securely clamped and driven to machine a workpiece. A transfer device moves tool heads from a tool head circulating mechanism to the turret.

Classifications:
International (IPC 8-9): B23Q1/54 B23Q3/157 (Advanced/Invention); B23Q1/25 B23Q3/157 (Core/Invention)
International (IPC 1-7): B23Q3/157
CPC: B23Q1/54 B23Q3/157 Y10T29/5155 Y10T483/1738 Y10T483/176 Y10T483/1855 B23Q2003/1558
European: B23Q1/54 B23Q3/157
US: 29/40 29/568 483/32 483/41 483/64



Family:

Publication number	Publication date	Application number	Application date
US4847978 A	19890718	US19870114218	19871028

Priority:

US19870114218 19871028

Probable Assignee: MAGUS GMBH

Assignee(s): (std)**:** LITTON AUTOMATION SYSTEMS

Assignee(s): LITTON INDUSTRIAL AUTOMATION SYSTEMS INC ; LITTON INDUSTRIAL AUTOMATION SYSTEMS INC 7300 TURF ; LITTON INDUSTRIAL AUTOMATION SYSTEMS INC 7300 TURFWAY ROAD FLORENCE KENTUCKY 41042 A CORP OF DE ; MAGUS GMBH ; MAGUS INTELLECTUAL PROPERTY GMBH ; UNOVA IP CORP ; WESTERN ATLAS INC

Inventor(s): (std)**:** KLEIN RICHARD J

468) Family number: 17237846 (ES1012933Y)

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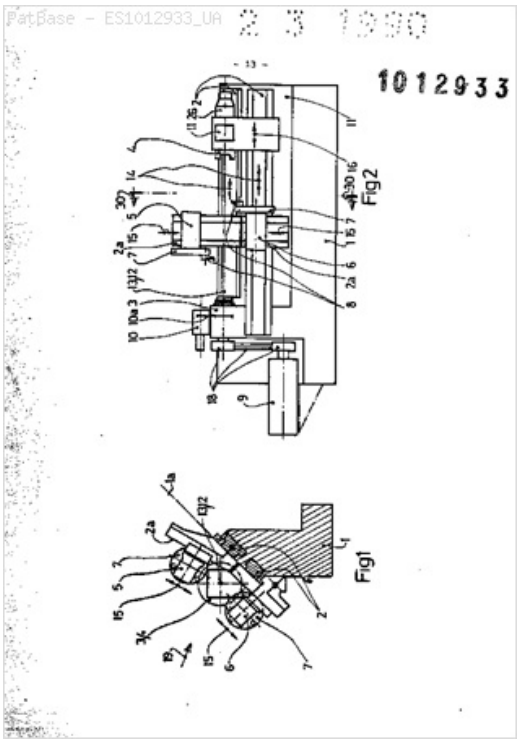
Title: TORNO INTEGRAL PERFECCIONADO.

Abstract: Source: ES1012933U [ES] TORNO INTEGRAL PERFECCIONADO, EN PARTICULAR DE LOS GOBERNADOS POR

CONTROL NUMERICO, CARACTERIZADO PORQUE CONSISTE EN LA CONFIGURACION DE UN PLATO-CABEZAL PORTAPIEZAS PRINCIPAL (3), CON SU EJE DE GIRO ORDINARIO (12) EN OPOSICION COAXIAL A UN PLATO-CABEZAL PORTAPIEZAS SECUNDARIO (4) DE MOTOR INTERNO QUE TIENE POSIBILIDAD DE DESPLAZARSE LONGITUDINALMENTE RESPECTO A DICHO EJE DE GIRO ORDINARIO (12) CON UNA CARRERA AXIAL (16) HASTA ADOSARSE AL PLATO-CABEZAL PORTAPIEZAS PRINCIPAL (3) EXISTIENDO DOS TORRETAS PORTAHERRAMIENTAS PRINCIPAL (5) Y SECUNDARIA (6), UBICADAS EN UN PLANO INCLINADO (1A) RESPECTO DEL EJE DE GIRO ORDINARIO (12) Y CON SUS RESPECTIVOS DISCOS GIRATORIOS PRINCIPAL (7) Y SECUNDARIO (7A), PORTADORES DE MULTIPLES HERRAMIENTAS (8), PARAXIALES AL EJE DE GIRO ORDINARIO (12) Y CON EL PLANO FRONTAL DE CADA DISCO GIRATORIO (7 O 7A) EN ENFRENTAMIENTO A SU RESPECTIVO PLATO-CABEZAL PORTAPIEZA (3 O 4) Y CON POSIBILIDADES DE DESPLAZAMIENTO SINCRONIZADOS E INDEPENDIENTES TANTO LONGITUDINALES (14) COMO TRANSVERSALES (15) RESPECTO DEL EJE DE GIRO ORDINARIO (12) Y PUDIENDO, AL MENOS UNO DE LOS PLATOS CABEZALES PORTAPIEZA (3 O 4), DESCONECTARSE A VOLUNTAD DE SU MOTOR PRINCIPAL (9) O ELEMENTO MOTRIZ (11) Y PASAR A SER ACCIONADO POR UN MOTOR AUXILIAR (10) REVERSIBLE, QUE A TRAVES DE UNA REDUCTORA (10A) PROPORCIONA AL PLATO-CABEZAL PORTAPIEZAS (3 O 4) CONSIDERADO UN GIRO (13) LENTO, REVERSIBLE Y SINCRONIZADO CONTINUA Y/O ALTERNATIVAMENTE CON SU CORRESPONDIENTE TORRETA PORTAHERRAMIENTAS (5 O 6), INTERPOLANDO LOS EJES (13), (15) Y/O (14) EN LA EJECUCION DEL TRABAJO SOBRE LA PIEZA (17).

Machine translation: About INTEGRAL perfected, IN PARTICULAR OF THE GOVERNED BY NUMERICAL CONTROL, characterized in that it CONSISTS IN THE CONFIGURATION OF A PLATE-HEADSTOCK (3), with its axis of rotation (12) In opposition to a plate-HEADSTOCK (4 COAXIAL) OF INTERNAL ENGINE HAVING POSSIBILITY TO MOVE LONGITUDINALLY WITH RESPECT TO said axis of rotation (12) WITH AN AXIAL stroke (16) TO BE ATTACHED TO THE PLATE (3) having two main HEADSTOCK-holding TURRETS (5) and secondary (6), LOCATED IN A inclined plane (1A) with respect to the axis of rotation (12) AND THEIR RESPECTIVE rotating disks (7) and secondary (7A), carriers of multiple tools (8), the axis of rotation (12 PARAXIAL) AND WITH THE FRONT PLANE OF EACH Rotating disk (7 or 7A) in confrontation to its respective head of the WORKREST (3 or 4-plate) AND WITH THE POSSIBILITY OF DISPLACEMENT LONGITUDINAL (14) and transverse SYNCHRONIZED AND INDEPENDENT (15) WITH RESPECT TO THE AXIS OF ROTATION (12) and being, AT LEAST ONE OF THE HEADS OF THE WORKREST (3 or 4), dishes disconnected AT WILL OF ITS MAIN MOTOR (9) or driving element (11) AND HAVING TO BE DRIVEN BY AN AUXILIARY MOTOR (10) reversible, which THROUGH A REDUCTION GEAR (10A) provides the headstock (3 or 4-plate) considered a rotation (13) SLOW, REVERSIBLE AND SYNCHRONIZED CONTINUOUS AND/OR alternatively with its corresponding TURRET (5 or 6), interpolating the axes (13), (15) and/or (14) IN THE EXECUTION OF THE WORK PIECE (17).

Classifications:
International (IPC 8-9): B23B3/22 (Advanced/Invention); B23B3/00 (Core/Invention)
International (IPC 1-7): B23B3/22



Family:

Publication number	Publication date	Application number	Application date
ES1012933 UA	19901001	ES19900000670U	19900302
ES1012933 Y1	19910416	ES19900000670U	19900302
ES1012933 YA	19910416	ES19900000670U	19900302

Priority:

ES19900000670U 19900302

Probable Assignee: DANOBAT S COOP LTDA

Assignee(s): (std): DANOBAT S COOP LTDA

Inventor(s): (std): ADONEGUI MILICUA JAVIER

469) Family number: 10639848 (US5713253A)

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Title: ROTATIONAL MACHINING METHOD

Abstract: A spindle 51 capable of controlling quantitatively the rotational angle around the center axial line itself is mounted with a turning tool 50; the spindle 51 and a workpiece are allowed to be relatively dislocated by an axial control along at least a plane perpendicular to the rotation axial line of the spindle 51 in such a manner that the relative movement locus L of the spindle center Cs to the workpiece conforms to a geometry to be machined and a required front rake angle beta is set, thereby allowing a mutual interpolation motion between the spindle and the workpiece to be performed; and the rotational angle of the spindle 51 is synchronously controlled with a required interrelation to the above-mentioned axial control, whereby the direction of the cutting edge of the turning tool 50 to the machined face of the workpiece is kept at a required direction at the full rotational angle position of the spindle 50 with the required front rake angle beta, and the direction of the

cutting edge of the turning tool 50 to the machined face of the workpiece W is kept at a required direction, and then the workpiece W is machined into a geometry determined by the interpolation locus L due to the above-mentioned mutual interpolation motion.

Classifications:

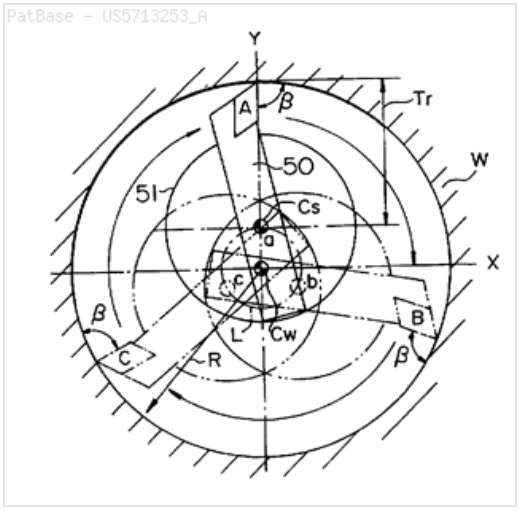
International (IPC 8-9): B23B1/00 B23B29/034 B23B29/24 B23B35/00 B23B39/00 B23B41/00 B23C1/00 B23Q15/14 B23Q15/26 G05B19/18 (Advanced/Invention);
B23B1/00 (Advanced/Non-invention);
B23B1/00 B23B29/00 B23B29/24 B23B35/00 B23B39/00 B23C1/00 B23Q15/007 B23Q15/20 G05B19/18 (Core/Invention);
B23B1/00 B23B41/00 (Core/Non-invention)

International (IPC 1-7): B23B1/00 B23B29/034 B23B29/24 B23B35/00 B23B39/00 B23B41/00 B23B5/00 B23C1/00 B23C3/00 B23C3/02 B23C3/10 B23G1/34 B23Q15/007 B23Q15/14 B23Q15/26

CPC: Y10T82/10 Y10T82/2529 Y10T409/303752 G05B19/184 G05B19/186 G05B2219/49121 G05B2219/50353

European: G05B19/18B4 G05B19/18B5 S05B219/49121 S05B219/50353

US: 364/474.02 409/131 700/160 82/1.11 82/111 82/131



Family:

Publication number	Publication date	Application number	Application date
DE19537292 A1	19960411	DE19951037292	19951006
JP3093933 B2	20001003	JP19940255553	19941020
JP3093934 B2	20001003	JP19940255557	19941020
JP3093935 B2	20001003	JP19940258296	19941024
JP8108308 A2	19960430	JP19940244015	19941007
JP8118101 A2	19960514	JP19940255553	19941020
JP8118115 A2	19960514	JP19940255557	19941020
JP8126938 A2	19960521	JP19940258296	19941024
KR0180954 B1	19990401	KR19950034395	19951007
KR100180954 B1	19990401	KR19950034395	19951007
TW301619 B	19970401	TW19950110094	19950927
US5713253 A	19980203	US19950538724	19951003

Priority:

JP19940211137 19940905 JP19940244015 19941007 JP19940255557 19941020
JP19940255553 19941020 JP19940258296 19941024

Probable Assignee: TOSHIBA KIKAI KK

Assignee(s): (std): TOSHBA KIKAI KK ; TOSHIBA MACHINE CO LTD

Assignee(s): TOSHIBA MACH CO LTD ; TOSHIBA KIKAI K K ; TOSHIBA KIKAI K K TOKIO TOKYO JP ; TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK ; TOSHIBA KIKAI KKJP

Inventor(s): (std): ARAKI MASABUMI ; ARAKI MASAFUMI ; DATE TAKAO ; GAKUHARI KATSUJI ; KAKUHARI KATSUJI ; KAWANO MAKOTO ; KONO MAKOTO

Inventor(s): KAWANO MAKOTO NUMAZU SHIZUOKA JP ; GAKUHARI KATSUJI MISHIMA SHIZUOKA JP ; DATE TAKAO SHIZUOKA JP ; ARAKI MASAFUMI NUMAZU SHIZUOKA JP

Agent(s): MIYOSHI HIDEKAZU

470) Family number: 31720850 (US2005047885A)

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Title: METHOD AND ASSEMBLY FOR ROTATING A CUTTING INSERT DURING A TURNING OPERATION AND INSERTS USED THEREIN

Abstract: A cutting insert rotated about its axis may be utilized during a metalworking operation and applied against the rotating workpiece to enhance tool performance. A method, including an assembly with a rotatable insert mounted to a toolholder may be utilized to achieve this result.

Classifications:

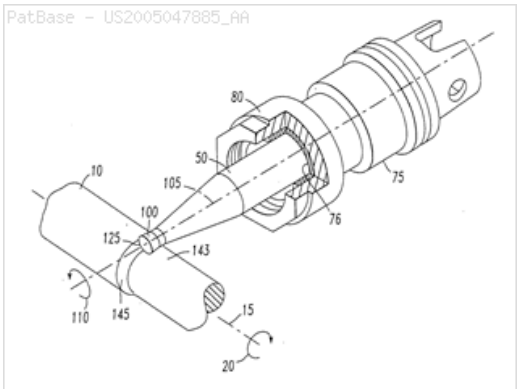
International (IPC 8-9): B23B1/00 B23B27/04 B23B27/08 B23B27/10 B23B27/12 B23B27/14 B23B27/16 B23B29/00 B23B29/04 B23B3/00 B23B31/40 B23B7/00 B23C1/00 B23C5/20 B23C5/22 B23G1/02 B23Q11/10 B26D1/00 (Advanced/Invention);
B23B1/00 B23B27/10 B23B27/12 B23B27/16 B23B31/40 B23Q11/10 (Advanced/Non-invention);
B23B1/00 B23B27/00 B23B27/14 B23B27/16 B23B29/00 B23B3/00 B23B31/00 B23B7/00 B23C1/00 B23G1/00 B23Q11/10 B26D1/00 (Core/Invention)

International (IPC 1-7): B23B27/04 B23B27/12 B23C1/00

CPC: B23B31/06 B23B2260/0785 Y10T82/10 Y10T82/2529 Y10T279/16 Y10T407/14 Y10T407/194 Y10T407/2286 Y10T407/23 Y10T407/235 B23G1/02 B23B1/00 B23B27/1603 B23B31/4006 B23B2200/0438 B23B2200/0461 B23B2200/081 B23B2200/161 B23B2200/204 B23B2205/12 B23B2260/042 B23B2265/16 Y10T409/303808 Y10T409/303976 Y10T409/305656 Y10T409/309408 B23B27/10 B23B27/12

European: B23B1/00 B23B27/10 B23B27/12 B23B27/16B B23B31/06 B23B31/40B B23G1/02 L23B200/04D L23B200/04G L23B200/08A L23B200/16A L23B200/20C L23B205/12 L23B260/042 L23B260/078T L23B265/16

US: 279/8 407/104 407/104S 407/107 407/109 407/11 407/113 407/113P 407/114 407/114S 407/33 407/42 407/50 407/64 407/7 407/7P 409/132 409/132P 409/135 409/135S 409/165 409/165S 409/232 409/232S 82/1.11 82/1.110P 82/11.1 82/131 82/131S



Family:

Publication number	Publication date	Application number	Application date
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CN100398236 C	20080702	CN200480028606	20040818
CN101668603 A	20100310	CN200880013229	20080324
CN1859992 A	20061108	CN200480028606	20040818
DE112008003301 T5	20100923	DE200811003301T	20081210
DE602004046786 D1	20150423	DE200460046786T	20040818
EP1660260 A2	20060531	EP20040786527	20040818
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JP2012024925 A2	20120209	JP20110243423	20111107
JP2012024926 A2	20120209	JP20110243424	20111107
JP5519616 B2	20140611	JP20110243424	20111107
KR101142081 B1	20120503	KR20067004145	20040818
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MX2009010171 A1	20100224	MX20090010171	20080324
RU2009139063 A	20110527	RU20090139063	20080324
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US2005047885 AA	20050303	US20030653712	20030902
US2007101837 AA	20070510	US20060616939	20061228
US2008232909 AA	20080925	US20070956520	20071214
US2008232911 AA	20080925	US20080053749	20080324
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US7611313 BB	20091103	US20060616939	20061228
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WO05021191 A2	20050310	WO2004US26820	20040818
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WO08118835 A1	20081002	WO2008US57975	20080324
WO09076442 A2	20090618	WO2008US86234	20081210
WO09076442 A3	20090917	WO2008US86234	20081210

Priority:

US20030653712 20030902 EP20040786527 20040818 JP20060525348 20040818
WO2004US26820 20040818 US20060616939 20061228 US20070896578P 20070323
US20070012621P 20071210 US20070956520 20071214 US20080053749 20080324
WO2008US57975 20080324 WO2008US86234 20081210

Probable Assignee: KENNAMETAL INC

Assignee(s): (std)**:** ANDRAS LYNN R ; BROWN PAUL ; BROWN PAUL A ; CHAPHALKAR NITIN ; HYATT GREGORY A ; MASSA TED R ; KENNAMETAL INC ; FILHO RUY FROTA DE SOUZA ; SOUTH ADAM ; FROTA DE SOUZA RUY ; FROTA DE SOUZA FILHO RUY ; ANDRAS LINN ; DE SOUZA FILHO RUY FROTA

Assignee(s): KENNAMETAL INC LATROBE ; ANDRAS LINN R ; MORI SEIKI USA INC ; KENNAMETAL INK

Inventor(s): (std)**:** ANDRAS LINN R ; ANDRAS LINN ROSS ; ANDRAS LYNN R ; BROWN PAUL ; DE SOUZA FILHO RUY FROTA ; FILHO RUY FROTA DE SOUZA ; FROTA DE SOUZA RUY ; HYATT GREGORY A ; HYATT GREGORY A ANDRAS LYNN R ; MASSA TED R ; SOUTH ADAM ; FROTA DE SOUZA FILHO RUY ; FROTA DE SOUSA RUJ ; EHNDREHS LINN ; CHAPHALKAR NITIN ; BROWN PAUL A ; BRAUN POL ; SOUZA RUY FROTA DE ; SAUT ADAM ; KHAJATT GREGORI A ; ANDRAS LINN ; RUY FROTA DE SOUZA ; PAUL BROWN ; LINN ANDRAS ; ADAM SOUTH

Inventor(s): GREGORY A HYATT ; TED R MASSA ; MASSA TED R LATROBE ; HYATT GREGORY A BARRINGTON ; MASSA TED ; HYATT GREGORY ; ANDRAS LYNN R LIGONIER

Agent(s): PRINZ AND PARTNER MBB PATENTANWAELTE RECHTSANWAELTE; PRINZ AND PARTNER MBB; PRINZ AND PARTNER; JAMES G PORCELLI; KENNAMETAL INC; KENNAMETAL INC INTELLECTUAL PROPERTY DEPARTMENT; JOHN J; LARRY R; MEENAN LARRY R ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

471) Family number: 43635850 (US2010310334A)

Title: MACHINE TOOL AND PROCESSING METHOD

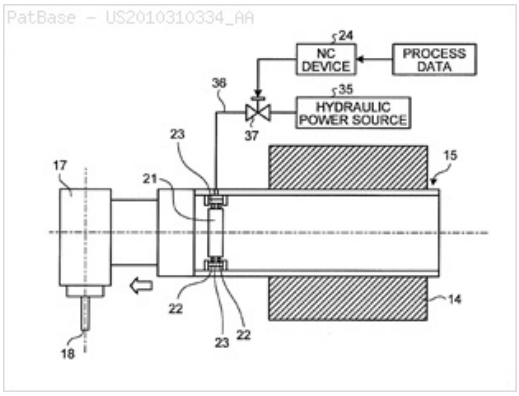
Abstract: In a machine tool or a processing method, a column base (12) is supported on a bed (11) movably in a horizontal direction, and a column (13) is installed vertically on the column base (12). A saddle (14) is supported on a side of the column (13) movably in a vertical direction, and a ram stock (15) is supported on the saddle (14) movably in a horizontal direction. A spindle (16) is rotatably supported by the ram stock (15), a damper (21) is provided on the ram stock (15), and an O-ring (22) is provided between the ram stock (15) and the damper (21), so that the O-ring (22) can be deformed by a pressing member (23). An NC device (24) can adjust a deformation degree of the O-ring (22) by the pressing member (23) depending on a mass of an attachment (17). Therefore, vibration of a tool can be effectively damped by changing a natural frequency according to replacement or movement of the attachment.

Classifications:

International (IPC 8-9): B23B19/00 B23B19/02 B23C9/00 B23Q1/00 B23Q1/25 B23Q1/70 B23Q11/00 F16F15/12 (Advanced/Invention);
B23B19/00 B23B19/02 B23Q1/00 B23Q11/00 (Advanced/Non-invention);
B23B19/00 B23Q1/00 B23Q11/00 G01B11/00 (Core/Invention)

International (IPC 1-7): B23Q1/00 G01B11/00

CPC: B23Q2220/006 B23Q11/0039 Y10T409/303752 Y10T409/304312 Y10T409/308288
European: B23Q11/00D4
US: 409/131 409/131P 409/141 409/141S 409/212 409/212S



Family:

Publication number	Publication date	Application number	Application date
CN101945722 A	20110112	CN200880126767	20080411
EP2253399 A1	20101124	EP20080740236	20080411
JP2009190141 A2	20090827	JP20080034975	20080215
KR20100112165 A	20101018	KR20107018009	20080411
TH98131 A	20090903	TH20081003920	20080729
TW200936293 A	20090901	TW20080128845	20080730
US2010310334 AA	20101209	US20080867686	20080411
WO09101709 A1	20090820	WO2008JP57138	20080411

Priority:
JP20080034975 20080215 WO2008JP57138 20080411

Probable Assignee: MITSUBISHI HEAVY IND LTD

Assignee(s): (std)**:** DOMARU HIROYUKI ; FURUTATE SATOSHI ; HASEGAWA TOMOHARU ; INOUE ATSUSHI ; MITSUBISHI HEAVY IND LTD

Assignee(s): MITSUBISHI HEAVY INDUSTRIES LTD

Inventor(s): (std)**:** FURUTATE SATOSHI ; INOUE ATSUSHI ; DOMARU HIROYUKI ; HASEGAWA TOMOHARU ; KODATE SATORU ; INOUE JUNJI ; HIROYUKI DOMARU ; JUNJI INOUE ; TOMOHARU HASEGAWA ; SATORU KODATE

Inventor(s): FURUTATE, Satoshi ; HASEGAWA, Tomoharu ; DOMARU, Hiroyuki ; INOUE, Atsushi

Agent(s): HENKEL FEILER AND HAENZEL; SAKAI HIROAKI; BIRCH STEWART KOLASCH AND BIRCH

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

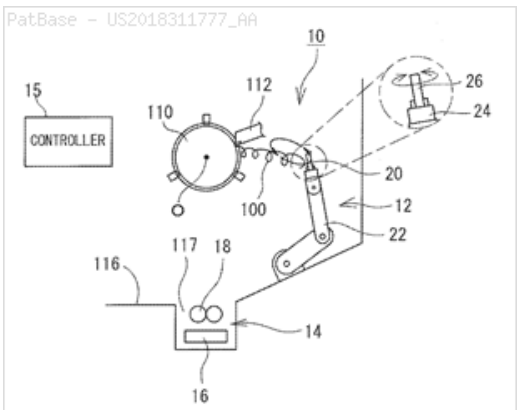
472) Family number: 71673854 (US2018311777A)

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Title: SWARF HANDLING APPARATUS

Abstract: A swarf handling apparatus installed in a machining tool that performs machining operation accompanied with production of stringy swarf includes a swarf catching device. The swarf catching device includes a holder unit that holds the stringy swarf when the stringy swarf makes contact with the holder unit. The swarf catching device causes the holder unit to be floated in a region around a machining point in such a manner that the position of the holder unit is varied relative to the machining point, for catching the stringy swarf in the holder unit.

Classifications:
International (IPC 8-9): B23B25/00 B23B47/34 B23G1/44 B23Q11/00 B23Q11/02 (Advanced/Invention)
CPC: B23Q11/0057 B23B2270/30 B23Q11/0042 B23Q11/0064 B23B25/02



Family:

Publication number	Publication date	Application number	Application date
CN108788898 A	20181113	CN201810381087	20180425
DE102018109627 A1	20181031	DE201810109627	20180423
JP2018183858 A2	20181122	JP20170088831	20170427
US2018311777 AA	20181101	US20180964706	20180427

Priority:
JP20170088831 20170427

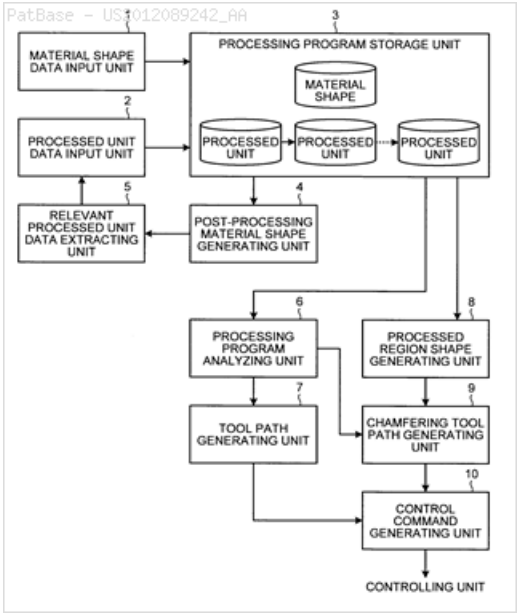
Probable Assignee: OKUMA MACHINERY WORKS LTD
Assignee(s): (std): OKUMA MACHINERY WORKS LTD
Assignee(s): OKUMA CORP
Inventor(s): (std): SUGIURA HIROYUKI
Agent(s): YKI INTELLECTUAL PROPERTY ATTORNEYS

473) Family number: 48146855 (US2012089242A)

Title: AUTOMATIC PROGRAMMING APPARATUS AND AUTOMATIC PROGRAMMING METHOD

Abstract: Automatic programming apparatus includes: a material shape data input unit that receives input of data of material shape; a processing program storage unit that stores therein data of material shape and processed unit data; a processed unit data input part that receives an input of other-processed-unit-reference-type processed unit data referencing processed region shape data contained in the processed unit data; a processed region shape generating unit that generates processed region shape data in the processed unit data for partial processing, based on data of material shape and processed region shape data referenced by other-processed-unit-reference-type processed unit data; and a control command generating unit that generates control command data, based on processed unit data for partial processing containing processed region shape data.

Classifications:
International (IPC 8-9): B23Q15/00 G05B19/4093 G05B19/4097 (Advanced/Invention)
CPC: G05B19/40931 G05B2219/36327 Y02P90/265
European: G05B19/4093 G05B19/4093G S05B219/36327
US: 1/1 700/98 700/98P



Family:

Publication number	Publication date	Application number	Application date
CN102473008 A	20120523	CN201080030400	20100706
CN102473008 B	20141105	CN201080030400	20100706
DE112010002839 B4	20190221	DE201011002839T	20100706
DE112010002839 T5	20121206	DE201011002839T	20100706
DE112010002839 T8	20130207	DE201011002839T	20100706
JP2011004585 A1	20121220	JP20110521815T	20100706
JP5163814 B1	20130313	JP20110521815T	20100706
JP5163814 B2	20130313	JP20110521815T	20100706
US2012089242 AA	20120412	US20100377292	20100706
US9152143 BB	20151006	US20100377292	20100706
WO11004585 A1	20110113	WO2010JP04400	20100706

Priority:
JP20090159690 20090706 DE201011002839T 20100706 WO2010JP04400 20100706
JP20110521815 20100706

Probable Assignee: MITSUBISHI ELECTRIC CORP
Assignee(s): (std): IRIGUCHI KENJI ; IWASAKI TAKASHI ; MATSUBARA SUSUMU ; MITANI YUKA ; MITSUBISHI ELECTRIC CORP ; SATO TOMONORI ; MIYATA AKIRA
Inventor(s): (std): SATO TOMONORI ; MATSUBARA SUSUMU ; MITANI YUKA ; IWASAKI TAKASHI ; IRIGUCHI KENJI ; MIYATA AKIRA ; TOMONORI SATO ; YUKA MITANI ; AKIRA MIYATA ; TAKASHI IWASAKI ; KENJI IRIGUCHI ; SUSUMU MATSUBARA
Agent(s): OBLON MCCLELLAND MAIER AND NEUSTADT LLP; TAKAHASHI SHOGO ET AL
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

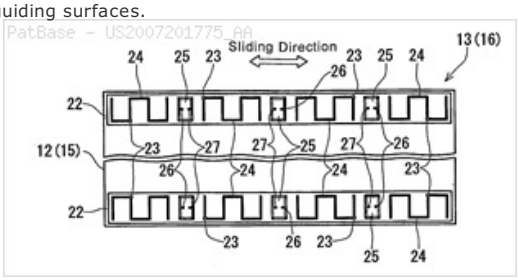
474) Family number: 32387856 (US2007201775A)

Title: SLIDE GUIDING DEVICE

Abstract: A slide guiding device in a machine tool includes slide guiding surfaces provided on a bed, sliding surfaces provided on a column, which is guided on the bed for movement on the same, and movable on the slide guiding surfaces, oil

grooves each with a first supply hole for supplying lubrication oil to contact surface areas between the sliding surfaces and the slide guiding surfaces, and oil pockets formed independently of the oil grooves for retaining the lubrication oil supplied to the contact surface areas between the sliding surfaces and the slide guiding surfaces.

Classifications:
International (IPC 8-9): B23Q1/38 B23Q1/42 B23Q11/12 F16C29/02 F16C32/06 F16C33/10 (Advanced/Invention);
B23Q1/26 B23Q11/12 F16C29/00 F16C32/06 F16C33/04 (Core/Invention)
International (IPC 1-7): B23Q1/42 B23Q11/12 F16C29/02 F16C32/06 F16C33/10
CPC: F16C29/025 F16C32/0659 F16C33/1065 F16C33/1075
European: F16C29/02H F16C32/06L4D4 F16C33/10L5D F16C33/10L5L
US: 384/12 384/12P



Family:

Publication number	Publication date	Application number	Application date
CN1934362 A	20070321	CN200580008979	20050318
CN1934362 B	20110914	CN200580008979	20050318
DE602005008034 D1	20080821	DE200560008034T	20050318
EP1740838 A1	20070110	EP20050721529	20050318
EP1740838 B1	20080709	EP20050721529	20050318
JP2005313272 A2	20051110	JP20040133252	20040428
JP4492200 B2	20100630	JP20040133252	20040428
US2007201775 AA	20070830	US20050592951	20050318
US7785009 BB	20100831	US20050592951	20050318
WO05106267 A1	20051110	WO2005JP05602	20050318

Priority:

JP20040133252 20040428 WO2005JP05602 20050318

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP ; SAITO TOSHIYUKI ; SAKEI TOSHIKAZU ; ASO TOMIO ; HAMAJIMA YOUJI ; TOYODA MACHINE WORKS LTD

Assignee(s): TOYODA MACH WORKS LTD ; TOYODA KOKI KK

Inventor(s): (std): SAITO TOSHIYUKI ; SAKEI TOSHIKAZU ; ASO TOMIO ; HAMAJIMA YOUJI ; SAKAI JUICHI ; HAMASHIMA YOJI ; TOSHIKAZU SAKEI ; YOUJI HAMAJIMA ; TOMIO ASO ; TOSHIYUKI SAITO ; YOUJI SAITO TOSHIYUKI SAKEI TO

Inventor(s): SAITO TOSHIYUKI SAKEI TOSHIKAZU ASO TOMIO ; SAITO TOSHIYUKI SAKEI TOSHIKAZU ASO TOMIO HAMAJIMA

Agent(s): OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT PC; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

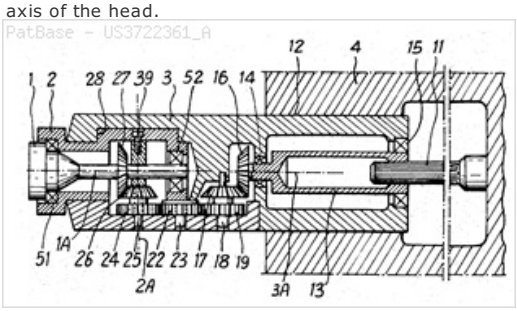
475) Family number: 119861 (US3722361A)

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Title: UNIVERSAL MILLING SPINDLE-CARRYING UNIT

Abstract: The invention relates to the universal milling units comprising a milling cutter-carrying spindle mounted in a head adapted to pivot in a fork-portion of a cylindrical body pivotally and longitudinally slidable in a bore of a support. The drive for rotating the milling cutter-carrying spindle is ensured from a power shaft coaxial with said body through a transmission which comprises, among others, a bevel gear secured to the milling cutter-carrying spindle and in mesh with a mating bevel gear which is carried by an intermediate shaft coaxial with the pivotal axis of the head.

Classifications:
International (IPC 8-9): B23B19/00 B23C1/02 B23C1/12 B23Q1/00 B23Q1/54 B23Q1/70 B23Q5/04 (Advanced/Invention);
B23B19/00 B23C1/00 B23Q1/00 B23Q1/25 B23Q5/00 (Core/Invention)
International (IPC 1-7): B23C1/02 B23C1/12 B23C9/00 B23Q1/08 B23Q3/00
CPC: Y10T409/30784 Y10T409/308456 B23Q1/5412 B23Q5/045
European: B23Q1/54A1 B23Q5/04D2
US: 409/204 409/215 90/1.7



Family:

Publication number	Publication date	Application number	Application date
BE768923 A	19711103	BE19710768923	19710623
CA926170 A1	19730515	CA19710118007	19710712
CH537235 A	19730531	CH19710009968	19710707
DE2131537 A1	19720120	DE19712131537	19710622
DE7124441 U	19730920	DE19710224441U	19710622
FR2102405 A5	19720407	FR19700026103	19700716
GB1315760 A	19730502	GB19710031972	19710707
JP55066718 U1	19800508	JP19790142256U	19791016
JP59006972 Y2	19840303	JP19790142256U	19791016
US3722361 A	19730327	US19710157385	19710628

Priority:

FR19700026103 19700716

Probable Assignee: GAMBIN SA

Assignee(s): (std)**:** GAMBIN S A ; GAMBIN SA ; GAMBIN SA SA

Assignee(s): SA GAMBIN SA FR ; GAMBIN S A A VIUZ EN SALLAZ FRANCE ; ALBERT RINCK ; GABIN SA ; GAMBIN FR SA

Inventor(s): (std)**:** ALBERT RINCK ; RINCK A ; RINCK ALBERT

Inventor(s): RINCK A FR

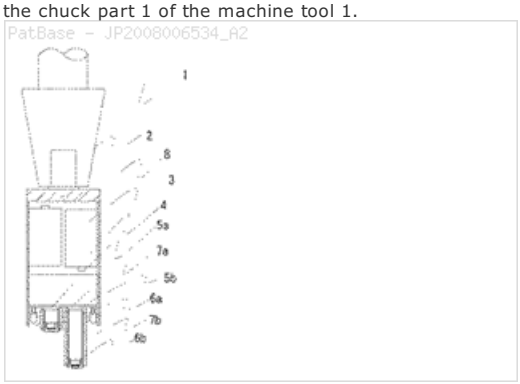
476) Family number: 41541861 (JP2008006534A)

Title: CAMERA FOR MACHINE TOOL AND MACHINE TOOL WITH RECEIVER

Abstract: PROBLEM TO BE SOLVED: To simply check the machining state using a camera in a machine tool. SOLUTION: This camera 8 for the machine tool is used attached to a machine tool 17 such as a machining center formed by having a head with a main spindle 18 detachably mounting a tool 4 at its tip, and a table 16 for mounting a workpiece 15; is provided with a chuck object part 2 having an end which is conformed to the shape of a chuck 1 detachably mounting the tool 4 and formed into a cylindrical shape, a square shape or a tapered shape; and image pickup units 7a and 7b are disposed in the opposite end of the chuck object part 2 so as to bring the workpiece 15 or the table 16 for mounting the workpiece 15 into view and capture them by attaching the chuck object part 2 of the camera 8 in the chuck part 1 of the machine tool 1.

Classifications:

International (IPC 8-9): B23Q17/24 (Advanced/Invention);
B23Q17/24 (Core/Invention)



Family:

Publication number	Publication date	Application number	Application date
JP2008006534 A2	20080117	JP20060179247	20060629

Priority:

JP20060179247 20060629

Probable Assignee: HIDAKA TAKEO

Assignee(s): (std)**:** HIDAKA TAKEO

Inventor(s): (std)**:** HIDAKA TAKEO ; HARAYAMA KOICHIRO

477) Family number: 28194862 (US2002060127A)

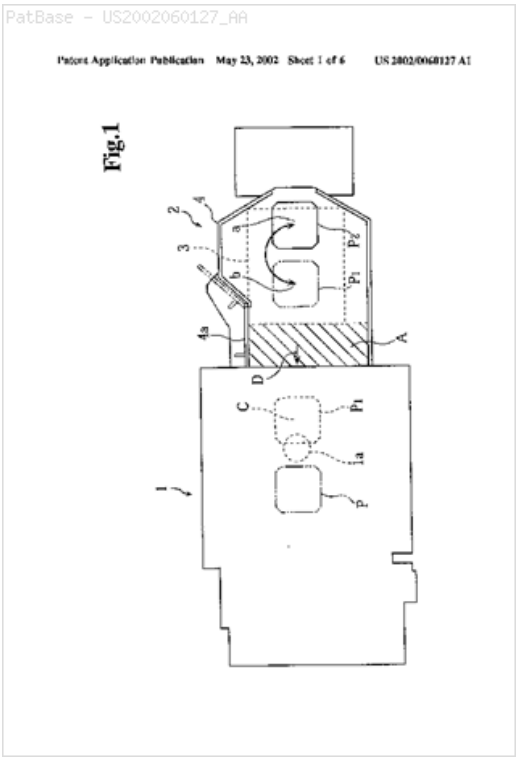
Title: MACHINE TOOL AND ASSOCIATED PALLET CHANGER

Abstract: A machine tool has a pallet changer at a front of a machine body for automatically changing a preceding-process pallet loaded with a machined workpiece thereon for a next-process pallet loaded with an unmachined workpiece thereon. A working space is provided between the machine body and the pallet changer. Thus, a machine tool, as well as a pallet changer used in the machine tool can be provided that allows a working space to be ensured without causing any complications for the structure and that has a wide range of applications.

Classifications:

International (IPC 8-9): B23Q11/00 B23Q5/34 B23Q7/00
B23Q7/14 (Advanced/Invention);
B23Q11/00 B23Q5/22 B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q11/00 B23Q5/34 B23Q7/00 B23Q7/14
B65G37/00 B65G47/00
CPC: Y10T29/5196 B23Q5/34 B23Q7/1431 B23Q11/00
European: B23Q11/00 B23Q5/34 B23Q7/14K2
US: 198/346.1 198/346.2 29/33P 414/222.07

PatBase – US2002060127_AA



Family:

Publication number	Publication date	Application number	Application date
DE60113627 D1	20060209	DE20016013627T	20011023
DE60113627 D1	20060209	DE20016013627	20011023
DE60113627 T2	20060316	DE20016013627T	20011023
EP1201354 A2	20020502	EP20010125163	20011023
EP1201354 A3	20021218	EP20010125163	20011023
EP1201354 B1	20050928	EP20010125163	20011023
JP2002137137 A2	20020514	JP20000328301	20001027
US2002060127 AA	20020523	US20010984120	20011029
US6679369 BB	20040120	US20010984120	20011029

Priority:

JP20000328301 20001027

Probable Assignee: MORI SEIKI CO LTD

Assignee(s): (std)**:** MORI SEIKI SEISAKUSHO KK ; OKUYAMA YOSHINOBU

Assignee(s): MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std)**:** OKUYAMA YOSHINOBU

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

478) Family number: 32450862 (US2005265124A)

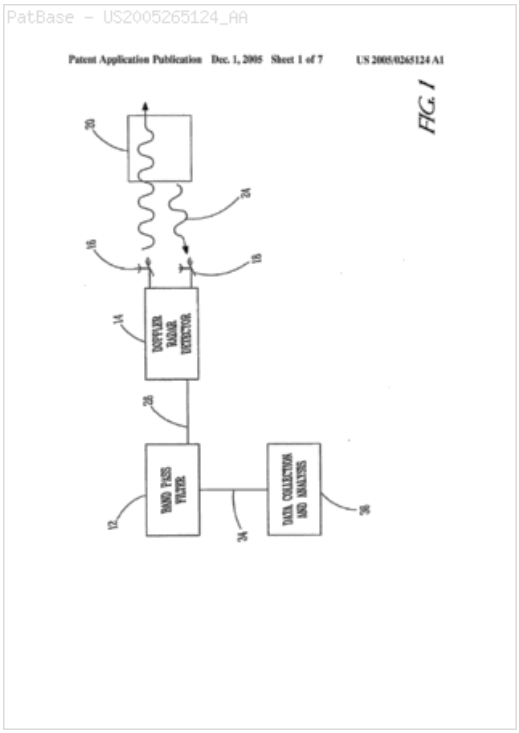
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Title: METHOD FOR DETECTING ACOUSTIC EMISSION USING A MICROWAVE DOPPLER RADAR DETECTOR

Abstract: Acoustic emissions are detected by reflecting microwave radar signals off of an object, receiving reflected radar signals, generating an intermediate frequency, and filtering the intermediate frequency to remove low frequency signals associated with object movement and not acoustic emissions. A microwave Doppler radar detector provides the signals, a band-pass filter filters the intermediate frequency signal, and resulting signal is collected and analyzed to establish a relationship between the acoustic emission and the filtered signal. One application described is detecting tool wear using a microwave Doppler-based acoustic emission sensor and predicting tool wear based on the detected acoustic emission.

Classifications:

International (IPC 8-9): B23Q17/09 G01N29/00 G01S13/524 G01S13/88 G01S3/80 (Advanced/Invention); G01S13/88 (Advanced/Non-invention); B23Q17/09 G01S13/00 G01S3/00 (Core/Invention)
International (IPC 1-7): G01S3/80
CPC: B23Q17/098 G01S13/524 G01S13/88
European: B23Q17/09E10 G01S13/524 S01S13/88
US: 340/679 342/192 367/128 367/128P 73/587



Family:

Publication number	Publication date	Application number	Application date
US2005265124 AA	20051201	US20050112569	20050422
US7397421 BB	20080708	US20050112569	20050422

Priority:

US20040564427P 20040422 US20050112569 20050422

Probable Assignee: SMITH GREGORY C

Assignee(s): (std)**:** SMITH GREGORY C

Inventor(s): (std)**:** SMITH GREGORY C

Inventor(s): SMITH GREGORY

Agent(s): G BRIAN PINGEL BROWN WINICK GRAVES GROSS BASKERVILLE AND SCHOENEBAUM PLC; SIMMONS PERRINE PLC

479) Family number: 30891866 (US5806841A)

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Title: FLUID-ACTUATED WORKHOLDING APPARATUS

Abstract: A fluid-actuated workholding apparatus that includes a base member that has a longitudinally extending slot and a fixed jaw attached thereto. The apparatus further includes first and second movable jaw members that are operably supported on the base member for movement towards and away from the fixed jaw member along the longitudinally extending slot. A clamping assembly is operably supported within the longitudinally extending slot and serves to define a fluid receiving cavity for receiving a pressurized fluid therein. The clamping assembly communicates with the first and second movable jaw members such that when a predetermined amount of pressurized fluid is admitted to the receiving cavity, the first and second movable jaw members are caused to move away from the fixed jaw member. The clamping assembly also includes mechanism for biasing the first and second movable jaw members towards the fixed jaw member when the pressurized fluid is removed from the receiving cavity to enable a first workpiece to be clamped between the first movable jaw member and the fixed jaw member under a compressive force and a second workpiece to be clamped between the second movable jaw member and the fixed jaw member under the same compressive force.

Classifications:

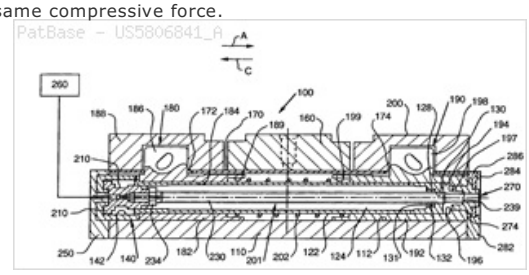
International (IPC 8-9): B23B31/26 B23B31/30 (Advanced/Invention); B23B31/02 (Core/Invention)

International (IPC 1-7): B23B31/30 B23Q3/00 B23Q3/08 B25B1/18 F15B15/20

CPC: B23B31/265 B23B31/302 B25B1/18 B25B1/2478

European: B23B31/26B2 B23B31/30B

US: 269/157 269/160 269/20 269/24 269/25 269/30 269/32 269/43



Family:

Publication number	Publication date	Application number	Application date
AU199649823 A1	19960911	AU19960049823	19960216
AU199669616 A1	19970319	AU19960069616	19960829
DE29502702 U1	19960725	DE19952002702U	19950218
DE29513907 U1	19970220	DE19952013907U	19950830
US5806841 A	19980915	US19960602372	19960216
US5971380 A	19991026	US19980005896	19980115
WO9626041 A2	19960829	WO1996US02031	19960216
WO9626041 A3	19970529	WO1996US02031	19960216
WO9707938 A1	19970306	WO1996US13972	19960829

Priority:

DE19952002702U 19950218 DE19959502702 19950218 DE199520139O7U 19950830
DE19959513907 19950830 WO1996US02031 19960216 US19960602372 19960216
WO1996US13972 19960829 US19980005896 19980115

Probable Assignee: CHICK WORKHOLDING SOLUTIONS INC

Assignee(s): (std): CHICK MACHINE TOOL INC ; CHICK MACHINE TOOLS INC ; HEBENER HELMUT

Assignee(s): HEBENER HELMUT 40699 ERKRATH DE ; CHICK WORKHOLDING SOLUTIONS INC

Inventor(s): (std): HEBENER HELMUT

Inventor(s): HELMUT HEBENER

Designated states: AM AT AU BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CZ DE DK EE ES FI FR GA GB GE GN GR HU IE IS IT JP KE KG KP KR KZ LK LR LS LT LU LV MC MD MG ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SN SZ TD TG TJ TM TT UA UG UZ VN

480) Family number: 74019869 (DE102017123921A1)

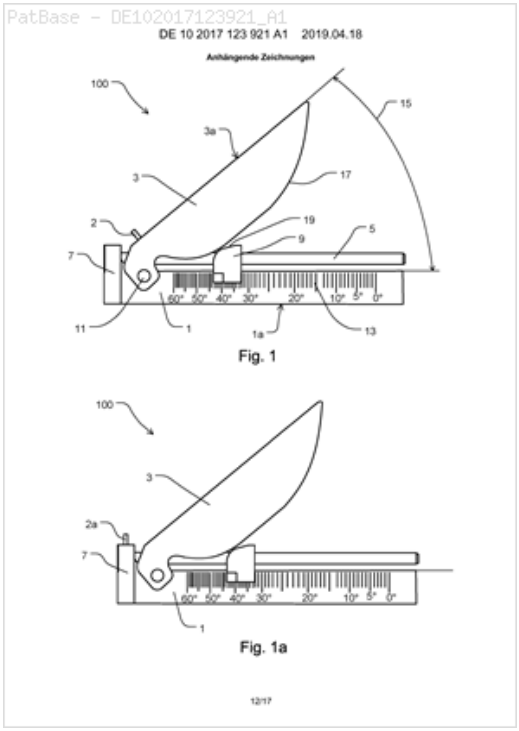
© PatBase

Title: WINKELEINSTELLVORRICHTUNG ZUM AUSRICHTEN VON WERKSTUECKEN IN SPANNVORRICHTUNGEN, SET UND VERFAHREN Angular ADJUSTMENT DEVICE FOR ALIGNING WORKPIECES IN TENSIONING DEVICES, SET AND METHODS (Machine translation)

Abstract: Source: DE102017123921A1 [DE] Die vorliegende Erfindung betrifft eine Winkeleinstellvorrichtung (100) zum Ausrichten von Werkstuecken (35) in Spannvorrichtungen (33), wobei die Winkeleinstellvorrichtung (100) wenigstens eine Grundleiste (1), eine Schwenkleiste (3) und eine Spindel (5) mit einem Festlagerblock (7) und einem Loslagerblock (9) aufweist. Der mittels der Spindel (5) translatorisch verschiebbare Loslagerblock (9) ist zum Einstellen und/oder zum Ausrichten von Winkeln (15) der Schwenkleiste (3) relativ zur Grundleiste (1) ausgestaltet und konfiguriert. Ferner betrifft die vorliegende Erfindung ein Set (200), umfassend wenigstens zwei erfindungsgemaesse Winkeleinstellvorrichtungen (100), wobei die Winkeleinstellvorrichtungen (100) mittels Verbindungsstiften (31) miteinander verbunden sind.

Machine translation: The present invention relates to an angular adjustment device (100) for alignment of workpieces (35) in the clamping devices (33), wherein the angle adjustment device (100) has at least one base bar (1), a pivot bar (3) and a spindle (5) with a fixed bearing block (7), and a floating bearing block (9). The displaceable in translational fashion by means of the spindle (5) Floating bearing block (9), for adjusting and/or for aligning angles (15) of the pivot bar (3) relative to the base bar (1) and configured. Further, the present invention relates to a set (200), comprising at least two inventive angular adjustment devices (100), wherein the angular adjustment devices (100) by means of connecting pins (31) are connected to one another.

Classifications:
International (IPC 8-9): B23Q3/18 B25B11/00 G01B3/56 G01B5/24 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
DE102017123921 A1	20190418	DE201710123921	20171013

Priority:

DE201710123921 20171013

Probable Assignee: LEX WERKZEUG U VORRICHTUNGSBAU PRAEZ GMBH

Assignee(s): (std): LEX WERKZEUG U VORRICHTUNGSBAU PRAEZ GMBH

Assignee(s): LEX WERKZEUG U VORRICHTUNGSBAU PRAEZISIONSMECHANIK GMBH

Inventor(s): (std): LEX ALEXANDER ; LEX GUIDO

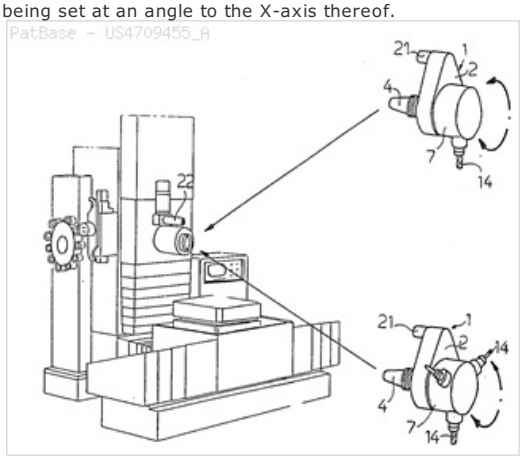
481) Family number: 5909869 (US4709455A)

© PatBase

Title: MILLING AND DRILLING HEAD FOR A MACHINE TOOL

Abstract: A milling and drilling head for a machine tool has an input shaft housed in a stationary case also incorporating a control means drivingly connected to a ring gear which is fast with a moving case portion accommodating at least one tool holding spindle driven off the master spindle of the machine tool and being set at an angle to the X-axis thereof.

Classifications:
International (IPC 8-9): B23B39/20 B23Q5/04 (Advanced/Invention); B23B39/00 B23Q5/00 (Core/Invention)
International (IPC 1-7): B23B39/20 B23B43/00 B23C3/34 B23Q5/04
CPC: B23Q2220/008 B23B39/205 B23Q5/045 Y10T29/5107 Y10T29/5154 Y10T29/5155 Y10T409/30448 Y10T409/30756 Y10T409/307672 Y10T409/308456 Y10T409/308512 Y10T409/308568 Y10T409/309296 B23Q2003/1558
European: B23B39/20B B23Q5/04D2
US: 29/26A 29/39 29/40 409/144 409/199 409/201 409/215 409/216 409/217 409/230



Family:

Publication number	Publication date	Application number	Application date
EP0158182 A2	19851016	EP19850103263	19850320
EP0158182 A3	19880720	EP19850103263	19850320
IT1173463 A	19870624	IT19840020204	19840323
IT8420204 A0	19840323	IT19840020204	19840323
US4709455 A	19871201	US19850787307	19851015

Priority:
IT19840020204 19840323 US19850787307 19851015

Probable Assignee: ANDREA D SPA
Assignee(s): (std): ANDREA D SPA ; ANDREA SPA D
Assignee(s): D ANDREA CORSO EUROPA 18 SPA ; D ANDREA S P A ; D ANDREA SPA
Inventor(s): (std): D ANDREA NICOLA ; D ANDREA ERMANNO ; ANDREA NICOLA D ; ANDREA ERMANNO D
Inventor(s): NICOLA D ANDREA ; ERMANNO D ANDREA
Designated states: AT CH DE FR GB LI SE

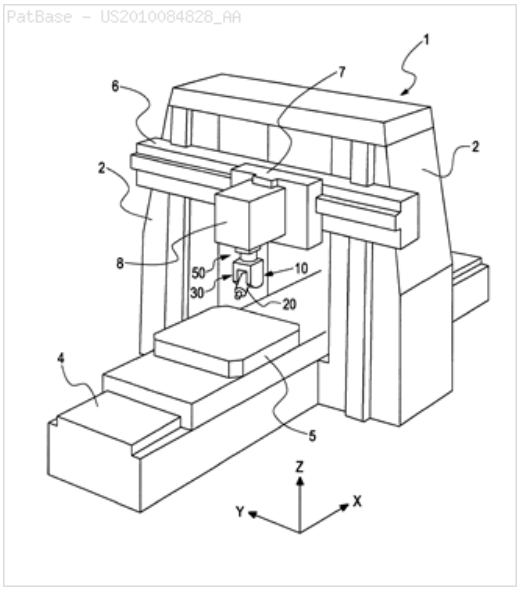
482) Family number: 42044870 (US2010084828A)

© PatBase

Title: INDEXING DEVICE FOR MACHINE TOOL

Abstract: A cylindrical pressure-receiving member 34b is arranged in a space between a ring-shaped clamp sleeve 34a and a frame 31b such that the clamp sleeve 34a is fitted around a shaft 38b being integral with a rotary shaft 39. In an outer peripheral portion 34a2 of the clamp sleeve 34a, an annular groove 34a1 provided continuously over the entire circumference within an axial area of the outer peripheral portion 34a2 fitted into an inner peripheral portion 34b3 of the pressure-receiving member 34b provides a thin-wall portion 34a5. Also, a space surrounded by the annular groove 34a5 and the pressure-receiving member 34b provides a pressure chamber 34d communicating with a fluid control circuit. A predetermined gap 34d2 is provided between an inner peripheral surface 31b4 of the through hole 31b1 of the frame and an outer peripheral surface 34b2 of the pressure-receiving member 34b.

Classifications:
International (IPC 8-9): B23B31/30 B23Q1/28 B23Q1/70 B23Q16/06 B23Q16/10 (Advanced/Invention); B23Q1/00 B23Q1/26 B23Q16/00 (Core/Invention)
CPC: B23Q2220/006 B23B31/30 B23Q1/287 B23Q1/5406 B23Q16/102 Y10T279/12 Y10T279/1216 Y10T279/13 Y10T279/21 Y10T409/307672
European: B23Q1/28D B23Q1/54A B23Q16/10C
US: 192/225 269/63 269/63S 279/126 279/126S 279/4.01 279/4.010S 279/4.03 279/5 279/5P 409/201



Family:

Publication number	Publication date	Application number	Application date
CN101616770 A	20091230	CN200780049867	20071112
CN101616770 B	20110202	CN200780049867	20071112
EP2127804 A1	20091202	EP20070831625	20071112

EP2127804 A4	20130515	EP20070831625	20071112
JP2008087785 A1	20100506	JP20080553972T	20071112
JP4883815 B1	20120222	JP20080553972T	20071112
JP4883815 B2	20120222	JP20080553972T	20071112
KR101325085 B1	20131106	KR20097013548	20071112
KR20090104816 A	20091006	KR20097013548	20071112
TW200902222 A	20090116	TW20070146271	20071205
US2010084828 AA	20100408	US20070522217	20071112
US8449232 BB	20130528	US20070522217	20071112
WO08087785 A1	20080724	WO2007JP71895	20071112

Priority:

JP20070005276 20070115 JP20080553972 20071112 WO2007JP71895 20071112

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std): NISHIDA YOUICHI ; TATSUDA YOSHINORI ; TSUDAKOMA KOGYO KABUSHIKIKAISH ; TSUDAKOMA IND CO LTD

Assignee(s): TSUDAKOMA CORP ; TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA

Inventor(s): (std): NISHIDA YOUICHI ; TATSUDA YOSHINORI ; YOSHINORI TATSUDA ; YOUICHI NISHIDA

Agent(s): SAMSON AND PARTNER; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

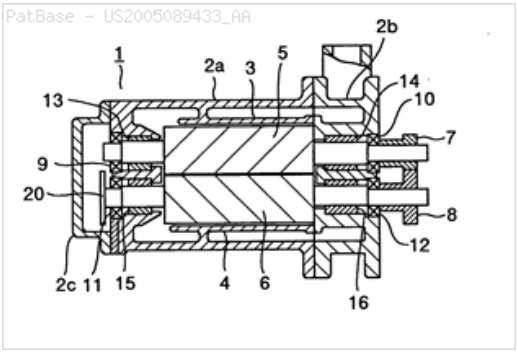
483) Family number: 30930870 (US2005089433A)

© PatBase

Title: SCREW COMPRESSOR AND METHOD OF MANUFACTURING ROTORS THEREOF

Abstract: A screw compressor comprises a casing, and a male and a female rotor formed with axially twisted screw grooves and accommodated in the casing, the both rotors being rotated by timing gears fixed to the respective rotors while a desired minute gap is kept therebetween, and a method of manufacturing rotors therefor. In the screw compressor, the male and female rotors formed with axially twisted screw grooves in the casing comprise concave stripes having a minute depth and provided on the respective screw grooves to extend along directions of twist thereof, and leakage of a compressed air is less to give a high compression efficiency.

Classifications:
International (IPC 8-9): B23C3/00 B23C3/16 B23C3/32 B23F15/08 F03C2/00 F04C18/00 F04C18/08 F04C18/16 F04C18/20 F04C29/00 (Advanced/Invention);
F04C18/16 (Advanced/Non-invention)
International (IPC 1-7): B23C3/16 B23F15/08 F01C1/08 F01C1/16 F01C1/24 F04C18/16 F04C18/20 F04C2/16 F04C29/00
CPC: Y10T29/49316 Y10T29/49332 Y10T29/49336 B23F15/08 B23C3/32 F04C18/084 F04C2230/10 Y10T409/303752 Y10T409/303808 F04C18/16
European: B23C3/32 B23F15/08 F04C18/08B2 F04C18/16 R04C230/10
US: 29/889 29/889.6 29/889.7 409/131 409/132 416/236R 418/189 418/190 418/194 418/194S 418/201.1 418/201.100P 418/201.3 418/201.300S



Family:

Publication number	Publication date	Application number	Application date
BE1016701 AF	20070508	BE20030000419	20030724
CN100520072 C	20090729	CN20031078617	20030717
CN1517556 A	20040804	CN20031078617	20030717
IN199339 B	00000000	IN2003KO00354	20030625
JP2004218517 A2	20040805	JP20030006501	20030115
JP3906806 B2	20070418	JP20030006501	20030115
KR100543942 B1	20060120	KR20030052639	20030730
KR20040065970 A	20040723	KR20030052639	20030730
US2005089433 AA	20050428	US20030616972	20030711
US2005147519 AA	20050707	US20050067701	20050301
US7040845 BB	20060509	US20050067701	20050301
US7044724 BB	20060516	US20030616972	20030711

Priority:

JP20030006501 20030115 US20030616972 20030711 US20050067701 20050301

Probable Assignee: HITACHI INDUSTRIAL EQUIPMENT SYSTEMS CO LTD

Assignee(s): (std): HITACHI IND CO LTD

Assignee(s): HITACHI INDUSTRIAL CO ; HITACHI INDUSTRIAL CO LTD ; HITACHI INDUSTRIAL EQUIPMENT SYSTEMS CO LTD ; HITACHI INDUSTRIES CO ; KATO TOMU ; MATSUMOTO KAZUHIRO ; KAMEYA HIROTAKA ; HITACHI INDUSTRIES CO LTD ; HITACHI PLANT TECHNOLOGIES LTD ; HITACHI LTD ; HITACHI IND ; HITACHI IND CO

Inventor(s): (std): KAZUHIRO MATSUMOTO ; TOMU KATO ; MATSUMOTO KAZUHIRO ; KATO TOMU ; KAMEYA KIROTAKA ; KAMEYA HIROTAKA ; KAMETANI HIROCHIKA ; HIROYOSHI KAMEYA

Inventor(s): KAMEYA HIROYOSHI

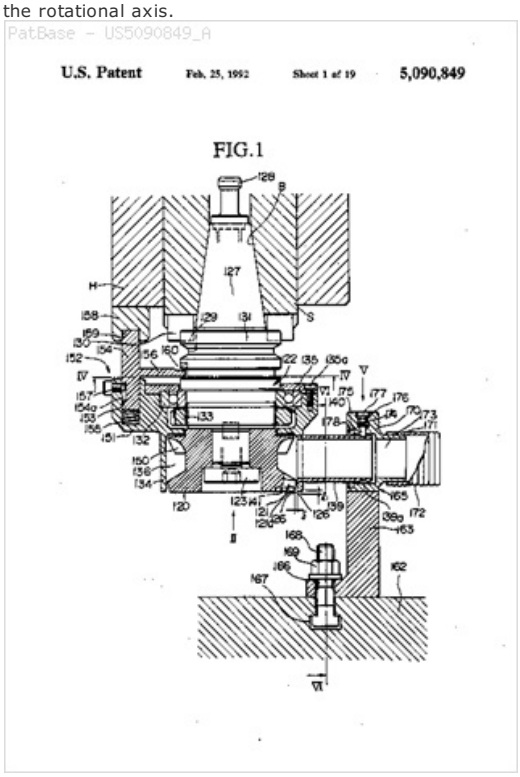
Agent(s): ANTONELLI TERRY STOUT AND KRAUS LLP

484) Family number: 10541870 (US5090849A)

Title: ROTARY CUTTING TOOL

Abstract: In a rotary cutting tool for use with at least one cutting insert, a cutter body is rotatable about a rotational axis. The cutting insert is mounted to an outer periphery of a forward end of the cutter body. A chip moving unit is arranged outwardly of an outer peripheral surface of the cutter body for moving chips generated by the cutting insert, to a desirable location. A cover assembly is provided for covering the outer peripheral surface of the cutter body, having a flow passageway defined between an inner peripheral surface of the cover assembly and the outer peripheral surface of the cutter body. An air sending assembly is arranged within the flow passageway for sending air adjacent the cutting insert, toward the desirable location during rotation of the cutter body about the rotational axis.

Classifications:
International (IPC 8-9): B23C5/06 B23C5/16 B23C9/00 B23Q11/00 B23Q11/08 (Advanced/Invention);
B23C5/02 B23C5/16 B23C9/00 B23Q11/00 B23Q11/08 (Core/Invention)
International (IPC 1-7): B23C5/00 B23C5/06 B23C5/16 B23C7/00 B23C9/00 B23Q11/00 B23Q11/08
CPC: B23Q2220/008 B23Q11/0046 B23Q11/0042 Y10T408/46 Y10T409/304088
European: B23Q11/00F B23Q11/00F1
US: 408/61 409/137



Family:

Publication number	Publication date	Application number	Application date
DE69033489 D1	20000420	DE19906033489	19900629
DE69033489 T2	20000803	DE19906033489T	19900629
EP0407836 A2	19910116	EP19900112464	19900629
EP0407836 A3	19910424	EP19900112464	19900629
EP0667209 A2	19950816	EP19950104146	19900629
EP0667209 A3	19960515	EP19950104146	19900629
EP0667209 B1	20000315	EP19950104146	19900629
JP2803328 B2	19980924	JP19900157346	19900615
JP2822459 B2	19981111	JP19890172508	19890704
JP2822562 B2	19981111	JP19900080159	19900328
JP3035914 A2	19910215	JP19890172508	19890704
JP3281114 A2	19911211	JP19900080159	19900328
JP4046707 A2	19920217	JP19900157346	19900615
KR19910002549 A	19910225	KR19900007024	19900516
KR19910016420 A	19911105	KR19900012033	19900806
KR19920000419 A	19920129	KR19900018512	19901115
KR960010552 B1	19960802	KR19900012033	19900806
KR960010553 B1	19960802	KR19900018512	19901115
KR960011083 B1	19960820	KR19900007024	19900516
US5090849 A	19920225	US19900545626	19900629

Priority:

JP19890172508 19890704 JP19900080159 19900328 JP19900157346 19900615
EP19900112464 19900629

Probable Assignee: MITSUBISHI MATERIALS CORP

Assignee(s): (std): MITSUBISHI MATERIAL K K ; MITSUBISHI MATERIALS CORP ; MITSUBISHI METAL CORP

Assignee(s): MITSUBISHI MATERIALS CORP TOKIO TOKYO ; MITSUBISHI MATERIAL KK

Inventor(s): (std): ARAI TATSUO C O TOKYO SEISAKUS ; HAGA KATSUMI C O TOKYO SEISAKU ; SAITOU TAKAYOSHI C O TOKYO SEIS ; SHIRATORI HIDEHISA C O TOKYO S ; HASEGAWA RYOEI C O TOKYO SEISA ; IIZUKA KAZUO C O TOKYO SEISAKU ; ARAI TATSUO ; HAGA KATSUMI ; SAITO TAKAYOSHI ; SHIRATORI HIDEHISA ; HASEGAWA RYOEI ; IIZUKA KAZUO ; IITSUKA KATSUO ; SAITO TAKANOBU ; SAITO TAKAYOSHI C O TOKYO SEIS ; SAITOU TAKANOBU

Inventor(s): HASEGAWA RYOEI C O TOKYO SEISAKUSHO ; HAGA KATSUMI C O TOKYO SEISAKUSHO ; IIZUKA KAZUO C O TOKYO SEISAKUSHO ; SAITO TAKAYOSHI C O TOKYO SEISAKUSHO ; SHIRATORI HIDEHISA C O TOKYO SEISAKUSHO ; ARAI TATSUO C O TOKYO SEISAKUSHO

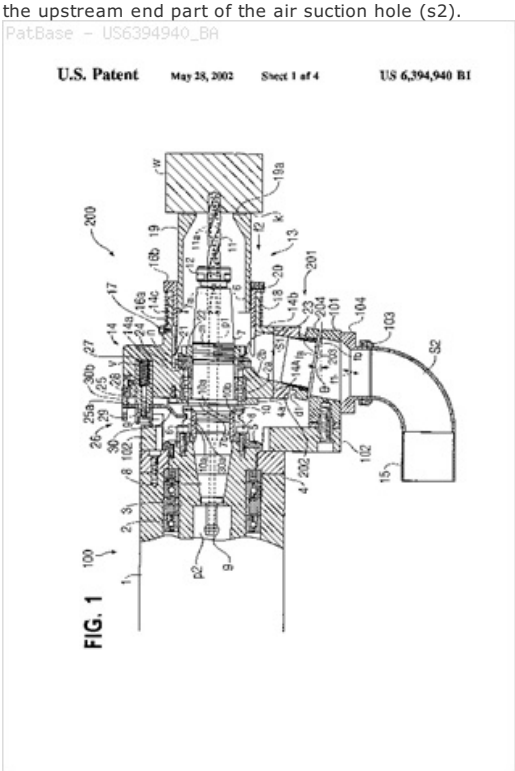
Designated states: DE FR GB IT SE

485) Family number: 28071872 (US6394940B)

Title: CHIP SUCTION TYPE MACHINE TOOL

Abstract: A chip suction type machine tool continuously removing chips produced during work machining by air suction, comprising a tool attaching part (200) in which a vent hole (s1) is formed and a spindle head (100) having an air suction hole (s2) communicating with the vent hole (s1) wherein, with the tool attaching part (200) installed on the spindle head (100), a telescoping cylinder means (201) which is formed in an inclined surfaces crossing at an angle (theta) of approximately 60 degrees or below, and facing closely, the direction of the spindle, allows at least one of the downstream end part of the vent hole and the upstream end part of the air suction hole to be deformably telescoped and, in free state, is held in a retracted state so that these downstream and upstream end parts are departed from each other by elastic member (205) which is provided between the downstream end part of the vent hole (s1) and the upstream end part of the air suction hole (s2).

Classifications:
International (IPC 8-9): B23B47/34 B23Q11/00 B23Q11/02 B23Q3/10 (Advanced/Invention);
B23Q11/00 (Advanced/Non-invention);
B23Q11/00 (Core/Invention)
International (IPC 1-7): B23B47/34 B23C9/00 B23Q11/00 B23Q11/02 B23Q3/10 B23Q3/157
CPC: B23Q2220/008 B23Q11/0046 Y10T408/46 Y10T409/30392 Y10T409/304088 Y10T483/15
European: B23Q11/00F1
US: 408/61 409/134 409/137 451/456 483/13



Family:

Publication number	Publication date	Application number	Application date
CA2312588 AA	20011227	CA20002312588	20000627
CA2312588 C	20050104	CA20002312588	20000627
CN1154551 C	20040623	CN20001009522	20000630
CN1330993 A	20020116	CN20001009522	20000630
DE60013853 D1	20041021	DE20006013853	20000209
DE60013853 D1	20041021	DE20006013853T	20000209
DE60013853 T2	20050922	DE20006013853T	20000209
EP1203629 A1	20020508	EP20000902893	20000209
EP1203629 A4	20030129	EP20000902893	20000209
EP1203629 B1	20040915	EP20000902893	20000209
ES2223455 T3	20050301	ES20000902893T	20000209
JP2000237928 A2	20000905	JP19990042876	19990222
JP3055019 B1	20000619	JP19990042876	19990222
KR100404552 B1	20031105	KR20017009462	20010727
KR20020005579 A	20020117	KR20017009462	20000209
TW460367 B	20011021	TW20000112815	20000629
US6394940 BA	20020528	US20010889785	20010720
WO0050199 A1	20000831	WO2000JP00732	20000209

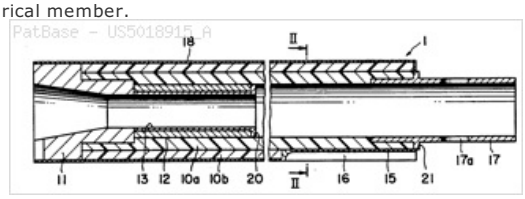
Priority:
JP19990042876 19990222 WO2000JP00732 20000209 CA20002312588 20000627 CN20001009522 20000630

Probable Assignee: HORKOS CORP
Assignee(s): (std): HOKUNI CO LTD ; HORKOS CORP ; SEO YOSHINORI ; SUGATA SHINSUKE
Assignee(s): HORKOS CORP FUKUYAMA
Inventor(s): (std): SEO YOSHINORI ; YOSHINORI IMOU ; SUGATA SHINSUKE ; SENOO YOSHINORI
Inventor(s): IMOU YOSHINORI
Agent(s): GOWLING LAFLEUR HENDERSON LLP
Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT KR LI LU MC NL PT SE US

486) Family number: 15260873 (US5018915A)

Title: SPINDLES OF MACHINE TOOLS

Abstract: In a spindle of a machine tool, a cylindrical member of the spindle adapted to accommodate the shank of a tool is prepared by winding carbon or glass fiber and the wound fiber is impregnated with a heat curable resin. After curing the resin a protective coating layer is applied to the other surface of the cylindrical member.



Classifications:
International (IPC 8-9): A61B17/17 B23B19/02 B23Q1/01 B23Q1/70 (Advanced/Invention); A61B19/00 (Advanced/Non-invention); A61B17/16 B23B19/00 B23Q1/00 (Core/Invention); A61B19/00 (Core/Non-invention)
International (IPC 1-7): B23B19/02 B23B47/00 B23C9/00 B23Q1/08 B29C37/00 B29C67/14 C23C4/04
CPC: Y10T408/94 Y10T409/309352 B23Q1/015 A61B17/1703 A61B2017/00902 B23Q1/70
European: A61B17/17B B23Q1/01B B23Q1/70
US: 408/238 409/231

Family:

Publication number	Publication date	Application number	Application date
DE4009461 A1	19910321	DE19904009461	19900323
JP2167602 A2	19900628	JP19890234218	19890908
JP2756155 B2	19980525	JP19890234218	19890908
US5018915 A	19910528	US19900497621	19900323

Priority:
JP19880240166 19880926 JP19890234218 19890908

Probable Assignee: TOSHIBA MACHINE CO LTD

Assignee(s): (std): MITSUBISHI RAYON CO ; TOSHIBA MACHINE CO LTD

Assignee(s): TOSHIBA KIKAI KK ; TOSHIBA MACH CO LTD ; MITSUBISHI RAYON CO LTD ; MITSUBISHI RAYON CO LTD TOKIO TOKYO JP ; MITSUBISHI RAYON COMPANY LTD ; MITSUBISHI REIYON KK ; TOSHIBA KIKAI K K ; TOSHIBA KIKAI KABUSHIKI KAISHA

Inventor(s): (std): IGUMA TAKAHIKO ; IMAO MASAHARU ; KODAMA HITOSHI ; INOKUMA TAKAHIKO ; IMAO SHOJI ; GOMI TAKEO ; BABA SADAMU

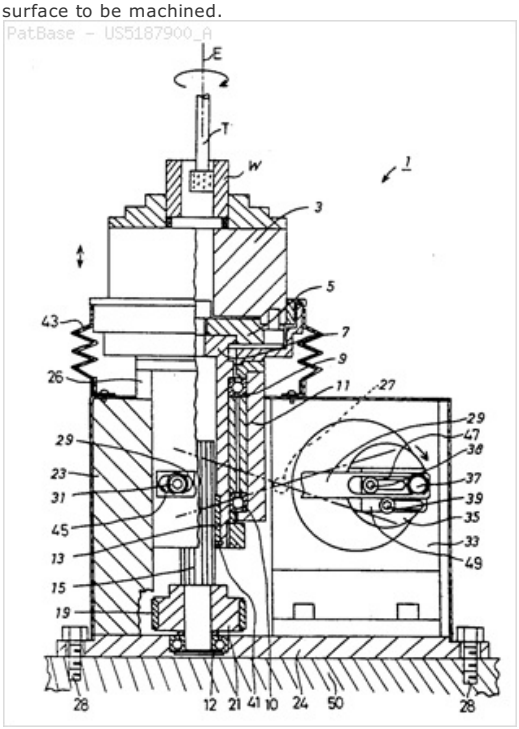
Inventor(s): IMAO SHOJI TAJIMI GIFU JP ; INOKUMA TAKAHIKO YOKOHAMA KANAGAWA JP ; KODAMA HITOSHI NAGOYA AICHI JP ; BABA SADAMU NUMAZU SHIZUOKA JP ; GOMI TAKEO TOYOHASHI AICHI JP

487) Family number: 7949879 (US5187900A)

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Title: Auxiliary device for a machine tool

Abstract: An auxiliary device for a machining tool that converts a standard rotary machining tool into an oscillation-machining tool. The device has a chuck, or other workpiece gripping device, at an upper end of a shaft. The shaft may be rotated around an axis parallel to the axis of the rotary machining tool and may be oscillated along the rotary axis. The degree of oscillation may be adjusted dependent on the length of the surface to be machined.



Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/48 B23Q1/70 B24B47/10 B24B5/06 (Advanced/Invention); B23Q1/00 B23Q1/25 B24B47/00 B24B5/00 (Core/Invention)
International (IPC 1-7): B23Q1/10 B23Q3/00 B24B47/10 B24B5/06
CPC: B23Q1/4828 B24B5/06 B24B47/10
European: B23Q1/48C B24B47/10 B24B5/06
US: 451/221 451/381 451/394 451/413 51/227R 51/232 51/240T 51/950WH

Family:

Publication number	Publication date	Application number	Application date
JP4193443 A2	19920713	JP19900321833	19901126
KR19920009505 A	19920625	KR19910015301	19910903
US5187900 A	19930223	US19910765816	19910926

Priority:
JP19900321833 19901126

Probable Assignee: BROTHER IND LTD

Assignee(s): (std): BROTHER IND LTD

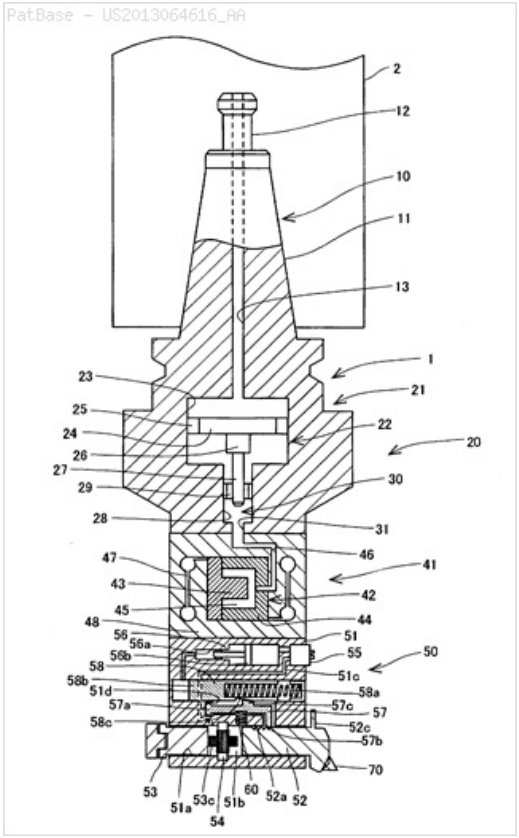
Assignee(s): BROTHER KOGYO KABUSHIKI KAISHA ; BROTHER KOGYO KK
Inventor(s): (std): MIWA YUJI

488) Family number: 48908883 (US2013064616A)

Title: TOOL RADIUS ADJUSTING METHOD IN MACHINE TOOL AND MACHINE TOOL FOR PRACTICING THE METHOD

Abstract: At a contact step in a tool radius adjusting method, a reference portion of a movable body provided radially movably on a housing of a boring tool and a position adjusting reference member fixed on a machine tool are brought into contact by sliding the movable body relative to the housing so that the position of a cutting blade comes to a predetermined position in a direction to go away from a rotational axis. Then, at an adjusting step, the position of the cutting blade relative to the rotational axis is adjusted by changing the relative position between a tool spindle holding the boring tool and the position adjusting reference member in a direction to come close to each other by drive mechanisms of the machine tool used for positioning a spindle head with the tool spindle relative to a workpiece in machining the workpiece with the cutting blade.

Classifications:
International (IPC 8-9): B23B29/034 B23B35/00 B23B47/22 B23Q17/22 (Advanced/Invention)
CPC: B23B29/03489 B23B35/00 B23B2250/04 B23B2270/025 B23B2270/027 B23B2270/48 Y10T408/03 Y10T408/85 Y10T82/10 Y10T408/175 Y10T408/858 B23B29/03403 B23B29/03421 B23B29/03425
European: B23B29/034B5 B23B29/034B7 L23B250/04 L23B260/092 L23B270/02H L23B270/02P L23B270/48
US: 408/13 408/147 408/153 408/1R 82/1.11



Family:

Publication number	Publication date	Application number	Application date
CN102596460 A	20120718	CN201080050730	20101110
CN102596460 B	20140409	CN201080050730	20101110
EP2502692 A1	20120926	EP20100829948	20101110
EP2502692 A4	20180228	EP20100829948	20101110
JP2011104702 A2	20110602	JP20090261399	20091116
JP5377240 B2	20131225	JP20090261399	20091116
US2013064616 AA	20130314	US20100509911	20101110
US9033623 BB	20150519	US20100509911	20101110
WO11058989 A1	20110519	WO2010JP69983	20101110

Priority:
JP20090261399 20091116 WO2010JP69983 20101110

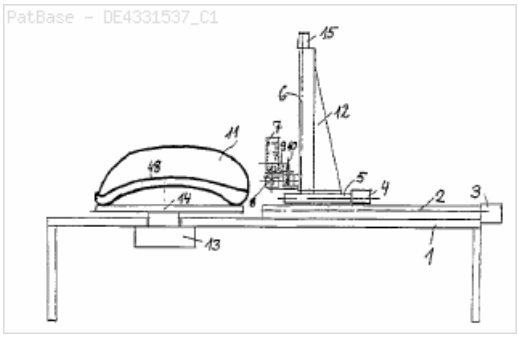
Probable Assignee: JTEKT CORP
Assignee(s): (std): JTEKT CORP ; KADOTA AKIHIKO ; KOMAI YASUHIRO ; NAKAMURA EIJI ; NT ENGINEERING KABUSHIKI KAISYA ; YOKOYAMA TAKASHI ; SAWAKI NORIKAZU ; NT ENGINEERING KK ; SAWAKI AYA ; SAWAKI HARUMI ; SAWAKI SHUN ; SAWAKI TAKU
Inventor(s): (std): KADOTA AKIHIKO ; KOMAI YASUHIRO ; YOKOYAMA TAKASHI ; SAWAKI NORIKAZU ; EIJI NAKAMURA ; YASUHIRO KOMAI ; TAKASHI YOKOYAMA ; NORIKAZU SAWAKI ; AKIHIKO KADOTA ; YOKOYAMA KOJI ; NAKAMURA EIJI
Agent(s): TBK; OBLON MCCLELLAND MAIER AND NEUSTADT LLP; KOBAYASHI OSAMU ET AL
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

489) Family number: 11485884 (DE4331537C1)

Title: Device for the machining of edges, surfaces or internal surfaces of a moulding having free-form surfaces

Abstract: In the case of a device for the machining of edges, surfaces or internal surfaces of a moulding having free-form surfaces, the device comprising a receiving device to which the moulding to be machined may be fastened, having a machining head and a machining tool fastened hereto, which machining head is fastened on a carrier which can be displaced by a linear unit relatively with respect to the moulding, and having a numerical control device via which the drive of the linear unit may be driven by a control program as a function of coordinate data, provision is made for the machining head to be fastened on a holder which is fastened on the carrier so as to be pivotable and/or displaceable counter to the force of a spring arrangement, and a readjustment of the linear movement is carried out as a function of the contact pressure of the machining tool on the moulding.

Classifications:
International (IPC 8-9): G05B19/416 G05B19/42 (Advanced/Invention); G05B19/416 G05B19/42 (Core/Invention)
International (IPC 1-7): B23Q15/00 G05B19/402
CPC: G05B19/4163 G05B19/4207
European: G05B19/416A G05B19/42B2



Family:

Publication number	Publication date	Application number	Application date
DE4331537 C1	19950413	DE19934331537	19930917

Priority:

DE19934331537 19930917

Probable Assignee: WUERSTL CURT VERMOEGENSVERWALT

Assignee(s): (std): WUERSTL CURT VERMOEGENSVERWALT

Assignee(s): CURT WUERSTL VERMOEGENSVERWALTUNGS GMBH AND CO KG ; CURT WUERSTL VERMOEGENSVERWALTUNGS GMBH AND CO KG 95032 HOF DE

Inventor(s): (std): HARNISCH FRED DR ; QUERFURTH WINFRIED

Inventor(s): QUERFURTH WINFRIED 96365 NORDHALBEN DE ; HARNISCH FRED DR 07356 WEISBACH DE

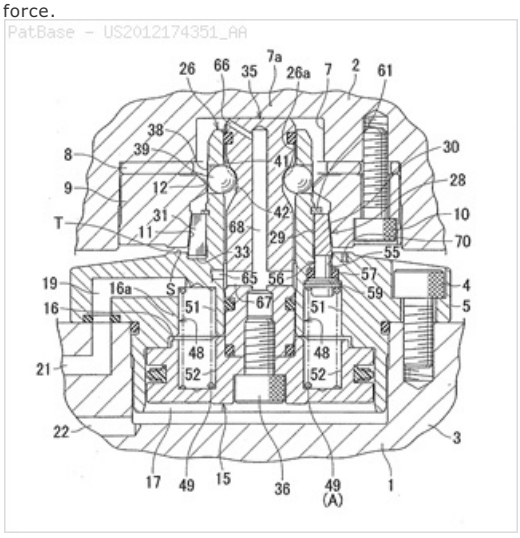
490) Family number: 48764886 (US2012174351A)

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Title: CLAMP DEVICE

Abstract: Above and below a piston (15) inserted into a housing (5), there are respectively provided a lock chamber (16) and a release chamber (17) where compressed air is supplied and discharged. A diametrically expandable and contractible tapered sleeve (28) is attached between an annular plug portion (26) projected upward from the housing (5) and a tapered hole (11) provided in a work pallet (2). An output rod (35) inserted into a cylindrical hole (26a) of the plug portion (26) is connected to the piston (15). Lock springs (49) constituted by compression coil springs are respectively inserted into a plurality of spring-attachment holes (48) formed in a recessed manner in an upper wall (16a) of the lock chamber (16). The spring-attachment holes (48) are communicatively connected to an outer surface of the housing (5) by through holes (55), respectively, and pushing members (56) are hermetically inserted into the through holes (55). The lock springs (49) urge the sleeve (28) through the pushing members (56) with a predetermined force.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q3/00 B23Q3/06 B23Q3/18 B23Q7/00 B25B5/14 B25B5/16 F16B2/12 (Advanced/Invention)
CPC: B23Q1/009 B23Q3/18 B23Q7/00
European: B23Q1/00D B23Q1/00D3
US: 24/463 24/463P 269/309



Family:

Publication number	Publication date	Application number	Application date
CN102574254 A	20120711	CN201080040087	20101005
CN102574254 B	20140416	CN201080040087	20101005
DE602010012268 D1	20140130	DE201060012268T	20101005
EP2489464 A1	20120822	EP20100823307	20101005
EP2489464 A4	20130327	EP20100823307	20101005
EP2489464 B1	20131204	EP20100823307	20101005
IN01580CN2012 A	20121026	IN2012CN01580	20120221
IN311514 B	20190426	IN2012CN01580	20120221

JP2011046039 A1	20130307	JP20110536101T	20101005
JP5690275 B1	20150325	JP20110536101T	20101005
KR101753426 B1	20170704	KR20127004616	20101005
KR20120086284 A	20120802	KR20127004616	20101005
US2012174351 AA	20120712	US20100395613	20101005
US8590878 BB	20131126	US20100395613	20101005
WO11046039 A1	20110421	WO2010JP67406	20101005

Priority:

JP20090252393 20091013 EP20100823307 20101005 WO2010JP67406 20101005
JP20110536101 20101005

Probable Assignee: KOSMEK LTD

Assignee(s): (std): HARUNA YOSUKE ; KOSMEK LTD

Assignee(s): KOSMEK LTD KOBE SHI

Inventor(s): (std): HARUNA YOSUKE ; YOSUKE HARUNA

Agent(s): KAHLER KAECK AND MOLLEKOPF; HORTON ANDREW ROBERT GRANT; KAJI SUHARA AND ASSOCIATES; BACON AND THOMAS PLLC; KAJI YOSHIYUKI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

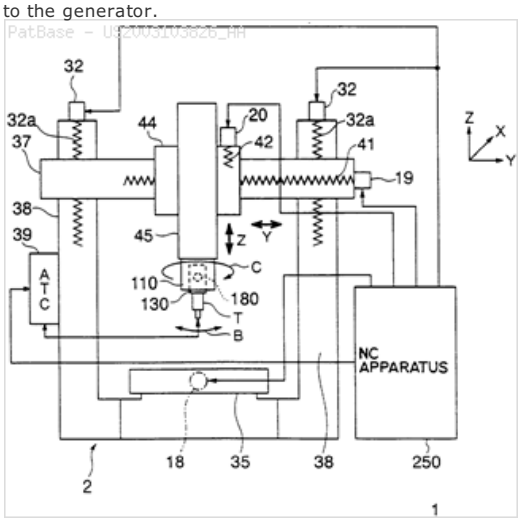
491) Family number: 28630886 (US2003103826A)

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Title: MACHINE TOOL

Abstract: A machine tool provided with a universal head free from restrictions on its swivel operation due to the presence of a power cable to a motor directly driving a spindle and consequently expanded in range of movement, provided with a ram serving as a support, a swivel member held by the ram to be able to swivel about a predetermined swivel axis, a tool mounting member held at the swivel member, rotatably holding at its front end a spindle to which a tool is mounted, and provided with a motor for driving the spindle, a generator provided at the swivel member and generating power used by the motor, and a power source provided at the ram and supplying power to the generator.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/44 B23Q1/70 B23Q37/00 B23Q5/04 B23Q5/10 (Advanced/Invention);
B23Q37/00 (Advanced/Non-invention);
B23Q1/00 B23Q1/25 B23Q37/00 B23Q5/00 (Core/Invention)
International (IPC 1-7): B23B31/02 B23C1/12 B23C7/00 B23C9/00 B23Q1/00 B23Q1/44 B23Q15/00 B23Q37/00 B23Q5/04
CPC: B23Q5/048 B23Q5/10 B23Q1/70 Y10T408/94 Y10T409/307672 Y10T409/308232 Y10T409/309296 Y10T409/309352 Y10T409/309408 Y10T409/30952
European: B23Q1/70 B23Q5/10
US: 408/238 409/201 409/211 409/230 409/231 409/232 409/234



Family:

Publication number	Publication date	Application number	Application date
JP2003170326 A2	20030617	JP20010367403	20011130
JP4138302 B2	20080827	JP20010367403	20011130
KR100759181 B1	20070914	KR20020074402	20021127
KR20030044818 A	20030609	KR20020074402	20021127
US2003103826 AA	20030605	US20020305079	20021127
US6746188 BB	20040608	US20020305079	20021127

Priority:

JP20010367403 20011130

Probable Assignee: TOSHIBA KIKAI KK

Assignee(s): (std): TOSHIBA MACHINE CO LTD ; WATANABE TAKAZUMI

Assignee(s): TOSHIBA KIKAI K USHIKI KAISHA AB ; TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK ; TOSHIBA MACH CO LTD

Inventor(s): (std): WATANABE TAKASUMI ; WATANABE TAKAZUMI

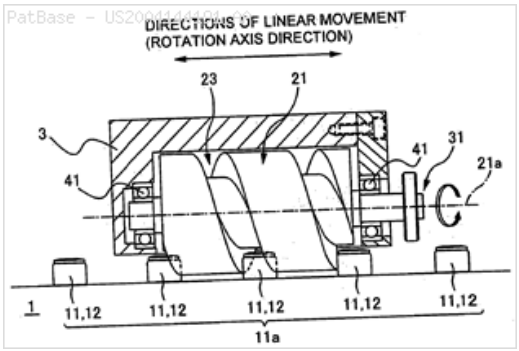
492) Family number: 30510890 (US2004144191A)

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Title: INCLINING AND ROTATING TABLE APPARATUS

Abstract: A drive mechanism is interposed between two members to make the members move relatively with respect to each other. At least one of the two members is guided to move linearly. The drive mechanism comprises: cam followers that are rotatably supported on one of the two members, that are arranged in the linear moving direction, and that are spaced from each other; and a cam that is rotatably supported on the other one of the two members and that is provided in its

circumference with a cam groove in which the cam followers engage, the rotation axis of the cam being arranged in the direction of the linear moving direction. The two members are made to move relatively with respect to each other by driving the cam to rotate and making the cam followers engage successively in the cam groove and move in the direction of the rotation axis.



Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/26 B23Q1/50 B23Q1/54 B23Q1/58 B23Q16/02 B23Q16/06 B23Q16/10 B23Q3/00 B23Q3/04 B23Q3/06 B23Q5/00 B23Q5/34 B23Q7/02 F16C19/38 F16C33/58 F16H1/06 F16H1/16 F16H1/20 F16H25/06 F16H25/10 F16H25/12 F16H25/24 (Advanced/Invention);
B23Q1/00 B23Q1/25 B23Q1/26 B23Q16/00 B23Q3/02 B23Q3/06 B23Q7/02 F16C19/22 F16C33/58 F16H25/00 (Core/Invention)
International (IPC 1-7): B23D7/08 B23Q1/25 B23Q1/26 B23Q1/40 B23Q1/50 B23Q1/54 B23Q16/02 B23Q16/06 B23Q16/10 B23Q3/00 B23Q3/04 B23Q3/06 B23Q3/18 B23Q5/00 B23Q5/027 B23Q5/34 B23Q7/02 F16C19/38 F16C33/58 F16H1/06 F16H25/06 F16H25/10 F16H25/12
CPC: Y10T409/30868 Y10T74/18056 Y10T74/18312 Y10T74/18792 Y10T74/19656 Y10T74/19828 F16H25/12 B23Q1/58 B23Q5/341 F16H25/2261 B23Q1/5437 B23Q16/065 B23Q16/102
European: B23Q1/26 B23Q1/54A B23Q1/54A9 B23Q1/58 B23Q16/06C B23Q16/10C B23Q3/04 B23Q3/06 B23Q5/34B B23Q5/34B6 F16H25/12 F16H25/22C4 F16H25/24A
US: 269/60 269/61 409/219 409/219P 74/25 74/415 74/415S 74/425 74/425P 74/57 74/89.14

Family:

Publication number	Publication date	Application number	Application date
CN100522464 C	20090805	CN200310119824	20031024
CN1264644 C	20060719	CN200310120358	20031022
CN1500589 A	20040602	CN200310120358	20031022
CN1500591 A	20040602	CN200310119824	20031024
DE60303266 D1	20060406	DE20036003266	20031023
DE60303266 T2	20060928	DE20036003266T	20031023
DE60304793 D1	20060601	DE20036004793	20031022
DE60304793 T2	20070503	DE20036004793T	20031022
EP1413387 A1	20040428	EP20030256722	20031023
EP1413387 B1	20060118	EP20030256722	20031023
EP1413390 A1	20040428	EP20030256658	20031022
EP1413390 B1	20060426	EP20030256658	20031022
JP2004160642 A2	20040610	JP20030328855	20030919
JP2004162912 A2	20040610	JP20030349888	20031008
JP4538212 B2	20100908	JP20030349888	20031008
KR100552303 B1	20060220	KR20030074493	20031024
KR100552304 B1	20060220	KR20030073725	20031022
KR20040035578 A	20040429	KR20030073725	20031022
KR20040036648 A	20040430	KR20030074493	20031024
TW200414961 A	20040816	TW20030129336	20031022
TW200414962 A	20040816	TW20030129313	20031022
TWI230640 B	20050411	TW20030129336	20031022
TWI236396 B	20050721	TW20030129313	20031022
US2004144191 AA	20040729	US20030690814	20031023
US2004146369 AA	20040729	US20030689548	20031021
US6955345 BB	20051018	US20030689548	20031021
US7237449 BB	20070703	US20030690814	20031023

Priority:
JP20020307297 20021022 JP20020309760 20021024 JP20030328855 20030919 JP20030349888 20031008

Probable Assignee: SANKYO SEISAKUSHO CO

Assignee(s): (std): SANKYO MFG ; SANKYO SEIKI SEISAKUSHO KK ; SANKYO SEISAKUSHO CO ; SANKYO SEISAKUSHO KK ; SANKYO MFG CO LTD ; SANKYO SEISAKUSHO CO LTD

Assignee(s): SANKYO SEISAKUSHO CO TOKIO TOKYO ; SANKYO SEI KUSHO CO ; SANKYO SEISAKUSHO K K ; SANKYO MFG CO ; SANKYO MANUFACTURING CO ; SANKYO MANUFACTURING CO LTD

Inventor(s): (std): HEIZABURO KATO ; KATO HEIZABURO

Agent(s): ISSHIKI AND CO; MORRISON AND FOERSTER LLP

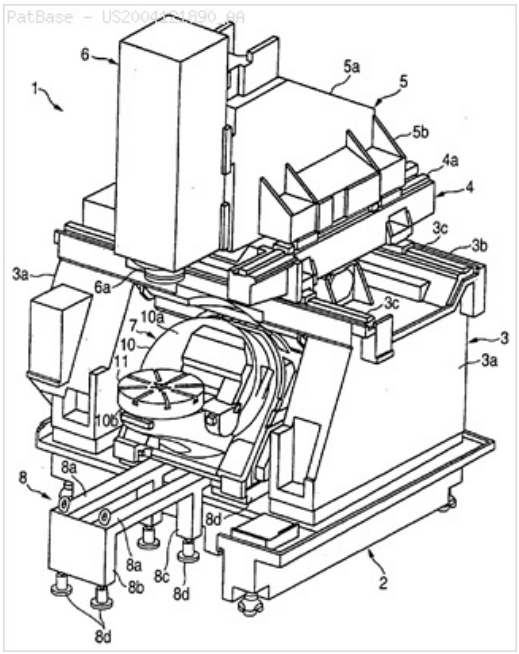
Designated states: DE FR GB IT

493) Family number: 30669892 (US2004121890A)

Title: MULTI-AXIAL MACHINE TOOL AND TABLE UNIT MOUNTING JIG

Abstract: In the multi-axial machine tool, a table unit is detachably mounted on the upper surface of the interior portion of a portal bed disposed on a leg. The table unit comprises a table base fixed to the upper surface of the leg, a turning table which, when it is viewed at a reference working position, is turnably disposed on an inclined turning surface of the table base formed so as to be inclined in a descending manner toward a front side of the machine tool, and a work table disposed on the table support portion of the turning table so as to be turnable around axes lying in parallel with the axis of a spindle.
Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/01 B23Q1/54 (Advanced/Invention);
B23Q1/00 B23Q1/25 (Core/Invention)
International (IPC 1-7): B23C1/06 B23C1/14 B23Q1/00 B23Q1/25 B23Q3/157
CPC: Y10T408/5614 Y10T409/30392 Y10T409/30896 Y10T483/179 B23Q1/54 B23Q1/012 Y10T409/305824 Y10T409/308288 Y10T409/309576
European: B23Q1/01A B23Q1/54
US: 269/57 269/58 269/63 269/71 408/89 409/134 409/168 409/212

409/224 409/235 483/54



Family:

Publication number	Publication date	Application number	Application date
JP2004160584 A2	20040610	JP20020328235	20021112
JP2008080491 A2	20080410	JP20070325063	20071217
US2004121890 AA	20040624	US20030693393	20031024
US6948894 BB	20050927	US20030693393	20031024

Priority:

JP20020328235 20021112 JP20070325063 20071217

Probable Assignee: MORI SEIKI CO LTD

Assignee(s): (std): MORI SEIKI SEISAKUSHO KK ; SUGITA MASAKI ; TAGA MITSURU ; TAKAI YASUFUMI ; KOJO KOICHI

Assignee(s): MORI SEIKI CO ; MORI SEIKI CO LTD

Inventor(s): (std): TAKAI YASUFUMI ; TAGA MITSURU ; SUGITA MASAKI ; KOJO KOICHI ; KOSHIRO KOICHI

Agent(s): OSHA-LIANG LLP

494) Family number: 41554892 (US2010290854A)

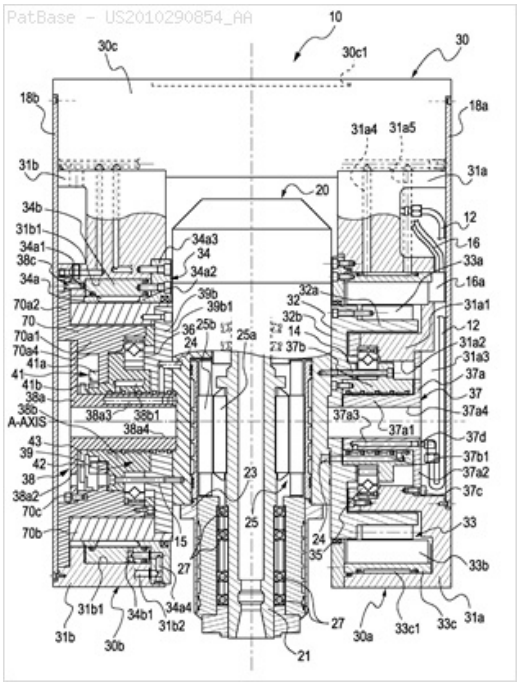
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Title: MACHINING HEAD FOR MACHINE TOOL

Abstract: A machining head for a machine tool includes a spindle unit including a spindle to which a tool is attachable and a support head component that supports the spindle unit, the support head component including an index mechanism that rotates the spindle unit at least about an axis line extending perpendicular to a rotary axis line of the spindle in order to index an angular position of the spindle unit. The index mechanism includes a support shaft fixed to the spindle unit and rotatably provided within a housing of the support head component, and a drive motor for rotating the support shaft, the drive motor including a motor rotor and a motor stator, the motor rotor being disposed concentrically with the support shaft around the support shaft within the housing of the support head component and being linked to the support shaft, the motor stator surrounding the motor rotor to face an outer periphery of the motor rotor. The bearing for rotatably supporting the support shaft is disposed within the motor rotor in a radial direction within a range occupied by the drive motor in a rotary axis line direction of the support shaft.

Classifications:

International (IPC 8-9): B23B19/02 B23Q1/26 B23Q1/40 B23Q1/52 B23Q1/54 B23Q1/64 B23Q1/70 B23Q15/00 B23Q16/02 B23Q16/10 B23Q3/12 B23Q5/02 B23Q5/04 B23Q5/28 B23Q5/34
G05B19/18 (Advanced/Invention);
G05B19/18 (Advanced/Non-invention);
B23Q1/00 B23Q1/25 B23Q1/26 B23Q16/00 B23Q3/00 B23Q5/00 (Core/Invention)
CPC: B23Q2210/004 B23Q2220/006 B23Q1/5406 Y10T409/308512 Y10T409/309296 B23Q1/70
European: B23Q1/54A B23Q1/70
US: 409/216 409/216P 409/230 409/230S



Family:

Publication number	Publication date	Application number	Application date
CN101534993 A	20090916	CN200780031000	20070813
CN101534993 B	20101222	CN200780031000	20070813
CN101913088 A	20101215	CN201010254506	20070813
CN101913088 B	20120711	CN201010254506	20070813
EP2075085 A1	20090701	EP20070792444	20070813
EP2075085 A4	20110427	EP20070792444	20070813
EP2500130 A2	20120919	EP20120002665	20070813
EP2500130 A3	20121219	EP20120002665	20070813
JP2008073840 A2	20080403	JP20070215107	20070821
JP2008080481 A2	20080410	JP20070220982	20070828
JP5026891 B2	20120919	JP20070220982	20070828
JP5085999 B2	20121128	JP20070215107	20070821
KR20090064531 A	20090619	KR20097003701	20090223
TW200810874 A	20080301	TW20070129358	20070809
TW200810875 A	20080301	TW20070128374	20070802
US2010290854 AA	20101118	US20070438415	20070813
WO08023587 A1	20080228	WO2007JP65801	20070813

Priority:

JP20060226210 20060823 JP20060232882 20060830 EP20070792444 20070813
WO2007JP65801 20070813 JP20070215107 20070821 JP20070220982 20070828

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std)**:** TATSUDA YOSHINORI ; TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH

Assignee(s): TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TSUDAKOMA KOGYO KK ; TSUDAKOMA KOGYO KABUSHIKI KAISHA ; TSUDAKOMA CORP ; TSUDAKOMA IND CO

Inventor(s): (std)**:** TATSUDA YOSHINORI ; YOSHINORI TATSUDA ; TATSUTA YOSHINORI

Agent(s): SAMSON AND PARTNER; Samson & Partner; WESTERMAN HATTORI DANIELS AND ADRIAN LLP; NAKAGAWA KUNIO

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

495) Family number: 4306892 (US4966209A)

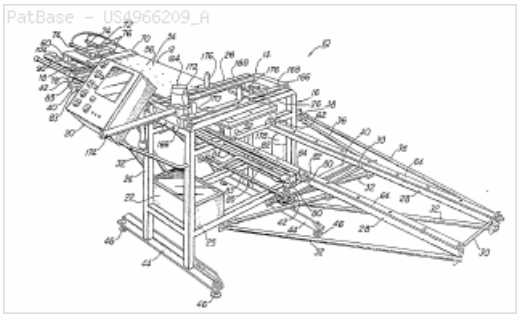
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Title: PRECISION MULTI-POINT LINEAR POSITIONING SYSTEM

Abstract: An apparatus for precision linear positioning of material along a frame, having carrier means for carrying the material juxtaposed above the frame, means for linearly moving the carrier means along the frame having a plurality of pneumatic cylinders each having an extendable and rectractable piston, the cylinders connected to each other in a series and including a first end pneumatic cylinder attached to the frame and a last end pneumatic cylinder attached to the carrier means, such that the carrier means is moved by the amount of the cumulative extension and retraction of the pistons, stopping means associated with each the pneumatic cylinder for limiting the extension of each the piston, and means for providing a controllable amount of air to each pneumatic cylinder to selectively control extension and retraction of each piston.

Classifications:
International (IPC 8-9): B23Q16/00 B27C5/06
B27M1/08 (Advanced/Invention);
B23Q16/00 B27C5/00 B27M1/00 (Core/Invention)
International (IPC 1-7): B27B1/00 B27C5/02
CPC: B27M1/08 B23Q16/004 B27C5/06 Y10T408/476

Y10T409/300336 Y10T409/305936 Y10T409/30868 Y10T83/6508 Y10T83/6524 Y10T83/6536
European: B23Q16/00L B27C5/06 B27M1/08
US: 144/134.1 144/134A 144/134R 144/135.2 144/2.1 144/2R 144/3B 144/424 408/63 409/170 409/219 409/70 83/713 83/723 83/730



Family:

Publication number	Publication date	Application number	Application date
US4966209 A	19901030	US19890445811	19891204

Priority:
US19890445811 19891204

Probable Assignee: WORLEY ROBERT D
Assignee(s): (std)**:** WORLEY ROBERT D
Inventor(s): (std)**:** WORLEY ROBERT D

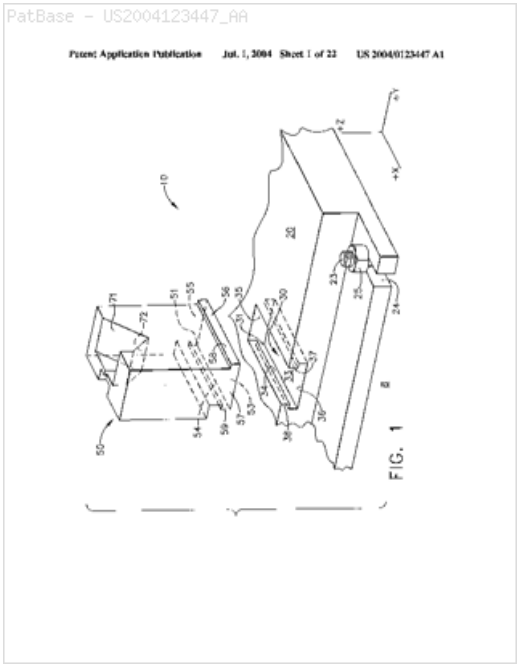
496) Family number: 30258893 (US2004123447A)

© PatBase

Title: MANUFACTURING CELL USING TOOLING APPARATUS

Abstract: A manufacturing cell having a plurality of work stations, where at least one of the work station comprises a metalworking machine, and where at least one metalworking machine is provided with a modular tooling apparatus. The modular tooling apparatus consists of a base having one or more attachment surfaces, and one or more inserts that can be inserted semi-permanently to the attachment surfaces. The attachment surface is typically a pocket in the surface of the base. The insert has a workpiece support feature that can support and/or secure the workpiece into the proper position and orientation for machining. The base, pockets and inserts are configured to provide a characteristic location and orientation for the workpiece relative to the base, and to the metalworking machine. The modular tooling apparatus permits machining a family of workpiece members that are related but different in detail, by inserting an insert member from the family of inserts to properly position and orient the corresponding workpiece member, without needing to change, disconnect, or move the base tooling. The invention also provides a process for performing a plurality of metalworking operations on workpieces, employing the manufacturing cell described hereinabove.

Classifications:
International (IPC 8-9): B23P23/00 B23Q1/25 B23Q3/00 B23Q3/02 B23Q3/06 B23Q3/10 B23Q37/00 B25B5/00 B25B5/14 F02C7/00 F04D29/38 (Advanced/Invention);
B23P23/00 B23Q1/25 B23Q3/02 B23Q3/06 B23Q37/00 B25B5/00 F02C7/00 F04D29/38 (Core/Invention)
International (IPC 1-7): B23C1/00 B23P23/00 B23Q1/25 B23Q3/00 B23Q3/02 B23Q3/10 B25B1/24 B25B27/14 B25B5/00 B25B5/14 F02C7/00 F04D29/38
CPC: Y10S269/90 Y10S269/902 Y10T29/53961 Y10T29/5124 Y10T29/5196 Y10T279/3462 Y10T409/30868 B23Q37/00 B23Q3/103 B25B5/003 B25B5/006 B25B5/14 B23Q3/063 Y10T409/308624 Y10T409/309016 Y10T409/303752
European: B23Q3/06D1 B23Q3/10D B23Q37/00 B25B5/00B B25B5/00C B25B5/14
US: 269/279 269/279P 269/282 269/297 269/303 269/305 269/309 269/315 269/316 269/319 269/88 269/900 269/902 269/99 279/152 29/281.1 29/33P 29/563 33/573 409/131 409/131P 409/218 409/219 409/225



Family:

Publication number	Publication date	Application number	Application date
CA2453735 AA	20040630	CA20032453735	20031218
CA2453735 C	20110712	CA20032453735	20031218
CA2453759 AA	20040630	CA20032453759	20031218
CA2453759 C	20100720	CA20032453759	20031218
CA2453916 AA	20040630	CA20032453916	20031218
CA2453916 C	20100713	CA20032453916	20031218
DE60302036 D1	20051201	DE20036002036	20031222
DE60302036 D1	20051201	DE20036002036T	20031222
DE60302036 T2	20060713	DE20036002036T	20031222
DE60305141 D1	20060614	DE20036005141	20031222
DE60305141 D1	20060614	DE20036005141T	20031222
DE60305141 T2	20070215	DE20036005141T	20031222
DE60327159 D1	20090528	DE20036027159	20031222

EP1435276 A1	20040707	EP20030258095	20031222
EP1435276 B1	20060510	EP20030258095	20031222
EP1435277 A1	20040707	EP20030258118	20031222
EP1435277 B1	20051026	EP20030258118	20031222
EP1437199 A1	20040714	EP20030258120	20031222
EP1437199 B1	20090415	EP20030258120	20031222
JP2004209638 A2	20040729	JP20030431903	20031226
JP2004223704 A2	20040812	JP20030431905	20031226
JP2004232631 A2	20040819	JP20030431904	20031226
JP4575662 B2	20101104	JP20030431904	20031226
JP4671598 B2	20110420	JP20030431903	20031226
JP4671599 B2	20110420	JP20030431905	20031226
US2004123447 AA	20040701	US20030370960	20030220
US2004124573 AA	20040701	US20030370869	20030220
US2005152758 AA	20050714	US20050073506	20050307
US2005262683 AA	20051201	US20050182476	20050715
US6681464 BA	20040127	US20030370868	20030220
US6993821 BB	20060207	US20030370960	20030220
US7146705 BB	20061212	US20050182476	20050715

Priority:

US20020437497P 20021230 US20020437238P 20021230 US20020437236P 20021230
US20030370868 20030220 US20030370960 20030220 US20030370869 20030220
CA20032453735 20031218 CA20032453759 20031218 CA20032453916 20031218
US20050073506 20050307 US20050182476 20050715

Probable Assignee: GENERAL ELECTRIC CO

Assignee(s): (std): DUPUIS CHRISTIAN ; ELMAN LARISA A ; GEN ELECTRIC ; AHTI ROBERT A

Assignee(s): AHTI ROBERT ALLAN ; GENERAL ELECTRIC CO ; GENERAL ELECTRIC COMPANY ; GENERAL ELECTRIC CO SCHENECTADY ; ELMAN LARISA ALEXANDRA

Inventor(s): (std): AHTI ROBERT A ; AHTI ROBERT ALLAN ; DUPUIS CHRISTIAN ; ELMAN LARISA A ; ELMAN LARISA ALEXANDRA

Inventor(s): AHTI ROBERT ; ELMAN LARISA

Agent(s): CRAIG WILSON AND CO; PEDDER JAMES CUTHBERT ET AL; HASSE GUTTAG AND NESBITT LLC; HASSE AND NESBITT LLC; DANIEL F

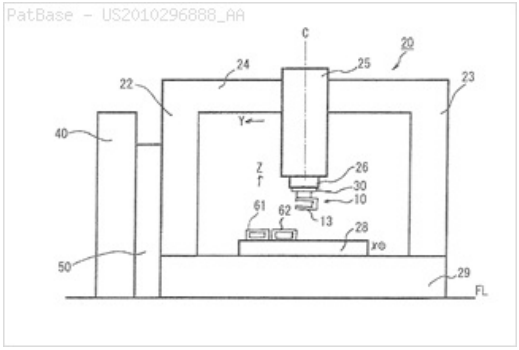
Designated states: DE FR GB IT SE

497) Family number: 47678894 (US2010296888A) © PatBase

Title: METHOD OF PLACING BOTTOM BLOCK, BLOCK-TRANSFERRING TOOL AND MACHINE TOOL PROVIDED WITH THE TOOL

Abstract: A method of placing a bottom block includes: placing bottom blocks on a block storage area in which a spindle can hold the bottom blocks; attaching a block-transferring tool to the spindle, the block-transferring tool having a main shaft attachment attached to the spindle and a block holder for holding the bottom block; and holding the bottom blocks by the block holder of the block-transferring tool and placing the held bottom blocks on a predetermined workpiece placing position on an upper surface of a table by relative movement.

Classifications:
International (IPC 8-9): B23B27/00 B23C7/00 B23Q1/00 B23Q1/72 B23Q3/00 B23Q3/02 B23Q3/10 B23Q3/155 B23Q3/157 B23Q41/02 B23Q41/04 B23Q7/00 (Advanced/Invention); B65G67/00 (Advanced/Non-invention)
CPC: Y10T29/54 Y10T409/30392 Y10T409/30868 Y10T483/16 B23Q3/10 B23Q1/015 B23Q3/06 Y10T409/303752
European: B23Q1/01B B23Q3/06 B23Q3/10
US: 29/284 29/284S 409/131 409/131P 409/134 409/134S 409/219 483/14 483/901



Family:

Publication number	Publication date	Application number	Application date
CN101890653 A	20101124	CN201010189911	20100518
CN101890653 B	20121010	CN201010189911	20100518
JP2011000701 A2	20110106	JP20100026505	20100209
JP5437095 B2	20140312	JP20100026505	20100209
KR101206669 B1	20121129	KR20100046205	20100518
KR101501808 B1	20150312	KR20120103222	20120918
KR20100124664 A	20101129	KR20100046205	20100518
KR20120109453 A	20121008	KR20120103222	20120918
US2010296888 AA	20101125	US20100782115	20100518
US8663077 BB	20140304	US20100782115	20100518

Priority:

JP20090120451 20090519 JP20100026505 20100209

Probable Assignee: TOSHIBA KIKAI KK

Assignee(s): (std): KATOH KOUICHI ; TOSHIBA MACHINE CO LTD

Assignee(s): TOSHIBA MACH CO LTD ; TOSHIBA MACHINE CO ; TOSHIBA KIKAI K K ; TOSHIBA KIKAI KABUSHIKI KAISHA ; TOSHIBA KIKAI KK

Inventor(s): (std): KATOH KOUICHI ; KATO KOICHI ; KOUICHI KATOH

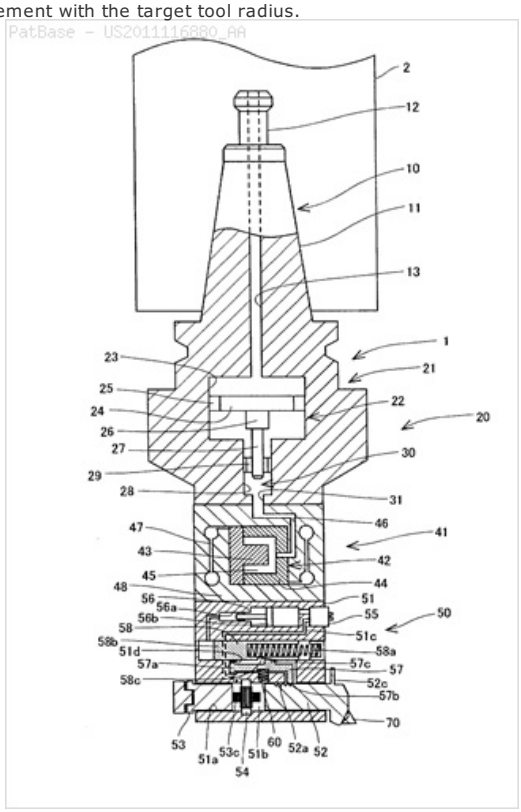
Agent(s): DLA PIPER LLP US; DLA PIPER LLP

498) Family number: 48884894 (US2011116880A)

Title: TOOL RADIUS ADJUSTING SYSTEM FOR BORING HOLDER, TOOL RADIUS ADJUSTING METHOD IN MACHINE TOOL, AND MACHINE TOOL

Abstract: A boring holder in a tool radius adjusting system is provided with a cutting blade and fine and coarse motion adjusting mechanisms each capable of adjusting the position of the cutting blade relative to a rotational axis of the boring holder. The tool radius adjusting system is provided with a tool radius measuring device for measuring the tool radius of the boring holder and a controller configured to calculate a compensation amount based on a tool radius measured by the tool radius measuring device and a target tool radius and to operate the fine and coarse motion adjusting mechanisms based on the compensation amount so that the tool radius is brought into agreement with the target tool radius.

Classifications:
International (IPC 8-9): B23B29/034 B23B47/18 B23B49/00 B23Q15/24 B23Q15/28 B23Q17/22 B23Q17/24 G05B19/401 (Advanced/Invention)
CPC: B12Q17/2457 B23Q17/2457 B23B29/03421 B23B29/03425 B23B2250/04 B23B2260/092 B23B2270/025 B23B2270/027 B23B2270/48 Y10T29/5105 Y10T82/10 Y10T408/03 Y10T408/08 Y10T408/175 Y10T408/85 Y10T408/858
European: B23B29/034B5 B23B29/034B7 B23Q17/24J2 L23B250/04 L23B260/092 L23B270/02H L23B270/02P L23B270/48
US: 29/26R 408/1.00RP 408/13 408/147 408/147S 408/153 408/1R 408/3 408/3S 82/1.11



Family:

Publication number	Publication date	Application number	Application date
CN102059362 A	20110518	CN201010541848	20101110
CN102059362 B	20150729	CN201010541848	20101110
EP2322319 A2	20110518	EP20100190862	20101111
EP2322319 A3	20180131	EP20100190862	20101111
JP2011104700 A2	20110602	JP20090261394	20091116
JP2011104704 A2	20110602	JP20090261401	20091116
JP5423333 B2	20140219	JP20090261401	20091116
US2011116880 AA	20110519	US20100942433	20101109
US8881354 BB	20141111	US20100942433	20101109

Priority:
JP20090261394 20091116 JP20090261401 20091116

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP ; KADOTA AKIHIKO ; NAKAMURA EIJI ; SAWAKI NORIKAZU ; YOKOYAMA TAKASHI

Inventor(s): (std): NAKAMURA EIJI ; KADOTA AKIHIKO ; YOKOYAMA TAKASHI ; SAWAKI NORIKAZU ; YOKOYAMA KOJI ; EIJI NAKAMURA ; TAKASHI YOKOYAMA ; NORIKAZU SAWAKI ; AKIHIKO KADOTA

Agent(s): TBK; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

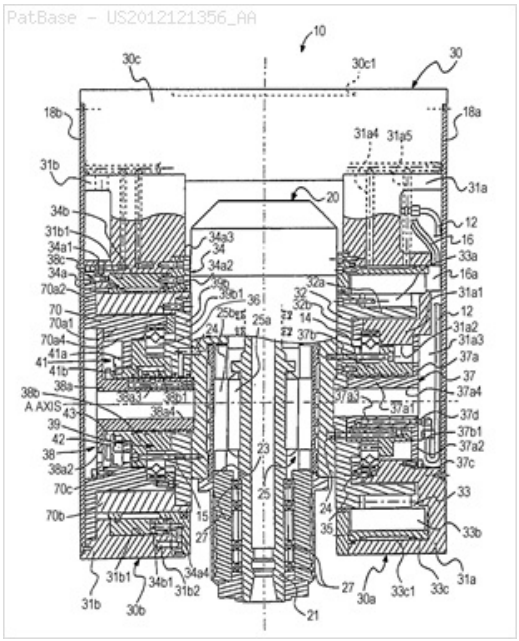
499) Family number: 41554894 (US2012121356A)

Title: MACHINING HEAD FOR MACHINE TOOL

Abstract: A machining head (10) for a machine tool includes a spindle unit (20) to which a tool is attachable and a support head component (30, 60) that includes an index mechanism for indexing an angular position of a spindle (21). The index mechanism includes a drive motor (33, 63) supported by a bearing (35, 65) within the housing (31a, 61) of the support head component (30, 60) and a rotary joint (37, 67) disposed concentrically with the bearing (35, 65) and the drive motor (33, 63). The bearing (35, 65) is disposed within a range occupied by the drive motor (33, 63) in an axial direction of a support shaft (32, 37b, 62, 67c), and the rotary joint (37, 67) is disposed within the drive motor (33, 63) in a radial direction thereof.

Classifications:
International (IPC 8-9): B23C1/12 B23Q1/00 B23Q1/52 B23Q1/54

B23Q1/64 B23Q1/70 B23Q15/00 B23Q3/12 B23Q5/00 B23Q5/04 B23Q5/28 (Advanced/Invention);
B23Q1/00 B23Q1/25 B23Q3/00 B23Q5/00 (Core/Invention)
CPC: B23Q2210/004 B23Q2220/006 B23Q1/5406 B23Q1/0018 Y10T409/307672
European: B23Q1/00B2 B23Q1/54A
US: 409/201 409/204 409/204P



Family:

Publication number	Publication date	Application number	Application date
CN101516569 A	20090826	CN200780031327	20070813
CN101516569 B	20110413	CN200780031327	20070813
EP2058083 A1	20090513	EP20070792445	20070813
EP2058083 A4	20110907	EP20070792445	20070813
JP2008073839 A2	20080403	JP20070215086	20070821
JP5085998 B2	20121128	JP20070215086	20070821
KR20090049592 A	20090518	KR20097003693	20090223
TW200810876 A	20080301	TW20070128377	20070802
US2012121356 AA	20120517	US20070438406	20070813
WO08023588 A1	20080228	WO2007JP65802	20070813

Priority:
JP20060226221 20060823 WO2007JP65802 20070813 JP20070215086 20070821

Probable Assignee: TSUDAKOMA KOGYO KK

Assignee(s): (std): TSUDAKOMA IND CO LTD ; TSUDAKOMA KOGYO KABUSHIKIKAISH ; TSUDAKOMA KOGYO KABUSHIKIKAISHA ; TATSUDA YOSHINORI

Assignee(s): TSUDAKOMA CORP ; TSUDAKOMA KOGYO KK

Inventor(s): (std): YOSHINORI TATSUDA ; TATSUTA YOSHINORI ; TATSUDA YOSHINORI

Agent(s): SAMSON AND PARTNER; NAKAGAWA KUNIO

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

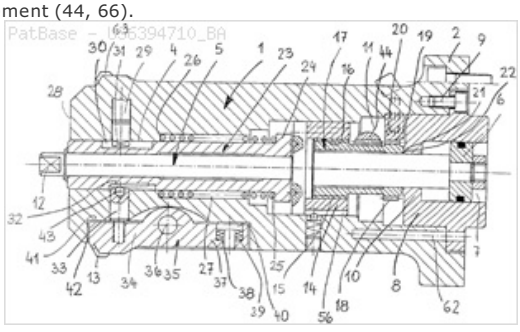
500) Family number: 20660894 (US6394710B)

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Title: TOOL AND METHOD FOR PROCESSING PERFORATIONS

Abstract: A tool having a base body is proposed, on which at least one cutter holder, preferably a rocker-type cutter holder, is mounted such that it can be adjusted transversely with respect to the axis of the tool. The cutter holder carries a cutter and rests via a pressure piece on a control chamfer, which is provided on a control sleeve which is mounted in the base body such that it can be displaced axially in relation to the pressure force. The tool is defined in that the movement of the cutter holder (35) is controlled by at least one centrifugal force-actuated element (44, 66).

Classifications:
International (IPC 8-9): B23B29/034 B23B41/12 (Advanced/Invention); B23B29/00 B23B41/00 (Core/Invention)
International (IPC 1-7): B23B29/034 B23B35/00 B23B41/00 B23B41/12 B23Q17/20 G05B19/19 G05D13/38
CPC: Y10T82/128 Y10T408/03 Y10T408/05 Y10T408/8583 Y10T408/85884 Y10T408/8595 Y10T408/865 B23B29/03457 B23B2270/48
European: B23B29/034N5 L23B270/48
US: 408/1.00R 408/154 408/159 408/180 408/187 408/1R 408/2 82/1.5



Family:

Publication number	Publication date	Application number	Application date
AU199877589 A1	19981124	AU19980077589	19980422
BRPI9809307 A	20000711	BR1998PI09307	19980422

DE19717835 A1	19981029	DE19971017835	19970426
DE59803621 D1	20020508	DE19985003621	19980422
EP0977644 A1	20000209	EP19980925477	19980422
EP0977644 B1	20020403	EP19980925477	19980422
JP2001522317 T2	20011113	JP19980546571T	19980422
JP4083242 B2	20080430	JP19980546571T	19980422
US6394710 BA	20020528	US20000403607	20000105
WO9848964 A1	19981105	WO1998EP02383	19980422

Priority:

DE19971017835 19970426 DE19985003621 19980422 WO1998EP02383 19980422

Probable Assignee: MAPAL FABRIK FUR PRAZISIONSWERKZEUGE DR KRESS KG

Assignee(s): (std)**:** HELLER GEB GMBH MASCHF ; KURZ ARTUR ; MAPAL FAB PRAEZISION ; MAPAL FABRIK F PRAEZ SWERKZ ; MAPAL FABRIK FUR PRAZISIONSWERKZEUGE DR KRESS KG

Assignee(s): MAPAL FABRIK F PRAEZISIONSWERKZEUGE DR KRESS KG ; MAPAL FABRIK F PRAEZISIONSWERKZEUGE ; MAPAL FABRIK FUR PRAZISIONSWERKZEUGE DR KRESS CORP ; MAPAL FABRIK FUER PRAEZISIONSWERKZEUGE ; MAPAL FABRIK FUER PRAEZISIONSWERKZEUGE DR KRESS KG ; HELLER MASCHF GMBH 72622 NUERTINGEN DE GEB ; GEBR HELLER MASCHINENFABRIK GMBH 72622 NUERTINGEN ; GEBR HELLER MASCHINENFABRIK GMBH 72622 NUERTINGEN DE

Inventor(s): (std)**:** ARTUR KURZ ; KURZ ARTUR

Inventor(s): KURZ ARTUR 73240 WENDLINGEN DE

Designated states: AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CU CY CZ DE DK EE ES FI FR GA GB GE GH GM GN GR HU IE IL IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SN SZ TD TG TJ TM TR TT UA UG US UZ VN ZW

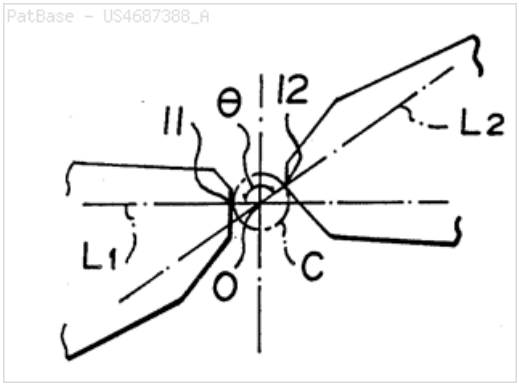
501) Family number: 5357896 (US4687388A)

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Title: DRILL BIT

Abstract: A drill bit is provided with a pair of cutting edges which are positioned so that a narrow slot is formed therebetween in an area including the rotational axis of the drill bit and so that the lines joining the rotational axis of the drill bit and the innermost points of the respective cutting edges are at an angle not larger than about 160 DEG with each other as viewed in the axial direction of the drill bit.

Classifications:
International (IPC 8-9): B23B51/00 B23B51/02 (Advanced/Invention); B23B51/00 B23B51/02 (Core/Invention)
International (IPC 1-7): B23B51/00 B23B51/02
CPC: Y10T408/909 Y10T408/9097 B23B51/02 B23B2222/28 B23B2240/08 B23B2251/18 B23B2251/46 B23B2251/50
European: B23B51/02 L23B222/28 L23B240/08 L23B251/18 L23B251/46 L23B251/50
US: 408/227 408/230



Family:

Publication number	Publication date	Application number	Application date
JP1809020 C3	19931210	JP19850111396	19850524
JP4043725 B4	19920717	JP19850111396	19850524
JP61270010 A2	19861129	JP19850111396	19850524
US4687388 A	19870818	US19860866076	19860522

Priority:

JP19850111396 19850524

Probable Assignee: TOSHIBA TUNGALOY CO LTD

Assignee(s): (std)**:** TOSHIBA TUNGALOY CO LTD

Assignee(s): TOSHIBA TUNGALOY CO

Inventor(s): (std)**:** ENDO ATSUSHI ; YOKOTA YUZO

Inventor(s): YOKOTA JUZO

502) Family number: 28493898 (US2003066564A)

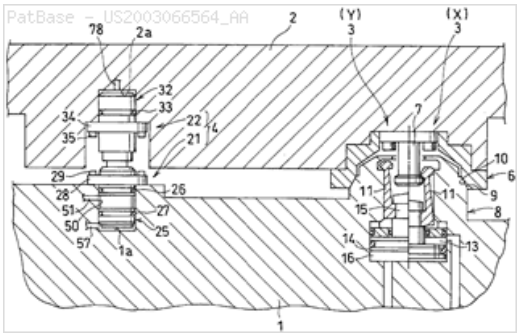
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Title: METHOD OF SUPPLYING AND DISCHARGING PRESSURIZED FLUID

Abstract: When supplying pressurized oil from a first port (51) to a second port (78), first, a pallet (2) is lowered to a table (1). And a first stop member (45) of a socket (21) is brought into butting contact with a second stop member (67) of a plug (22), thereby forming a contact gap (B) between the second stop member (67) and a check member (72) within a check valve chamber (70) of the plug (22). Next, the pallet (2) is fixed to the table (1) by a locking device (3). Subsequently, the pressurized oil at the first port (51) is supplied to the second port (78) via the check valve chamber (70) and thereafter is discharged to an exterior area.

Classifications:
International (IPC 8-9): B23Q1/72 B23Q3/00 F15B3/00 F16L29/04 F16L37/30 (Advanced/Invention);
B23Q1/00 B23Q3/00 F15B3/00 F16L29/00 F16L37/28 (Core/Invention)
International (IPC 1-7): B23Q1/72 B23Q3/00 F15B3/00 F16L37/30 F16L37/36

CPC: B23Q1/0018 B23Q1/0072 F16L29/04 Y10T137/0318 Y10T137/87949 Y10T137/87973
European: F16L29/04
US: 137/1 137/614.03 137/614.06 137/614.060P



Family:

Publication number	Publication date	Application number	Application date
CN1288352 C	20061206	CN20021043527	20020927
CN1412448 A	20030423	CN20021043527	20020927
JP2003117748 A2	20030423	JP20010310993	20011009
JP3862539 B2	20061227	JP20010310993	20011009
US2003066564 AA	20030410	US20020266266	20021008
US6644331 BB	20031111	US20020266266	20021008

Priority:

JP20010310993 20011009

Probable Assignee: KOSMEK KK

Assignee(s): (std)**:** KOSMEK KK ; KOSMEK LTD ; KUSMIKU CO LTD

Assignee(s): KUSMIKU CO ; K USHIKI KAISHA KOSMEK AB ; KABUSHIKI KAISHA KOSMEK

Inventor(s): (std)**:** AKIRA ARISATO ; ARISATO AKIRA

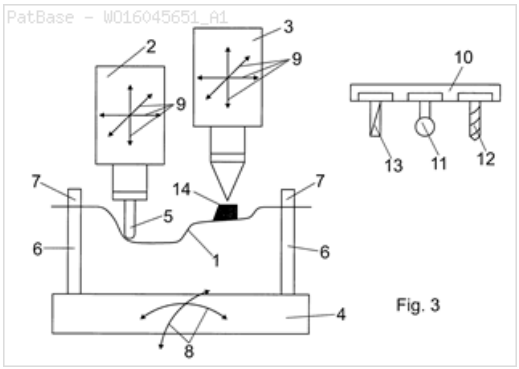
503) Family number: 61908900 (WO16045651A1)

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Title: METHOD AND DEVICE FOR THE COMBINED PRODUCTION OF COMPONENTS BY MEANS OF INCREMENTAL SHEET FORMING AND ADDITIVE METHODS IN ONE CLAMPING SETUP

Abstract: The invention relates to a method and a device suitable for carrying out the method for producing components (21) by means of incremental sheet forming (5) and additive methods (3), in particular by means of laser cladding, in which the component (21) is at least locally transformed into a formed finished part geometry (21) by means of incremental sheet forming (5) of a sheet starting material (1), and before and/or during and/or thereafter, material accumulations (14) are applied to and/or bonded to the sheet starting material (1) and/or to the formed finished part geometry (21) at least locally by means of additive methods, in particular by laser cladding methods, in the same clamping setup of the component (21). In addition, prior to and/or during and/or subsequent to the use of additive methods (3) on the sheet starting material (1), a cutting (12, 13) and/or forming (11) finishing of the local material accumulations (14) can be carried out, in particular to increase the dimensional and geometrical accuracy of the local material accumulations (14) or of the formed sheet sections of the component (21).

Classifications:
International (IPC 8-9): B21D22/00 B21D31/00 B23K26/00 B23K26/08 B23K26/14 B23K26/34 B23K26/342 B23K37/02 B23P15/00 B23P17/00 B23P23/04 (Advanced/Invention)
CPC: B23P15/00 B21D31/005 B23K26/342 B23P23/04 B23K26/0093 B23K26/0823 B23K26/0884 B23K26/14 B23K37/0235 B23K2103/04



Family:

Publication number	Publication date	Application number	Application date
DE102014014202 A1	20160324	DE201410014202	20140922
EP3197633 A1	20170802	EP20150777863	20150901
EP3197633 B1	20190501	EP20150777863	20150901
WO16045651 A1	20160331	WO2015DE000442	20150901

Priority:

DE201410014202 20140922 WO2015DE000442 20150901

Probable Assignee: TECH UNIV DORTMUND

Assignee(s): (std)**:** TECH UNIV DORTMUND ; TECHNISCHE UNIV DORTMUND

Inventor(s): (std)**:** HOELKER RAMONA ; KHALIFA NOOMAN BEN ; TEKKAYA A ERMAN ; BEN KHALIFA NOOMAN ; HOELKER JAEGER RAMONA

Agent(s): SCHNEIDER UWE

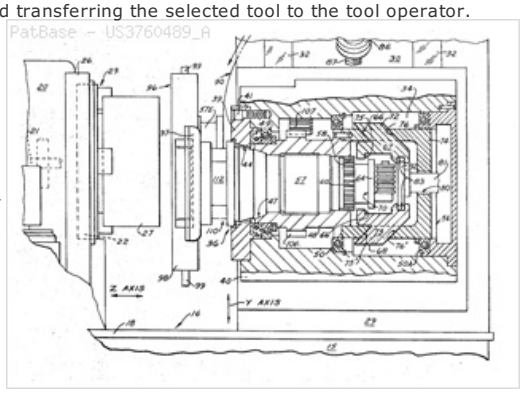
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

504) Family number: 165905 (US3760489A)

Title: TOOL STORAGE AND IDENTIFICATION SYSTEM

Abstract: This invention relates to tool storage and identifying means including an improved storage magazine journalled to rotate about a horizontal support axis and provided with radially disposed tool sockets adapted to receive an intermixed combination of rearwardly coded tools. Power actuated means are provided to releasably urge latches in one direction to prevent accidental withdrawal of a tool from its socket, and to retain each rearwardly coded tool releasably latched in a code identifying position relative to a resiliently operable switch identifier carried by the magazine support. After identification of a tool, power actuated means retract a particular latch for releasing and transferring the selected tool to the tool operator.

Classifications:
International (IPC 8-9): B23Q3/155 (Advanced/Invention); B23Q3/155 (Core/Invention)
International (IPC 1-7): B23B7/00 B23Q3/00 B23Q3/155 B23Q3/157
CPC: Y10T29/5114 Y10T483/134 Y10T483/1705 Y10T483/1736 Y10T483/1809 B23Q3/15546 B23Q3/155 B23Q3/15526 Y10T483/1743
European: B23Q3/155 B23Q3/155D2 B23Q3/155D4
US: 211/1.53 29/27C 29/56.8 29/568 295/680 483/18 483/31 483/34 483/59 483/9



Family:

Publication number	Publication date	Application number	Application date
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BE745593 A1	19700716	BE19700745593	19700206
CA928484 A1	19730619	CA19700073393	19700129
CH504930 A	19710331	CH19700001725	19700206
DE2005614 A1	19700820	DE19702005614	19700207
FR2035256 A5	19701218	FR19700004627	19700210
GB1279747 A	19720628	GB19700006282	19700210
IL33810 A0	19700322	IL19700033810	19700129
IL33810 A1	19731128	IL19700033810	19700129
NL147059 B	19750915	NL19700001782	19700209
NL7001782 A	19700812	NL19700001782	19700209
SE361280 B	19731029	SE19700001689	19700210
US3587165 A	19710628		19690210
US3760489 A	19730925	US19710138668	19710429

Priority:
US19690707812 19690210 US19690797812 19690210 US19710138668 19710429

Probable Assignee: KEARNEY AND TRECKER CORP

Assignee(s): (std): KEARNEY AND TRECKER CORP

Assignee(s): KEARNEY AND TRECKER CORP 11 000 THEODORE TRECKER ; KEARNEY AND TRECKER CORP 11 000 THEODORE TRECKER WAY WILWAUKEE WISCONSIN E U A ; KEARNEY AND TRECKER CORP US ; KEARNEY ET TRECKER CORP ; KEARNEY AND TRECKER MILWAUKEE WISCONSIN VER ST V AM CORP ; EDWARD G GRIFFITH

Inventor(s): (std): GRIFFITH E ; GRIFFITH E G ; EDWARD GRIFFITH ; GRIFFITH EDWARD G

Inventor(s): GRIFFITH E G US ; EDWARD G GRIFFITH ; EG GRIFFITH ; GRIFFITH E US ; GRIFFITH EDWARD ; E G GRIFFITH

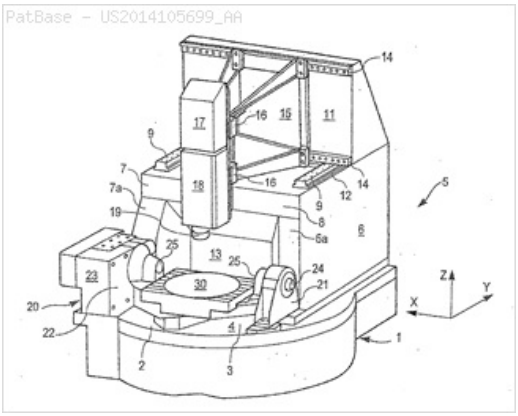
Agent(s): REINHOLD COHN AND PARTNERS

505) Family number: 51369906 (US2014105699A)

Title: PROGRAM-CONTROLLED MACHINE TOOL

Abstract: A program controlled machine tool, including a bed-like substructure, a machine frame having two vertical and parallel side walls, and a compound slide having a longitudinal slide which can travel in the direction of the Y-coordinate axis on the two side walls of the machine frame. A cross slide is guided in such a way that it can travel in the direction of the X-coordinate axis. A machining unit can travel in the direction of the vertical Z-coordinate axis and has a working spindle. A workpiece table arrangement arranged on the substructure in front of the side walls. The workpiece table arrangement is arranged on the front partial area of the flat base and the cross slide has a length in the direction of the Y-coordinate axis which corresponds approximately to the diameter of the workpiece table and/or the working space in the Y-direction.

Classifications:
International (IPC 8-9): B23C1/14 B23Q1/00 B23Q1/01 B23Q1/54 B23Q1/56 B23Q11/08 (Advanced/Invention)
CPC: B23Q1/01 B23Q1/0054 B23Q1/012 B23Q1/015 Y10T409/300896 Y10T409/30392 Y10T409/305824 Y10T409/308288 Y10T409/309576
European: B23Q1/01A B23Q1/01B
US: 1/1 409/134 409/168 409/212 409/235 409/80



Family:

Publication number	Publication date	Application number	Application date
CN103298584 A	20130911	CN201180061374	20111220
CN103298584 B	20170714	CN201180061374	20111220
DE102010064271 A1	20120628	DE201010064271	20101228
DE502011006057 D1	20150409	DE201150006057T	20111220
EP2658676 A1	20131106	EP20110804555	20111220
EP2658676 B1	20150225	EP20110804555	20111220
ES2535713 T3	20150514	ES20110804555T	20111220
IN01767KN2013 A	20140328	IN2013KN01767	20130604
JP2014501631 T2	20140123	JP20130546663T	20111220
JP5823534 B2	20151125	JP20130546663T	20111220
US2014105699 AA	20140417	US20110997066	20111220
US9346138 BB	20160524	US20110997066	20111220
WO12089563 A1	20120705	WO2011EP73452	20111220
WO12089563 A4	20121011	WO2011EP73452	20111220

Priority:

DE201010064271 20101228 EP20110804555 20111220 WO2011EP73452 20111220

Probable Assignee: DECKEL MAHO PFRONTEN GMBH

Assignee(s): (std)**:** DECKEL MAHO PFRONTEN GMBH ; LECHLEITER KARL

Inventor(s): (std)**:** LECHLEITER KARL

Agent(s): BEETZ AND PARTNER MBB PATENTANWAELTE; BEETZ AND PARTNER MBB; MAXHAM FIRM; BEETZ AND PARTNER

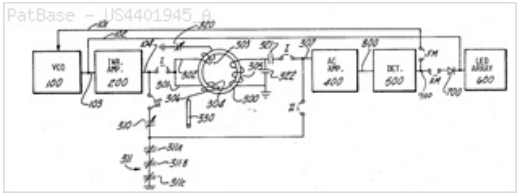
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

506) Family number: 28637907 (US4401945A)

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Title: Apparatus for detecting the position of a probe relative to a workpiece

Abstract: Apparatus for detecting the position of a probe relative to a workpiece, for example probe contact with the workpiece, is disclosed. The apparatus includes a transducer for converting probe contact to an electrical signal and a plurality of light emitting semiconductors for wirelessly transmitting an indication of the occurrence of the signal via infrared radiation. The apparatus is capable of operation with either a mechanical switch type probe transducer or a current measuring transformer type probe transducer. The apparatus is easily adapted to transmit the occurrence of probe contact by either amplitude modulation or frequency modulation of the emitted infrared radiation.



Classifications:
International (IPC 8-9): B23Q1/00 B23Q17/00 B23Q17/20 B23Q7/04 B25J9/18 G01B1/00 G01B11/24 G01B21/00 G01B21/20 G01B7/00 G01B7/008 G01B7/012 G01B7/14 G01B7/28 G05B19/18 G05B19/418 G08C17/00 G08C19/26 G08C19/36 G08C21/00 G08C23/00 G08C23/04 (Advanced/Invention);
B23Q17/00 B23Q7/04 B25J9/18 G01B11/24 G01B21/00 G01B21/20 G01B7/28 G08C19/36 (Advanced/Non-invention);
B23Q1/00 B23Q17/20 G01B11/24 G01B21/00 G01B7/00 G01B7/008 G01B7/14 G05B19/18 G05B19/418 G08C19/16 G08C21/00 G08C23/00 (Core/Invention)
International (IPC 1-7): A61B5/10 B21B41/12 B23B25/06 B23C B23F23/08 B23P B23Q1/00 B23Q15/00 B23Q15/22 B23Q17/00 B23Q17/02 B23Q17/20 B23Q17/22 B23Q7/04 B23Q7/14 B25J9/00 G01B1/00 G01B11/00 G01B11/14 G01B11/24 G01B21/00 G01B21/20 G01B3/22 G01B7/00 G01B7/02 G01B7/03 G01B7/14 G01B7/28 G01D5/40 G01N21/63 G01N21/66 G01N3/08 G01R1/067 G01R19/145 G02B27/00 G04B G05B15/00 G05B19/02 G05B19/18 G05B19/405 G05D G08B1/08 G08B23/00 G08C17/00 G08C19/00 G08C19/18 G08C19/26 G08C19/36 G08C21/00 G08C23/00 H01H1/06 H01R H04B9/00 H04L H04Q9/08
CPC: G01B21/047 G01B7/008 Y10T29/5124 Y10T408/173 Y10T408/175 Y10T408/21 Y10T409/305544 Y10T409/307448 Y10T409/308736 Y10T29/5178 Y02P70/163 Y10T409/303864 G01B7/003 G05B2219/49302 G05B19/18 B23Q1/0009 B23Q17/20 G01B7/002 G01B7/012 G01B2210/58 G05B2219/33207 G05B2219/34306 G05B2219/37405 Y02P90/083 Y02P90/087 Y02P90/18 G05B19/41825 G08C23/04 G08C2201/51
European: B23Q1/00B B23Q17/20 G01B21/04D G01B7/008 G01B7/00B G01B7/00C G01B7/012 G05B19/18 G05B19/418C2 G08C23/04 S01B210/58 S05B219/33207 S05B219/34306 S05B219/37405 S05B219/49302 S08C201/510
US: 200/275 250/551 29/563 29/57 320/136 320/48 324/207 324/207.14 324/236 33/174L 33/556 33/558 33/561 33/565 331/65 340/531 340/636 340/636.1 340/636.15 340/652 340/686 340/686.5 340/870.28 345/179 398/109 398/114 398/162 408/12 408/13 408/16 409/133 409/163 409/197 409/220 414/730 455/603 455/617 700/169 700/247 700/258 901/10 901/47 901/6

Family:

Publication number	Publication date	Application number	Application date
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AU198318318 A1	19840308	AU19830018318	19830823
AU198427595 A1	19841220	AU19840027595	19840502
AU555481 B2	19860925	AU19840027595	19840502
AU556805 B2	19861120	AU19830018318	19830823
AU559784 B2	19870319	AU19820082822	19820419
BE892971 A	19820816	BE19820207927	19820426
BE897667 A	19840102	BE19830211462	19830902
BE899915 A	19841001	BE19840213142	19840614
BR8202477 A	19830412	BR19820002477	19820429
CA1172334 A1	19840807	CA19820399755	19820330
CA1212744 A1	19861014	CA19830435943	19830902
CA1226351 A1	19870901	CA19830442763	19831207
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CA1237178 A1	19880524	CA19840456486	19840613
CH669842 A	19890414	CH19840002760	19840606
DE3213313 A1	19821118	DE19823213313	19820408
DE3213313 C2	19930121	DE19823213313	19820408
DE3331794 A1	19840308	DE19833331794	19830902
DE3331794 C2	19940511	DE19833331794	19830902
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DE3422181 C2	19900315	DE19843422181	19840614
DE3564031 D1	19880901	DE19853564031	19850416
EP0164526 A1	19851218	EP19850104585	19850416
EP0164526 B1	19880727	EP19850104585	19850416
FR2505040 A1	19821105	FR19820007155	19820426
FR2505040 B1	19860418	FR19820007155	19820426
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FR2548349 B1	19890728	FR19840009150	19840612
GB2097930 A1	19821110	GB19820009451	19820331
GB2097930 B2	19850123	GB19820009451	19820331
GB2126758 A1	19840328	GB19830023285	19830831
GB2126758 B2	19861015	GB19830023285	19830831
GB2141365 A1	19841219	GB19840011441	19840504
GB2141365 B2	19870121	GB19840011441	19840504
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GB8411441 A0	19840613	GB19840011441	19840504
IT1147865 A	19861126	IT19820048308	19820429
IT1170462 A	19870603	IT19830048920	19830902
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IT8248308 A0	19820429	IT19820048308	19820429
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JP2118244 Y	19970624	JP19910027504U	19840614
JP4032321 B4	19920529	JP19820069461	19820423
JP5032188 B4	19930514	JP19830162482	19830903
JP57182602 A2	19821110	JP19820069461	19820423
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JP60013202 A2	19850123	JP19840122881	19840614
JP6049953 U1	19940708	JP19910027504U	19910422
JP6058718 B4	19940803	JP19850081198	19850416
JP61021598 A2	19860130	JP19850081198	19850416
JP7038810 Y2	19950906	JP19910027504U	19910422
KR19850000668 A	19850228	KR19840003305	19840613
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KR900002677 B1	19900423	KR19840003305	19840613
MX151356 A	19841112	MX19820192488	19820429
MX154209 A	19870616	MX19830198594	19830902
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NL190956 C	19941116	NL19840001874	19840613
NL8401874 A	19850102	NL19840001874	19840613
NL8401874 A1	19850102	NL19840001874	19840613
SE457336 B	19881219	SE19840003156	19840613
SE457336 C	19890420	SE19840003156	19840613
SE8202683 A	19821031	SE19820002683D	19820429
SE8202683 L	19821031	SE19820002683	19820429
SE8403156 A	19841215	SE19840003156	19840613
SE8403156 A0	19840613	SE19840003156	19840613
SE8403156 L	19841215	SE19840003156	19840613
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ZA8306397 A	19850424	ZA19830006397	19830829
ZA8403832 A	19860129	ZA19840003832	19840521
ZA8502198 A	19861126	ZA19850002198	19850322

Priority:

US19810259257 19810430 CA19820399755 19820330 US19820414734 19820903
US19820414734 19820903 US19830478906 19830325 US19830504137 19830614
CA19830435943 19830902 CA19830442763 19831207 US19840601034 19840416
CA19840456486 19840613 CA19850477387 19850325 EP19850104585 19850416
US19850729418 19850501 US19870027112 19870313 US19880219649 19880715
US19900619882 19901129

Probable Assignee: VALENITE LLC

Assignee(s): (std): GTE VALENITE CORP ; GTE VALENITE CORP N D GES D ST ; VALERON CORP ; GTE VALERON CORP ; GTE VALERON TE TROY MICHIGAN VER ST V CORP

Assignee(s): GTE VALERON TE TROY MICHIGAN VER ST V AM CORP ; JUENGEL RICHARD O ; GTE VALENITE CORP NDGESDSTAATES DELAWARE TROY MICH ; VALERON TROY MI A CORP OF MI CORP ; VALERON CORP TROY MICH US ; VALERON THE CORP ; JII TEII II BEIRURON CORP ; VALERON A CORP OF MI CORP ; GTE VALERON A CORP OF DE CORP ; VALENITE INC ; VALENITE LLC ; GTE VALENITE CORP N D GES D STAATES DELAWARE TRO ; GTE VALENITE CORP N D GES D STAATES DELAWARE TROY MICH US ; BANKERS TRUST CO ; BARERON CORP ZA

Inventor(s): (std): JUENGEL R ; JUENGEL R O ; JUENGEL RICHARD O ; JUENGEL RICHARD OWEN ; RICHAADO OO JUENGERU ; RICHIYAADO OO JIYUENGERU ; TEUENGEL RICHARD O ; RICHIYAADO OOUEN JIYUUNGERU ; RICHARD OWEN JUENGEL ; RICHIYAADO OOUEN JIYAANJIERU ; RICHARD O JUENGEL ; RICHIYAADO OUIN JIYUNGERU ; RICHARD CWEN JUENGEL ; R O JUENGEL ; JUENGELT RICHARD OWEN ; JUENGEL RICHARD CWEN

Inventor(s): RO JUENGEL ; OWEN JUENGEL RICHARD ; O JUENGEL RICHARD ; NAME NOT GIVEN ; JUENGEL RICHARD OWEN ROMEO MICH

Agent(s): PHILLIPS ORMONDE FITZPATRICK; GRIFFITH HACK; WRAYS; WRAYS PTY LTD; RIDOUT AND MAYBEE LLP; MACRAE AND CO

Designated states: AT BE CH DE FR GB IT LI LU NL SE

507) Family number: 40796910 (EP1852214B1) © PatBase

Title: Workpiece clamping device with tool carrier

Abstract: The device (3) has a base which is furnished for mounting the machine tool (1). A clamping unit or holding unit is arranged for mounting the work piece (4) during the treatment and is supported on the base. The workpiece is supported in resting state at the base and is mounted on the base by a position unit. An independent claim is also included for a method of treatment, particularly cutting treatment.

Classifications:
International (IPC 8-9): B23C3/16 B23Q3/00 B23Q3/155 B23Q37/00 B23Q7/14 (Advanced/Invention);
B23C3/00 B23Q3/00 B23Q3/155 B23Q37/00 B23Q7/14 (Core/Invention)
CPC: B23Q3/155 B23Q7/1426
European: B23Q3/155 B23Q7/14K

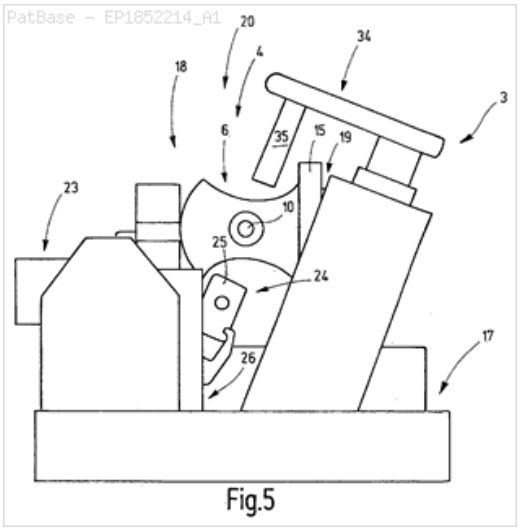


Fig.5

Family:

Publication number	Publication date	Application number	Application date
AT413942 E	20081115	AT20070008276T	20070424
DE102006020895 A1	20071108	DE200610020895	20060505
DE502007000229 D1	20081224	DE200750000229T	20070424
EP1852214 A1	20071107	EP20070008276	20070424
EP1852214 B1	20081112	EP20070008276	20070424
ES2314956 T3	20090316	ES20070008276T	20070424

Priority:

DE200610020895 20060505

Probable Assignee: HELLER GEB GMBH MASCHF

Assignee(s): (std): HELLER GEB GMBH MASCHF

Assignee(s): HELLER MASCHF GMBH GEB ; GEBR HELLER MASCHINENFABRIK GMBH

Inventor(s): (std): BAUER WALTER ; FETZER MAX

Agent(s): RUEGER BARTHELT AND ABEL PATENTANWAELTE

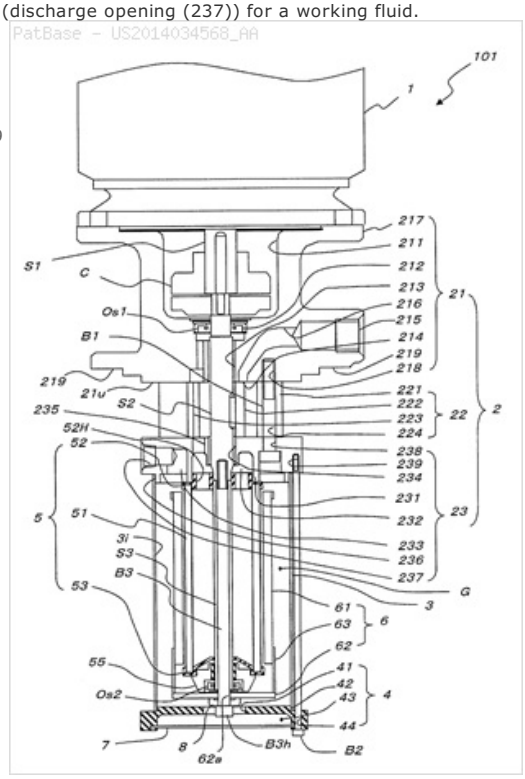
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL PL PT RO SE SI SK TR YU

508) Family number: 52329911 (US2014034568A)

Title: FILTER MECHANISM

Abstract: The present invention is a filter mechanism provided in a pump or the like, and the purpose thereof is to provide a filter mechanism that can eliminate foreign matter adhering to the surface of a filter and thereby can prevent clogging of filters because of foreign matter. According to the present invention, an area toward the inside in the direction of the radius of the filter is linked to an intake opening (235) of the pump (for example, a trochoid pump (22)) and, via the pump (22) to a pump ejection opening (trochoid pump ejection opening (215)), and an area between a filter (5) and (an inside wall surface (3i) of) a first casing (3) is linked to a low-pressure ejection opening (discharge opening (237)) for a working fluid.

Classifications:
International (IPC 8-9): B01D29/11 B01D29/62 B01D29/66 B01D29/74 B01D29/76 B01D29/86 B01D33/68 B01D35/02 B01D35/28 B01D46/00 B23Q11/00 B23Q11/10 (Advanced/Invention); B23Q11/10 (Advanced/Non-invention)
CPC: B01D46/0064 B01D29/62 B01D29/86 B01D33/68 B23Q11/1069
European: B01D29/86 B01D33/68
US: 210/407 55/292



Family:

Publication number	Publication date	Application number	Application date
CN103619436 A	20140305	CN201180070566	20110502
CN103619436 B	20150819	CN201180070566	20110502
EP2705886 A1	20140312	EP20110864635	20110502
EP2705886 A4	20141022	EP20110864635	20110502
IN07679CN2013 A	20140801	IN2013CN07679	20130923
JP2012150625 A1	20140728	JP20130513050T	20110502
JP5757997 B1	20150805	JP20130513050T	20110502
KR101775481 B1	20170907	KR20137029145	20110502
KR20140031887 A	20140313	KR20137029145	20110502
US2014034568 AA	20140206	US20110112127	20110502
US2018229172 AA	20180816	US20180950811	20180411
US10040013 BB	20180807	US20110112127	20110502
WO12150625 A1	20121108	WO2011JP60506	20110502

Priority:
WO2011JP60506 20110502 US20130112127 20131016 US20180950811 20180411

Probable Assignee: NIPPON OIL PUMP CO LTD
Assignee(s): (std): KAWANO YUJI ; NIPPON OIL PUMP CO LTD
Assignee(s): NIPPON OIL PUMP CO
Inventor(s): (std): KAWANO YUJI
Agent(s): PIESOLD ALEXANDER JAMES; PATENT CORPORATE BODY TAKAHASHI OFFICE; KRATZ QUINTOS AND HANSON LLP
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

509) Family number: 10384913 (US5242360A)

Title: SPINDLE AND TOOLHOLDER FOR MACHINE TOOL

Abstract: In a vertical machining center, a tubular spindle-drive sleeve rotates about its longitudinal axis while axially immovable. A spindle is axially slidable in and rotatably driven by the sleeve. A linear drive, non-rotating ball screw connected to the upper end of the spindle is driven axially by a powered ball nut to advance and retract the spindle in the sleeve. A coupling plug fixed at the bottom of the spindle connects to any one of various toolholders in a turret. Axial movement of the spindle by the ball nut automatically couples and decouples the spindle to and from the toolholder. Gaseous or liquid fluid supply down through the spindle is provided. In one embodiment, an air motor is mounted inside the spindle and coupled to a second spindle in the changeable toolholder to supplement the main spindle drive and drive the toolholder spindle for driving a cutting tool at a much higher rotational rate than is possible with the main spindle alone.

Classifications:

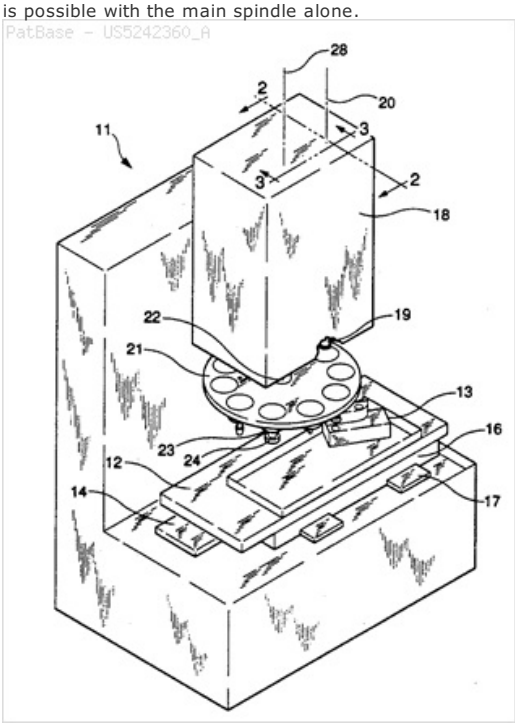
International (IPC 8-9): B23B19/02 B23B31/00 B23B31/02 B23B31/10 B23B31/107 B23Q1/00 B23Q1/70 B23Q11/04 B23Q11/10 B23Q3/157 B23Q5/40 B25J15/08 (Advanced/Invention);
B23B31/00 B23B31/02 B23Q11/10 B25J15/08 (Advanced/Non-invention);
B23B19/00 B23B31/00 B23B31/02 B23B31/10 B23Q1/00 B23Q11/04 B23Q11/10 B23Q3/157 B23Q5/22 B25J15/08 (Core/Invention)

International (IPC 1-7): B23B19/02 B23B31/107 B23B47/04 B23C1/06 B23Q1/00 B23Q1/25 B23Q11/04 B23Q11/10 B23Q3/157 B23Q5/40 B25J15/08

CPC: Y10T408/94 Y10T409/309352 Y10T483/1748 B23Q1/0027 B23Q1/70 B23Q3/15706 B23Q5/402 B23Q11/04

European: B23Q1/00B2B B23Q1/70 B23Q11/04 B23Q3/157B B23Q5/40B

US: 408/238 409/231 483/36



Family:

Publication number	Publication date	Application number	Application date
AU199347800 A1	19940214	AU19930047800	19930722
DE69323748 D1	19990408	DE19936023748	19930722
DE69323748 T2	19990701	DE19936023748T	19930722
EP0651686 A1	19950510	EP19930918303	19930722
EP0651686 A4	19950809	EP19930918303	19930722
EP0651686 B1	19990303	EP19930918303	19930722
JP8501986 T2	19960305	JP19940504679T	19930722
US5242360 A	19930907	US19920920125	19920724
WO9402283 A1	19940203	WO1993US06881	19930722

Priority:

US19920920125 19920724 WO1993US06881 19930722

Probable Assignee: HURCO COMPANIES INC

Assignee(s): (std): HURCO CO INC ; ACROLOC INC

Assignee(s): ACROLOC INC A CORP OF INDIANA ; BANK ONE INDIANA NA ; HURCO COMPANIES INC ; HURCO COMPANIES INC INDIANAPOLIS IND US ; NBD BANK NA

Inventor(s): (std): BAYER JACK ; BAYER JACK L

Inventor(s): BAYER JACK L PHOENIX AZ 85016 US

Designated states: AT AU BB BE BF BG BJ BR BY CA CF CG CH CI CM CZ DE DK ES FI FR GA GB GN GR HU IE IT JP KP KR KZ LK LU MC MG ML MN MR MW NE NL NO NZ PL PT RO RU SD SE SK SN TD TG UA VN

510) Family number: 31431916 (US2005056985A)

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Title: FIXTURE

Abstract: A fixture 3 for fixing an article to be fixed, such as a workpiece 2, to a fixture base 1 comprises a fixture body 5 detachably mountable on a mounting object, such as the fixture base 1. A linking member 4 is detachably mountable on the workpiece 2. The fixture body 5 comprises a body section 6 comprising an insertion hole 12 into which the linking member 4 is to be inserted, a rotary section 7 which is rotatably fitted onto the body section 6 so as to cover an outer peripheral portion 6b thereof, and a ball 8a protruding into the insertion hole 12 via a through hole 13 formed in the body section 6 for engagement with the linking member 4. Furthermore, a pushing portion 19 which causes the ball 8a to protrude into the insertion hole 12 when the rotary section 7 is moved in one of axial directions thereof is provided at the inner surface 7c of the rotary section 7.

Classifications:

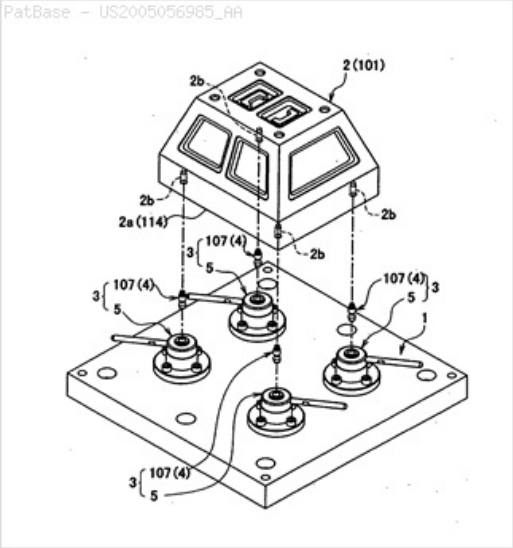
International (IPC 8-9): B23Q3/02 B23Q3/06 B27G15/00 F16B2/16 (Advanced/Invention);
B23Q3/02 B23Q3/06 B27G15/00 F16B2/02 (Core/Invention)

International (IPC 1-7): B23Q3/02 B23Q3/06 B27G15/00 F16B2/16

CPC: B23Q1/0072

European: B23Q3/06

US: 269/157 269/289R 269/309



Family:

Publication number	Publication date	Application number	Application date
JP2004322300 A2	20041118	JP20030127593	20030502
US2005056985 AA	20050317	US20040836046	20040430
US7044462 BB	20060516	US20040836046	20040430

Priority:

JP20030059140 20030305 JP20030127593 20030502

Probable Assignee: IMAO CORP KK

Assignee(s): (std)**:** IMAO CORP ; IWATA KAZUHIDE

Assignee(s): IMAO CORP KK

Inventor(s): (std)**:** IWATA KAZUHIDE

Agent(s): JORDAN AND HAMBURG LLP

511) Family number: 1306921 (US3576540A)

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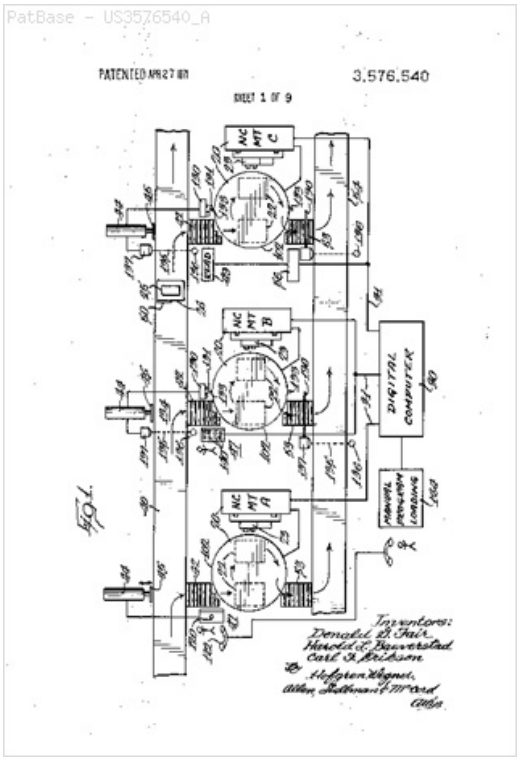
Title: PLURAL MACHINE TOOL AND PART HANDLING CONTROL SYSTEM

Abstract: 1,254,445. Machine tool details. SUNDSTRAND CORP. 18 Nov., 1968 [20 Nov., 1967], No. 54709/68. Heading B3B. [Also in Division G3] A control system for a plurality of machine tools capable of selectively performing machine operations on various parts delivered thereto comprises a central source of machining programmes responsive to the process number of a part for connecting the identified programme over a data link to the machine tool at which the part is located. In, as shown, numerically controlled machine tools 20, each of which is a general purpose multi-axis machine tool capable of boring, milling and drilling, are supplied with parts 25 on pallets 26 by a conveyer 54. The machine tools are controlled by an on-line, time-shared digital computer 30. The parts 25 are randomly supplied to a machine tool by a pneumatic or hydraulic, ram 44 transferring a pallet to rollers 42. At station A, the ram is actuated from an operator's console 42 and process indicia, on a card 50 attached to the pallet, are read by an operative to an operative at a manual control 124 who loads the appropriate machine tool programme into the computer. At station B the ram is actuated in response to the interruption of a light-beam 135 by the pallet when a worktable is empty as indicated by a switch 130. The process indicia are directly set into the computer by an operative depressing push-buttons 140. At station C the process indicia are read photoelectrically and directly set into the computer, which, in turn, initiates, after completion of the machining programme, the dumping of the card 50 and its replacement with a blank card on which a write unit 56 prints the indicia of a new process.

Classifications:

International (IPC 8-9): B23Q3/157 B23Q41/00 G05B19/418 G07C3/00 (Advanced/Invention);
B23Q3/157 B23Q41/00 G05B19/418 G07C3/00 (Core/Invention)
International (IPC 1-7): B23Q21/00 B23Q3/157 B23Q39/00 B23Q41/02 B23Q41/06 B23Q5/54 B65G43/00 B65G47/48 G05B15/00 G05B15/02 G05B19/00 G05B19/18 G06F15/46 G06F9/00 G06K17/00
CPC: Y10T29/5124 Y10T408/08 Y10T408/52 Y10T483/165 Y02P90/12 Y02P90/14 Y02P90/205 Y02P90/28 G05B19/41835 B23Q41/00 Y02P90/10 G07C3/00 Y02P90/04 G05B19/4187 G05B19/4183 G05B19/4184 G05B2219/31266 G05B2219/31268 G05B2219/31432 G05B2219/32046 G05B2219/36523 G05B2219/45213 G05B2219/49302 Y02P90/08
European: B23Q41/00 G05B19/418D G05B19/418E G05B19/418F G05B19/418P1 G07C3/00 S05B219/31266 S05B219/31268 S05B219/31432 S05B219/32046 S05B219/36523 S05B219/45213 S05B219/49302
US: 198/341.03 198/346.1 29/563 318/562 340/172.5 408/3 408/69 483/15 700/179 700/9

PatBase – US3576540_A



Family:

Publication number	Publication date	Application number	Application date
CA941493 A1	19740205	CA19720136841	19720310
CA941493 A2	19740205	CA19720136841	19720310
DE1809745 A1	19690626	DE19681809745	19681119
DE1809745 B2	19800604	DE19681809745	19681119
DE1817913 A1	19731018	DE19681817913	19681119
DE1817913 C2	19830601	DE19681817913	19681119
DE1817914 A1	19731018	DE19681817914	19681119
DE1817914 C2	19830127	DE19681817914	19681119
FR1592016 A	19700504	FR19680174170	19681118
GB1254445 A	19711124	GB19680054709	19681118
GB1254446 A	19711124	GB19710029061	19681118
GB1254447 A	19711124	GB19710029062	19681118
GB1254988 A	19711124	GB19710029064	19681118
JP51023747 B4	19760719	JP19680083845	19681118
US3576540 A	19710427	US19670576540	19671120

Priority:

US19670684235 19671120 CA19680035495 19681118 GB19680054709 19681118
DE19681817913 19681119 DE19681817914 19681119 CA19720136841 19720310

Probable Assignee: BULLARD SUNDSTRAND INC

Assignee(s): (std)**:** SUNDSTRAND CORP ; WHITE CONSOLIDATED IND INC

Assignee(s): WHITE CONSOLIDATED IND INC CLEVELAND OHIO ; WHITE CONSOLIDATED IND INC 44111 CLEVELAND ; WHITE CONSOLIDATED IND INC CLEVELAND OHIO V ST A ; WHITE CONSOLIDATED IND INC 44111 CLEVELAND OHIO US ; FAIR DONALD G ; BAEVERSTAD HAROLD L ; BANCBOSTON FINANCIAL CO ; BANCBOSTON FINANCIAL CO 100 FEDERAL STREET BOSTON ; BANCBOSTON FINANCIAL CO 100 FEDERAL STREET BOSTON MA 02110 A MA BUSINESS TRUST ; BANCBOSTON FINANCIAL CO A MA BUSINESS TRUST ; BULLARD IND ; BULLARD IND INC ; BULLARD SUNDSTRAND INC ; DEVLIEG BULLARD INC ; ERIKSON CARL F

Inventor(s): (std)**:** L BAEVERSTAD HAROLD ; G FAIR DONALD ; FAIR DONALD G ; ERIKSON CARL F ; BAEVERSTAD HAROLD L ; F ERIKSON CARL

Inventor(s): ERIKSON CARL F BELVIDERE ; BAEVERSTAD HAROLD L ROCKFORD ; FAIR DONALD G BELVIDERE ILL US ; ERIKSON CARL F BELVIDERE ILL US ; BAEVERSTAD HAROLD L ROCKFORD ILL US ; FAIR DONALD G BELVIDERE ; CARL F ERIKSON ; DONALD G FAIR ; HAROLD L BAEVERSTAD

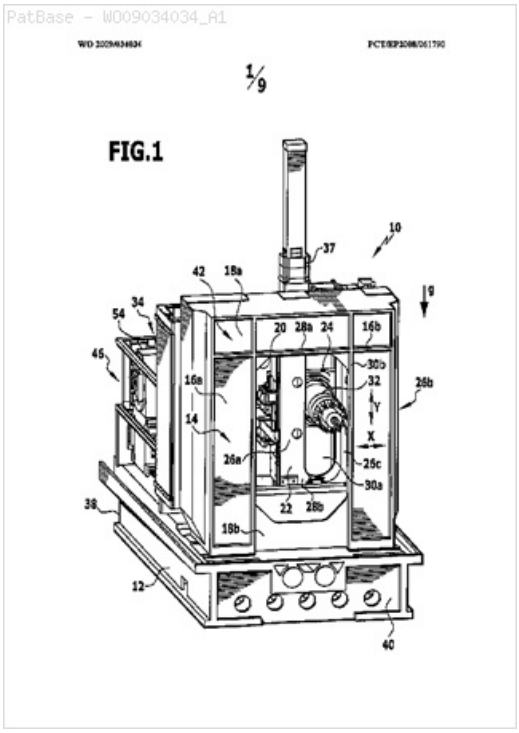
512) Family number: 42997927 (WO09034034A1)

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Title: MACHINE TOOL COMPRISING MOVABLE WORKPIECE SLIDES

Abstract: The invention relates to a machine tool which comprises a machine frame, at least one workpiece support that is movably held on the machine frame, a working room, a first workpiece slide that can be displaced relative to the machine frame on a first guide device, a second workpiece slide that can be displaced relative to the machine frame on a second guide device, the working room being located between the first guide device and the second guide device, and a connecting device via which the first workpiece slide and the second workpiece slide can be interconnected.

Classifications:
International (IPC 8-9): B23Q1/26 B23Q1/48 B23Q1/54 B23Q39/02 B23Q39/04 (Advanced/Invention);
B23Q1/25 B23Q1/26 B23Q39/00 (Core/Invention)
CPC: B23Q2039/002 B23Q1/5412 B23Q1/4852 B23Q39/02 B23Q39/04
European: B23Q1/48E B23Q1/54A1 B23Q39/02 B23Q39/04



Family:

Publication number	Publication date	Application number	Application date
AT507925 E	20110515	AT20080803759T	20080905
DE102007044282 A1	20090312	DE200710044282	20070907
DE502008003443 D1	20110616	DE200850003443T	20080905
EP2185314 A1	20100519	EP20080803759	20080905
EP2185314 B1	20110504	EP20080803759	20080905
WO09034034 A1	20090319	WO2008EP61790	20080905

Priority:

DE200710044282 20070907 WO2008EP61790 20080905

Probable Assignee: MAG IAS GMBH

Assignee(s): (std)**:** BAYHA THOMAS ; EX CELL O GMBH ; HORN WOLFGANG ; MAG IAS GMBH ; MAG POWERTRAIN GMBH ; MEIDAR MOSHE ISRAEL ; WINCKLER FRIEDRICH

Inventor(s): (std)**:** BAYHA THOMAS ; HORN WOLFGANG ; MEIDAR MOSHE ISRAEL ; WINCKLER FRIEDRICH

Agent(s): HOEGER STELLRECHT AND PARTNER PATENTANWAELTE

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

513) Family number: 56265929 (US2016167182A)

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Title: MACHINE TOOL

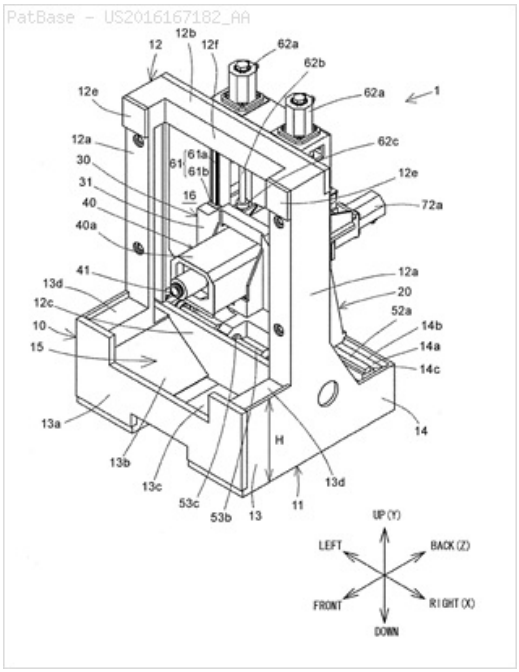
Abstract: A machine tool includes a base column having a base portion and a column portion provided on the base portion, a first saddle supported behind the column portion and movable in a left-right direction, a second saddle supported on the first saddle and movable in a vertical direction, a spindle unit supported on the second saddle and movable in a front-back direction, a pair of X-axis guide mechanisms for guiding movements of the first saddle in the left-right direction, a pair of Y-axis guide mechanisms for guiding movements of the second saddle in the vertical direction, and a pair of Z-axis guide mechanisms for guiding movements of the spindle unit in the front-back direction.

Classifications:

International (IPC 8-9): B23C1/00 B23C1/027 B23Q1/01 B23Q1/56 B23Q1/62 B23Q1/70 B23Q11/00 B23Q11/08 B23Q3/157 B23Q5/22 (Advanced/Invention)

CPC: B23Q3/15706 B23Q3/15766 Y10T483/1795 B23Q3/157 B23Q1/015 B23Q1/017 B23Q1/626 B23Q11/0067 B23C1/002 B23C1/027 B23Q1/012 B23Q11/085 Y10T408/91 Y10T409/30392 Y10T409/304088 Y10T409/308288 Y10T409/309576 Y10T409/307112 Y02P70/171

US: 409/137 409/235



Family:

Publication number	Publication date	Application number	Application date
CN104039499 A	20140910	CN201380001787	20130927
CN104039499 B	20161005	CN201380001787	20130927
EP2921253 A1	20150923	EP20130830166	20130927
EP2921253 A4	20161102	EP20130830166	20130927
JP2014061210 A1	20160905	JP20130551446T	20130927
JP6156877 B1	20170705	JP20130551446T	20130927
KR101526251 B1	20150609	KR20137029966	20130927
KR20140076529 A	20140620	KR20137029966	20130927
US2016167182 AA	20160616	US20130127097	20130927
US9492902 BB	20161115	US20130127097	20130927
WO14061210 A1	20140424	WO2013JP05760	20130927

Priority:

JP20120229347 20121016 WO2013JP05760 20130927

Probable Assignee: HORKOS CORP

Assignee(s): (std): HORKOS CORP

Inventor(s): (std): IKEDA KUNIHIRO ; SEO YOSHINORI

Agent(s): KRAMER BARSKE SCHMIDTCHEN PATENTANWAELTE PARTG MBB; OKUMURA HIDEYUKI; OSHA LIANG LLP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

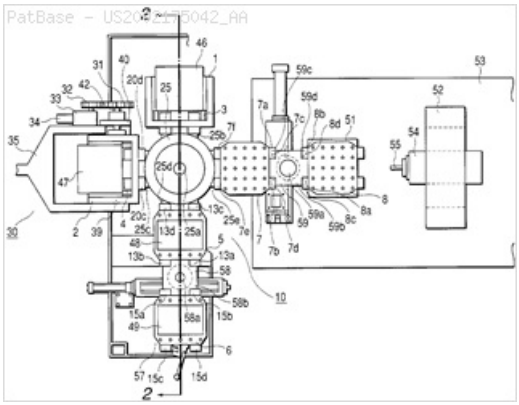
514) Family number: 30993929 (US2002175042A)

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Title: L-SHAPED PALLET BASE AND PALLET EXCHANGING APPARATUS

Abstract: In a pallet used in a conventional pallet exchanging apparatus, the side of a workpiece can be machined, but the upper surface of the workpiece cannot be machined. In this case, to machine the upper surface of the workpiece, the workpiece must be removed and great labor becomes necessary. This is solved by an L-shaped pallet base characterized in that provision is made of a first plate-like portion having female side clamps, and a second plate-like portion perpendicular to the first plate-like portion and having male side clamps. And the pallet is fixable by the female side clamps of the pallet being engaged with the male side clamps of the L-shaped pallet base, and the L-shaped pallet base becomes fixable onto a machining table by the female side clamps of the L-shaped pallet base and male side clamps disposed on the surface of the machining table being engaged with each other.

Classifications:
International (IPC 8-9): B23Q7/00 B23Q7/14 (Advanced/Invention);
B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q7/00 B65G47/80
CPC: Y10T29/5196 B23Q7/1431
European: B23Q7/14K2
US: 198/346.1 29/33P



Family:

Publication number	Publication date	Application number	Application date
DE10222391 A1	20021121	DE20021022391	20020521
JP2002346872 A2	20021204	JP20010149913	20010518
US2002175042 AA	20021128	US20020146142	20020516

Priority:

JP20010149913 20010518

Probable Assignee: ASUKA TRADING CO LTD

Assignee(s): (std)**:** ASKA TRADING KK ; ASUKA TRADING CO ; NISHII KOJI

Assignee(s): ASUKA TRADING CO LTD

Inventor(s): (std)**:** KOJI NISHII ; NISHII KOJI

Agent(s): MOTOMIYA TERUHISA; FUJINO IKUO; TAKANASHI NORIMICHI; UBUKATA KAZUO; KATO NOBUAKI; TAKAHASHI SEIICHIRO; OCHI TAKAO; USUI SHINICHI; OKABE MASAO; YOSHIZAWA HIROSHI; ASAHI NOBUMITSU

515) Family number: 52202930 (WO13011815A1)

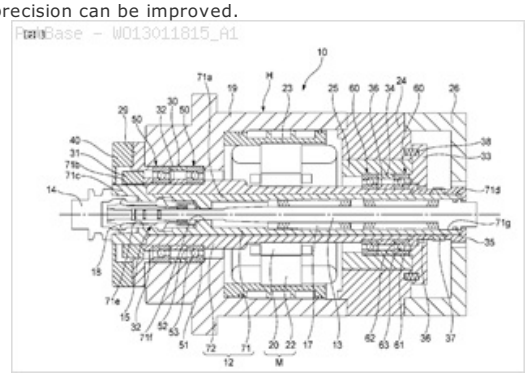
Title: MAIN SHAFT APPARATUS

Abstract: A main shaft apparatus (10) of a built-in motor system, wherein a rotary shaft (12) is provided with: a first cylindrical component (71) made of metal material; and a second cylindrical component (72) made of carbon fibre composite material, which is positioned on the outer peripheral surface of the first cylindrical component (71) and into the outer peripheral surface of which a rotor (20) fits. By virtue of this, the temperature increase of the rotary shaft and a bearing due to the heat produced by the rotor can be controlled and processing precision can be improved.

Classifications:

International (IPC 8-9): B23B19/02 B23Q11/12 B23Q3/14 F16C11/04 F16C19/16 F16C19/52 F16C19/54 F16C25/06 F16C25/08 F16C35/063 F16C35/073 F16C35/12 F16C37/00 (Advanced/Invention)

CPC: B23Q1/70 B23Q11/127



Family:

Publication number	Publication date	Application number	Application date
CN103003014 A	20130327	CN201280000782	20120628
CN103003014 B	20141210	CN201280000782	20120628
DE602012021297 D1	20160915	DE201260021297T	20120628
DE602012051656 D1	20181025	DE201260051656T	20120628
EP2735392 A1	20140528	EP20120814297	20120628
EP2735392 A4	20150318	EP20120814297	20120628
EP2735392 B1	20160803	EP20120814297	20120628
EP3098004 A1	20161130	EP20160174038	20120628
EP3098004 B1	20190508	EP20160174038	20120628
EP3100805 A1	20161207	EP20160174040	20120628
EP3100805 B1	20180926	EP20160174040	20120628
JP2012187702 A2	20121004	JP20110160974	20110722
JP2013022674 A2	20130204	JP20110159093	20110720
JP2013022675 A2	20130204	JP20110159094	20110720
JP2013022698 A2	20130204	JP20110160973	20110722
JP2013022699 A2	20130204	JP20110160975	20110722
JP2013022700 A2	20130204	JP20110160976	20110722
JP2013082018 A2	20130509	JP20110222158	20111006
JP2015127097 A2	20150709	JP20150078661	20150407
JP2016135541 A2	20160728	JP20160078389	20160408

JP2016163932 A2	20160908	JP20160078390	20160408
JP5712838 B2	20150507	JP20110160973	20110722
JP5712839 B2	20150507	JP20110160974	20110722
JP5712840 B2	20150507	JP20110160975	20110722
JP5742534 B2	20150701	JP20110159093	20110720
JP5811657 B2	20151111	JP20110160976	20110722
JP5915068 B2	20160511	JP20110222158	20111006
JP5943116 B2	20160629	JP20150078661	20150407
JP6210123 B2	20171011	JP20160078389	20160408
JP6210124 B2	20171011	JP20160078390	20160408
TW201311390 A	20130316	TW20120126388	20120720
TWI503201 B	20151011	TW20120126388	20120720
WO13011815 A1	20130124	WO2012JP66482	20120628

Priority:

JP20110038053 20110224	JP20110159093 20110720	JP20110159094 20110720
JP20110160973 20110722	JP20110160974 20110722	JP20110160975 20110722
JP20110160976 20110722	JP20150078661 20110722	JP20110222158 20111006
EP20120814297 20120628	EP20160174040 20120628	WO2012JP66482 20120628
JP20150078661 20150407	JP20160078389 20160408	JP20160078390 20160408

Probable Assignee: NSK LTD

Assignee(s): (std): INAGAKI YOSHIFUMI ; IWASAKI OSAMU ; NSK LTD ; OGURI SHOICHIRO ; YONEYAMA HIROKI ; KATSUNO YOSHIAKI

Inventor(s): (std): OGURI SHOICHIRO ; YONEYAMA HIROKI ; KATSUNO YOSHIAKI ; IWASAKI OSAMU ; INAGAKI YOSHIFUMI

Inventor(s): IWASAKI OSAMU MAEBASHI SHI ; OGURI SHOICHIRO MAEBASHI SHI ; YONEYAMA HIROKI MAEBASHI SHI ; INAGAKI YOSHIFUMI MAEBASHI SHI ; KATSUNO YOSHIAKI FUJISAWA SHI

Agent(s): GRUENECKER PATENT U RECHTSANWAELTE PARTG MBB; GRUENECKER PATENT U RECHTSANWAELTE PARTG MBB; EIKOH PATENT FIRM PC; HAMADA YURIKO ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

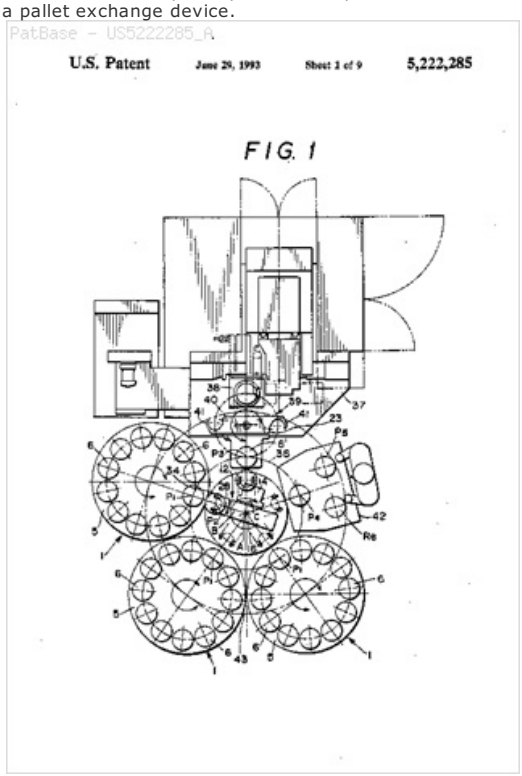
516) Family number: 3046933 (US5222285A)

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Title: PALLET STORAGE DEVICE AND A PALLET EXCHANGE DEVICE FOR A MACHINE TOOL, AND A LATHE WITH AN AUTOMATICALLY REMOVABLE PALLET

Abstract: A plurality of pallets for exchanging and fixing workpieces are placed on a plurality of respective tables supported vertically with spacing between one another, and the tables are rotated to transfer a required pallet to the predetermined exchange position to perform an exchange operation of the pallet by a pallet exchange device.

Classifications:
International (IPC 8-9): B23B15/00 B23B31/107 B23B31/117 B23Q3/12 B23Q3/155 B23Q7/00 B23Q7/10 B23Q7/14 (Advanced/Invention);
B23B15/00 B23B31/10 B23Q3/00 B23Q3/155 B23Q7/00 B23Q7/10 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23B15/00 B23B31/107 B23Q3/12 B23Q41/02 B23Q7/00 B23Q7/10
CPC: Y10T29/5124 Y10T29/5196 Y10T82/2514 B23Q7/1494 B23Q3/15526 B23Q7/10
European: B23Q3/155D2 B23Q7/10 B23Q7/14K8
US: 198/346.1 29/33P 29/563 414/223 414/223.01 414/331 414/331.01 82/124



Family:

Publication number	Publication date	Application number	Application date
DE69127513 D1	19971009	DE19916027513	19910617
DE69127513 T2	19980326	DE19916027513T	19910617
EP0462533 A2	19911227	EP19910109867	19910617
EP0462533 A3	19921202	EP19910109867	19910617
EP0462533 B1	19970903	EP19910109867	19910617
JP4053601 A2	19920221	JP19900161517	19900620

US5222285 A	19930629	US19910716029	19910614

Priority:

JP19900161517 19900620

Probable Assignee: MATSURA KIKAI SEISAKUSHO KK

Assignee(s): (std)**:** MATSURA KIKAI SEISAKUSHIYO KK ; MATSURA KIKAI SEISAKUSHO KK ; MATSURA MACHINERY CORP

Assignee(s): MATSUURA KIKAI SEISAKUSHIYO KK ; MATSUURA MACHINERY A OF JAPAN CORP ; MATSUURA MACHINERY CORP ; MATSUURA MACHINERY CORP FUKUI JP

Inventor(s): (std)**:** HORIKAWA YOSHIHARU ; HORIKAWA KICHIJI

Inventor(s): HORIKAWA YOSHIHARU NYU GUN FUKUI KEN JP

Designated states: CH DE FR GB IT LI SE

517) Family number: 1131933 (US3875635A)

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Title: METHOD OF FORMING GLOBOID WORM THREAD AND WORM WHEEL TEETH

Abstract: A method of forming globoid worm thread and worm wheel teeth by making a worm blank into globoidal form and then positioning same with its axis of rotation inclined in a vertical plane to an angle equal to the worm helix angle at the pitch point. Prior to cutting the worm thread, the center-to-center distance is increased according to a formula provided herein. The worm thread is finished by means of a grinding wheel, the face of which is orientated identically with the working edge of the cutting tool. The worm-wheel is formed by means of a hob identical with the preliminarily cut worm, and the worm gear produced by this method features initial point contact which remains correct in the event of mounting inaccuracy. 9 Claims, 4 Drawing Figures

Classifications:

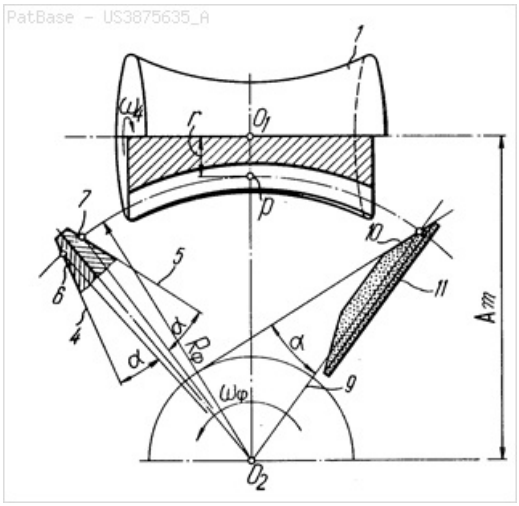
International (IPC 8-9): B23F13/06 B23F13/08 F16H55/22 (Advanced/Invention); B23F13/00 F16H55/02 (Core/Invention)

International (IPC 1-7): B21H5/00 B23F13/06 B23P15/14 F16H55/22

CPC: Y10S451/90 B23F13/08 B23F13/06 F16H55/22 Y10T29/49469 Y10T409/107473

European: B23F13/06 B23F13/08 F16H55/22

US: 29/159.2 29/893.31 291/592 40/587 409/48 451/47 451/900



Family:

Publication number	Publication date	Application number	Application date
FR2269397 A1	19751128	FR19740015034	19740430
FR2269397 B1	19770304	FR19740015034	19740430
US3875635 A	19750408	US19740461254	19740415

Priority:

US19740461254 19740415 FR19740015034 19740430

Probable Assignee: LE METALLICHESKY Z IM XXII SIE

Assignee(s): (std)**:** LE METALLICHESKY Z ; LE METALLICHESKY Z IM XXII SIE

Assignee(s): LENINGRADSKY METALLICHESKY ZAVOD ; LENINGRADSKY METALLICHESKY ZAVOD IMENI XXII SIEZDA KPSS ; LENINGRADSKY METALLICHESKY ZAVOD SU

Inventor(s): (std)**:** BOGATSKY MIKHAIL MIKHAILOVICH ; PAVLOV ARSENY MIKHAILOVICH

518) Family number: 67146937 (US2019111534A)

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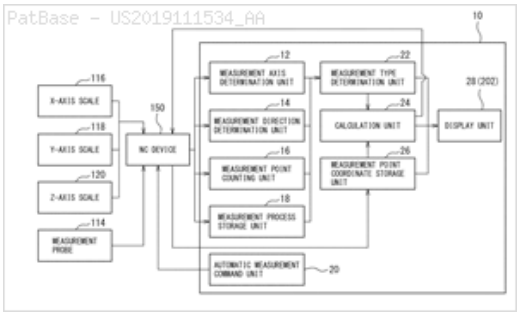
Title: INSTRUMENT FOR MEASURING WORKPIECE, AND MACHINE TOOL

Abstract: The present invention is configured such that: when an operator moves a spindle and a table relative to each other using a jog-feed means and when a measurement probe comes into contact with a workpiece fixed on the table, the coordinates of each feed axis are stored; the type of measurement performed by the operator is identified on the basis of the information concerning the feed axis used for moving said measurement probe, the moving direction of the feed axis, the number of times the measurement probe has come into contact with the workpiece, and the number of the jog-feed operation being currently performed by the operator; and the workpiece is measured on the basis of the stored coordinates of the respective feed axes.

Classifications:

International (IPC 8-9): B23Q17/20 G01B5/008 G01B5/012 G05B19/401 (Advanced/Invention)

CPC: G01B5/008 G05B19/401 G01B5/012 B23Q17/20



Family:

Publication number	Publication date	Application number	Application date
CN108698185 A	20181023	CN201680082257	20160331
EP3437795 A1	20190206	EP20160896944	20160331
JP2017168727 A1	20180927	JP20180508318T	20160331
US2019111534 AA	20190418	US20160090108	20160331
WO17168727 A1	20171005	WO2016JP60826	20160331

Priority:

WO2016JP60826 20160331

Probable Assignee: MAKINO MILLING MACHINE

Assignee(s): (std)**:** MAKINO MILLING MACH CO LTD ; MAKINO MILLING MACHINE

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std)**:** KASAI KOJI ; ISHII KAZUNARI ; STANCU ALEXANDRA FLORENTINA ; KAWAI RIE

Agent(s): MCWILLIAMS DAVID JOHN; AOKI ATSUSHI; AOKI ATSUSHI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

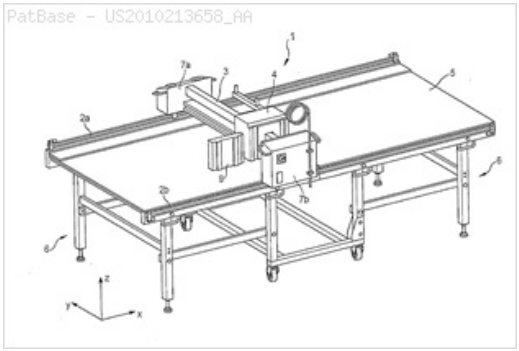
519) Family number: 46559937 (US2010213658A)

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Title: TOOL UNIT, WORK TABLE

Abstract: A work-table for planar work pieces has a supporting plate for the work piece, which extends in two dimensions, a tool carrier for fixing at least one tool unit, the tool carrier being movable along the two dimensions of the supporting plate above the same, and a stand holding the supporting plate. The supporting plate has two or more sub-plates, at least one of which being foldable towards the other one.

Classifications:
International (IPC 8-9)**:** B23Q3/00 B25H1/04 (Advanced/Invention)
CPC: B25H1/04 B25H1/10
European: B25H1/04 B25H1/10
US: 269/289R



Family:

Publication number	Publication date	Application number	Application date
DE102009009267 A1	20100819	DE200910009267	20090217
US2010213658 AA	20100826	US20100705578	20100213

Priority:

DE200910009267 20090217

Probable Assignee: ESMO AG

Assignee(s): (std)**:** ESMO AG

Inventor(s): (std)**:** HUBER WERNER

Agent(s): ZIEGLER IP LAW GROUP LLC

520) Family number: 28645937 (US2003126942A)

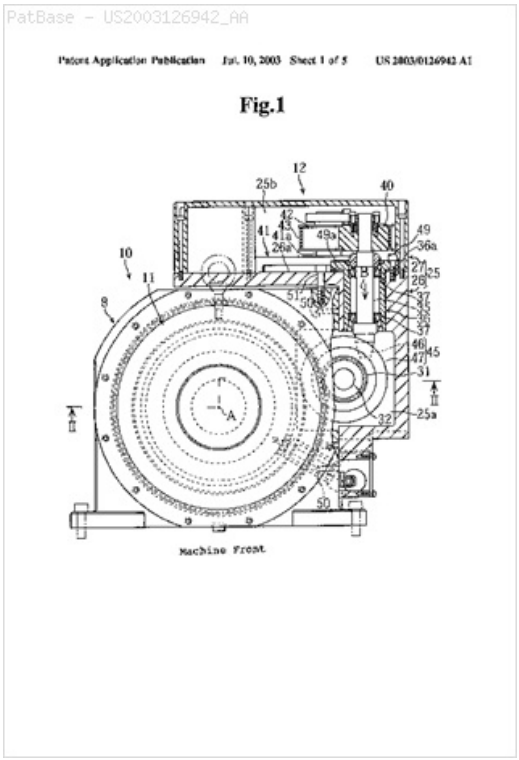
© PatBase

Title: ROTATIONAL INDEXING DEVICE OF MACHINE TOOL

Abstract: A machine tool rotational indexing device is provided that is capable of increasing transmission efficiency by preventing slip in transmitting a turning force of a gear mechanism and coping with high-speed rotational indexing with restrained heat generation. The device has a swivel slide loaded with a workpiece or a tool and is rotationally and indexably mounted in a specified rotational angle position on a fixed base. A large spur gear is provided in an outer peripheral portion

of the swivel slide. A small spur gear meshed with the large spur gear is provided on an intermediate shaft arranged parallel to a rotational axis A of the swivel slide. A driving shaft arranged perpendicular to the rotational axis A and the intermediate shaft are connected to each other with a hypoid gear. The position of the large and small spur gears and the hypoid gear is adjustable to reduce backlash.

Classifications:
International (IPC 8-9): B23Q1/52 B23Q16/02 B23Q5/56 F16H1/06 F16H1/14 F16H57/023 F16H57/12 (Advanced/Invention)
International (IPC 1-7): B23Q16/02 B23Q5/56 F16H1/06 F16H1/14 F16H55/18 F16H57/02 F16H57/12
CPC: Y10T74/14 Y10T74/19623 Y10T74/19688 B23Q16/025 B23Q1/52 B23Q5/56
European: B23Q1/52 B23Q16/02C3 B23Q5/56
US: 74/409 74/409S 74/423 74/423S 74/813 74/813.00RP 74/813R



Family:

Publication number	Publication date	Application number	Application date
EP1323493 A2	20030702	EP20020028647	20021220
EP1323493 A3	20050706	EP20020028647	20021220
JP2003194156 A2	20030709	JP20010397419	20011227
US2003126942 AA	20030710	US20020329767	20021227

Priority:
JP20010397419 20011227

Probable Assignee: MORI SEIKI CO LTD
Assignee(s): (std)**:** MORI SEIKI SEISAKUSHO KK
Assignee(s): OKUYAMA YOSHINOBU ; WATANABE MICHIO ; KOMATSU SATOSHI ; MORI SEIKI CO ; MORI SEIKI CO LTD
Inventor(s): (std)**:** KOMATSU SATOSHI ; OKUYAMA YOSHINOBU ; WATANABE MICHIO
Designated states: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SI SK TR

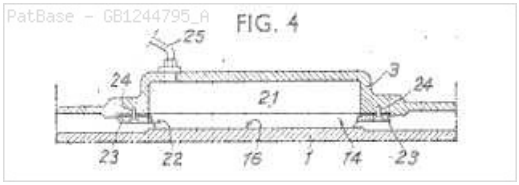
521) Family number: 324938 (GB1244795A)

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Title: IMPROVEMENTS IN OR RELATING TO MACHINES HAVING A MOVABLE MEMBER MOUNTED ON GUIDE BARS

Abstract: 1,244,795. Fluid bearings. P. LOUSTALET. 10 Feb., 1969 [12 July, 1968], No. 7140/69. Heading F2A. [Also in Division B3] Air cushions for supporting machine parts 3 on a base 1 (see Division B3) are provided by cavities 21 on the underside of the port 3 connected to a source of compressed air. A flexible seal 22 surrounds the cavity and maintains a sealing contact with the surface 16 of the base.

Classifications:
International (IPC 8-9): B23Q1/38 F16C29/02 (Advanced/Invention); B23Q1/26 F16C29/00 (Core/Invention)
International (IPC 1-7): B23Q1/02 F16C29/02
CPC: F16C2322/39 F16C32/06 B23Q1/38 F16C29/025
European: B23Q1/38 F16C29/02H F16C32/06



Family:

Publication number	Publication date	Application number	Application date
CH478628 A	19690930	CH19690002511	19690219
DE1912886 A1	19700326	DE19691912886	19690313
DE1912886 B2	19780126	DE19691912886	19690313
FR1589452 A	19700331		19680712
GB1244795 A	19710902	GB19690007140	19690210

Priority:
FR19680000721 19680712 FR19685000721 19680712 FR19686500721 19680712

Probable Assignee: LOUSTALET PIERRE
Assignee(s): (std)**:** LOUSTALET PIERRE
Assignee(s): PIERRE LOUSTALET

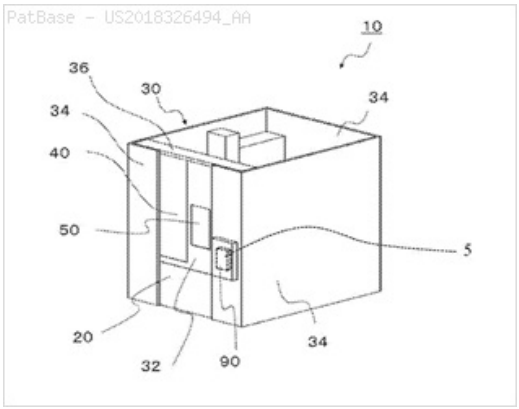
Inventor(s): (std): LOUSTALET PIERRE ; PIERRE LOUSTALET

522) Family number: 65368940 (US2018326494A)

Title: COMPOSITE PROCESSING MACHINE, MACHINING TOOL, AND COMPOSITE PROCESSING METHOD

Abstract: A machining tool includes a light irradiator, a cover, and a light blocking filter. The light irradiator is to irradiate a workpiece to process the workpiece. The cover covers the light irradiator and the workpiece in the cover. The light blocking filter is configured to change light transmissivity of the light blocking filter in accordance with light from an inside of the cover, which the light blocking filter receives.

Classifications:
International (IPC 8-9): B22F3/105 B22F3/16 B22F3/24 B23K26/21 B23K26/34 B23K9/32 B23P23/04 B23Q11/08 B33Y10/00 B33Y30/00 B33Y50/02 (Advanced/Invention)
CPC: Y02P10/295 B22F3/162 B23P23/04 B23Q11/0891 B22F3/24 B22F2003/247 B33Y50/02 B33Y10/00 B22F3/1055 B33Y30/00



Family:

Publication number	Publication date	Application number	Application date
CN108472776 A	20180831	CN201680079490	20161104
EP3342533 A1	20180704	EP20160910789	20161104
EP3342533 A4	20181212	EP20160910789	20161104
JP2018083786 A1	20181108	JP20170504830T	20161104
JP6100449 B1	20170322	JP20170504830T	20161104
US2018326494 AA	20181115	US20180040540	20180720
WO18083786 A1	20180511	WO2016JP82884	20161104

Priority:
JP20170504830T 20161104 WO2016JP82884 20161104 US20180040540 20180720

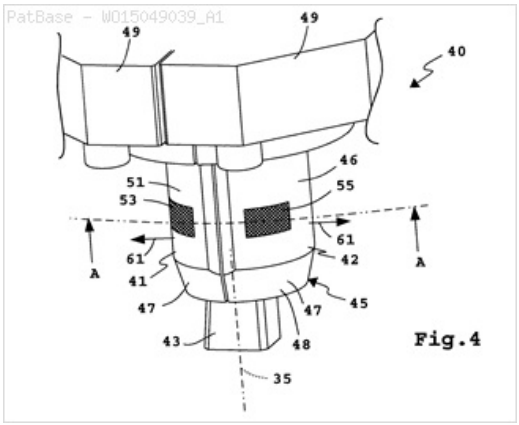
Probable Assignee: YAMAZAKI MAZAK CORP
Assignee(s): (std): YAMAZAKI MAZAK CORP
Inventor(s): (std): UEMURA KAZUKI ; OKABE NAOKAZU ; MATSUBARA EIJI ; KAI SHOYA
Agent(s): TBK; PATENT CORPORATE BODY DAI ICHI KOKUSAI TOKKYO JIMUSHO
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

523) Family number: 58859944 (WO15049039A1)

Title: RUPTURE-SEPARATING DEVICE

Abstract: The invention relates to a rupture-separating device with a spreading element arrangement (45), which comprises a first and at least one second spreading element (41, 42), which are formed such that they can be moved by means of an actuating body (43) between a positioning position for insertion into a bearing opening (89) of a motor component (80) and a spreading position for the abutment of abutting surfaces (52-55) of the outer circumference (46) thereof against an inner circumference (94) of the bearing opening (89), in order to form on the motor component (80) rupture-separating surfaces (90) that are made to extend away from the bearing opening (89) in the radial direction. According to the invention, the abutting surfaces (52 to 55) of the spreading element arrangement (45) comprise abutting surfaces (52 to 55) that can be arranged on both sides of a predetermined breaking location (95) of the motor component (80), wherein these abutting surfaces (52 to 55) extend around the predetermined breaking location (95) in the range of abutting angles (57) of altogether 35 degrees to 120 degrees and respectively abut with surface-area contact on the inner circumference (94) of the bearing opening (89), and wherein there are altogether at least four raised abutting surfaces (52 to 55) of the spreading element arrangement (45) for abutment on the bearing opening (89).

Classifications:
International (IPC 8-9): B23D31/00 B23P13/00 B26F3/02 F16C7/02 (Advanced/Invention)
CPC: B23D31/003



Family:

Publication number	Publication date	Application number	Application date
DE102013016352 A1	20150402	DE201310016352	20131001
DE102013016352 B4	20160728	DE201310016352	20131001
EP3052262 A1	20160810	EP20140777265	20140926
JP2016539018 T2	20161215	JP20160546151T	20140926
WO15049039 A1	20150409	WO2014EP02608	20140926

Priority:

DE201310016352 20131001 WO2014EP02608 20140926

Probable Assignee: KESSLER MASCHF KG

Assignee(s): (std): ALFING KESSLER SONDERMASCHINEN GMBH ; KESSLER MASCHF KG

Inventor(s): (std): BELLAN ARMIN

Agent(s): PATENTANWAELTE BREGENZER U REULE PARTNERSCHAFTSGESELLSCHAFT MBB; KOCHER MARK

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

524) Family number: 31327946 (US2004221696A)

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Title: NON-ROTARY CUTTING TOOL AND PROCESS OF MACHINING SCROLL MEMBER BY USING THE SAME

Abstract: A non-rotary cutting tool which is to be moved relative to a workpiece in a predetermined direction for cutting the workpiece, with its rake face being held substantially perpendicular to the predetermined direction. The cutting tool includes (a) a generally cylindrical shank portion, and (b) a generally semi-cylindrical body portion which has an outer circumferential surface constituted by the rake face and a semi-cylindrical surface. The semi-cylindrical body portion has a cutting edge which is defined by an edge of the rake face and which is covered with a diamond coating. Also disclosed is a process of machining a scroll member of a scroll compressor by using this non-rotary cutting tool.

Classifications:

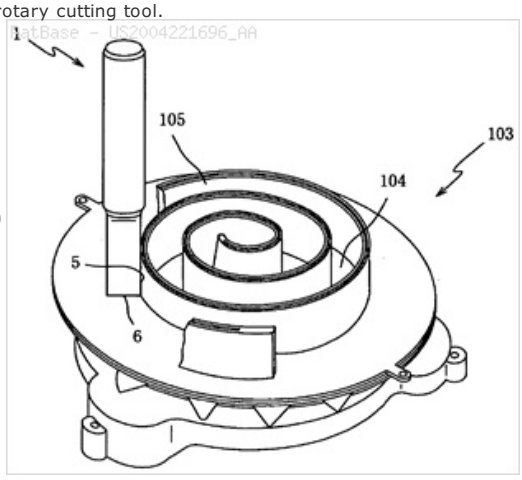
International (IPC 8-9): B23B1/02 B23B27/00 B23B27/04 B23B27/06 B23B27/14 B23B27/20 B23B3/00 B23B5/36 B23B5/46 B23C3/32 B23D11/00 B23D13/00 B23D43/04 B23D5/00 B23D61/12 B23D61/18 B23D71/00 (Advanced/Invention);
B23B27/14 (Advanced/Non-invention);
B23B27/00 B23B3/00 B23D11/00 B23D5/00 (Core/Invention)

International (IPC 1-7): B23B27/02 B23B27/04 B23B27/06 B23B27/14 B23B27/20 B23B29/00 B23B3/00 B23B5/46 B23C3/32 B23D13/00 B23D43/04 B23D61/12 B23D61/18 B23D71/00 B26D1/00 B26D7/00

CPC: Y10T29/4924 Y10T82/10 Y10T82/13 Y10T82/149 Y10T82/2512 Y10T82/2585 Y10T407/28 Y10T409/50082 B23D5/00 B23B27/06 B23B2200/201 B23B2200/245 B23B2222/28 B23B2226/31 B23B2228/04 B23D11/00 Y10T407/26 Y10T407/27 Y10T408/81 Y10T409/5041 Y10T83/896 Y10T409/305656 Y10T409/502788 Y10T409/504592 Y10T409/509348

European: B23B27/06 B23D11/00 B23D5/00 L23B200/20A L23B200/24B L23B222/28 L23B226/31 L23B228/04

US: 29/888.022 407/118 407/119 407/119S 407/12 407/120 407/120S 408/145 409/165 409/165S 409/293 409/293S 409/305 409/305S 409/313 409/313P 409/316 409/316S 409/345 409/345S 82/1.11 82/1.110P 82/1.110S 82/11.1 82/123 82/13 82/158 82/158S 82/18 83/649 83/649P



Family:

Publication number	Publication date	Application number	Application date
CN100366369 C	20080206	CN200410001387	20040107
CN1550277 A	20041201	CN200410001387	20040107
CN2715888 Y	20050810	CN200420001835U	20040108
JP2004351606 A2	20041216	JP20030312265	20030904
JP4088570 B2	20080521	JP20030312265	20030904
KR101078618 B1	20111107	KR20040000151	20040102
KR20040095611 A	20041115	KR20040000151	20040102
US2004221696 AA	20041111	US20040771812	20040204
US2005166739 AA	20050804	US20050098252	20050404
US2006133904 AA	20060622	US20050304034	20051215

US7237992 BB	20070703	US20050098252	20050404
US7293945 BB	20071113	US20050304034	20051215

Priority:

JP20030129825 20030508 JP20030312265 20030904 US20040771812 20040204
US20050098252 20050404 US20050304034 20051215

Probable Assignee: MATSUSHITA ELECTRIC INDUSTRIAL CO LTD

Assignee(s): (std): MATSUHITA ELECTRIC IND CO LTD ; MATSUSHITA ELECTRIC IND CO LTD ; MATSUHASHI HIDEAKI ; NAGAI TAMOTSU ; OSG CORP

Assignee(s): PANASONIC CORP ; MATSUHITA ELECTRIC IND CO ; MATSUSHITA ELECTRIC INDUSTRIAL CO ; MATSUSHITA ELECTRIC INDUSTRIAL CO LTD

Inventor(s): (std): HIDEAKI MATSUHASHI ; MATSUBASHI HIDEAKI ; MATSUHASHI HIDEAKI ; NAGAI TAMOTSU ; TAMOTSU NAGAI ; HIDEAKI MATSUBASHI

Agent(s): YASUO MURAMATSU MURAMATSU AND ASSOCIATES; MURAMATSU AND ASSOCIATES

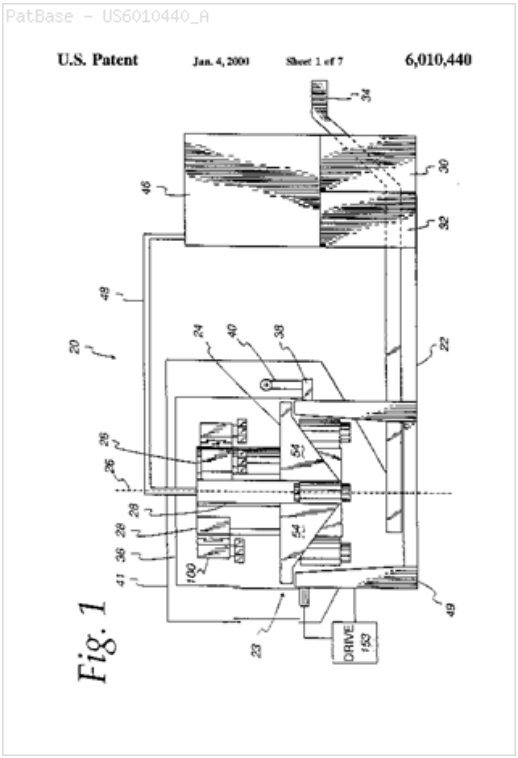
525) Family number: 11975947 (US6010440A)

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Title: AUTOMATED MACHINE TOOL INCLUDING A PLURALITY OF PROCESSING UNITS AND A SHARED TOOL STOCKER

Abstract: An automated machine tool is provided and includes a frame having a first workpiece transfer station at a first location on the frame; at least two self-contained processing units, each of the units including structure for holding the workpiece for processing and structure for performing a process on the workpiece; structure for sequentially indexing the processing units to the first workpiece transfer station for transferring workpieces to and from each of the processing units; a shared tool storing device; a first cutting tool transfer device for transferring cutting tools to and from the processing units; and a second cutting tool transfer device for transferring cutting tools between the first transfer device and the storing device.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 B23Q39/00 B23Q39/04 (Advanced/Invention);
B23Q3/155 B23Q3/157 B23Q39/00 (Core/Invention)
International (IPC 1-7): B23Q3/155 B23Q39/00
CPC: B23Q39/042 B23Q3/15513 B23Q3/15773 Y10T29/5154 Y10T29/5198 Y10T483/10 Y10T483/115 Y10T483/165 Y10T483/1719 Y10T483/175 Y10T483/1757 Y10T483/1783 Y10T483/1845
European: B23Q3/155C B23Q3/157D B23Q39/04B
US: 29/335 29/33S 29/39 483/1 483/15 483/24 483/3 483/37 483/40 483/51 483/63



Family:

Publication number	Publication date	Application number	Application date
JP11090789 A2	19990406	JP19980196802	19980626
US6010440 A	20000104	US19970922852	19970903

Priority:

US19970922852 19970903

Probable Assignee: TOSHIHARU TOMU MIYANO

Assignee(s): (std): TOSHIHARU TOMU MIYANO

Assignee(s): MIYANO MACHINERY INC ; MIYANO MACHINERY USA INC ; MIYANO TOSHIHARU TOM ; TOSHIHARU TOM MIYANO

Inventor(s): (std): MIYANO TOSHIHARU TOM ; TOSHIHARU TOMU MIYANO

526) Family number: 73827947 (DE102018124305A1)

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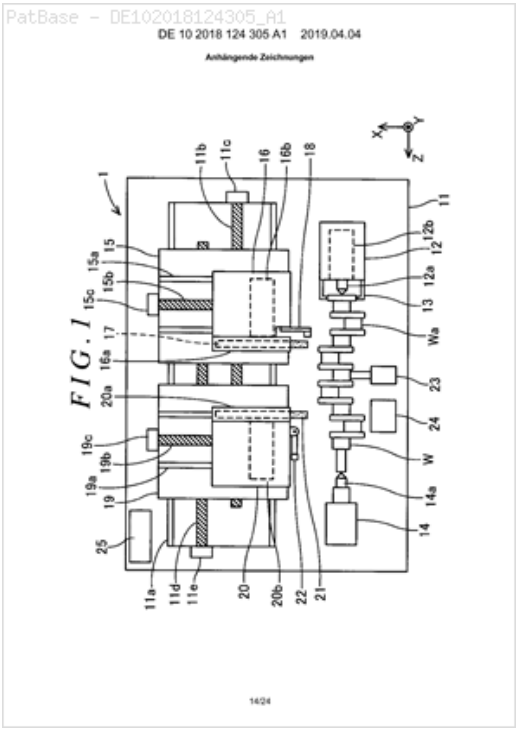
Title: WERKZEUGMASCHINE Machine tool (Machine translation)

Abstract: Source: DE102018124305A1 [DE] Eine Werkzeugmaschine 1 hat: eine Stuetzeinrichtung 12,13, 14, die ein Werkstueck W mit einem exzentrischen Teil Wa stuetzt, sodass das Werkstueck W um eine Drehachse P2 des Werkstuecks W drehbar ist, einen Parallellenkermechanismus 30, der um eine Achse P7 parallel zu der Drehachse P2 des Werkstuecks W schwenkbar ist; eine Beruehrsonde 40, die an dem Parallellenkermechanismus 30 angebracht ist und einen Spitzenerfassungsteil 41 hat; und eine Steuereinrichtung 25, die den Spitzenerfassungsteil 41 der Beruehrsonde 40 in

Kontakt mit dem exzentrischen Teil Wa bringt, indem der Parallellenkermechanismus 30 geschwenkt wird und das Werkstueck W gedreht wird, und eine Drehlage des exzentrischen Teils Wa berechnet, auf der Basis einer Schwenkposition des Parallellenkermechanismus 30 und eines Drehwinkels T12, T22 der Stuetzeinrichtung 12,13, 14, wenn der Spitzenerfassungsteil 41 in Kontakt mit dem exzentrischen Teil Wa gebracht wird.

Machine translation: A machine tool 1 has: a support device 12, 13, 14, a workpiece W with an eccentric supports, so that the workpiece W part is rotatable about a rotational axis P2 of the workpiece W is rotatable, a parallel link mechanism 30 about an axis P7 parallel to the rotational axis P2 of the workpiece; a feed probe 40 is pivotally coupled to the parallel Beru handlebar mechanism 30 is attached, and a peak detection portion 41; and a control unit 25, the peak detection part 41 of the Beru sensor probe 40 in contact with the eccentric part is pivoted by the parallel link mechanism 30 and the workpiece is rotated, and a rotational position of the eccentric portion is calculated on the basis of a pivot position of the handlebar assembly 30 and an angle of rotation of T12, T22 of the support device 12, 13, 14, When the peak detection portion 41 is brought into contact with the eccentric part is.

Classifications:
International (IPC 8-9): B23Q16/06 B23Q17/00 B23Q17/22 B23Q3/18 B24B49/02 B24B49/04 B24B49/10 B24B5/42 (Advanced/Invention)
CPC: B24B5/421 B24B49/04 B23Q3/18 B23Q16/06 B23Q17/00



Family:

Publication number	Publication date	Application number	Application date
CN109605102 A	20190412	CN201811122869	20180926
DE102018124305 A1	20190404	DE201810124305	20181002
JP2019063962 A2	20190425	JP20170194167	20171004

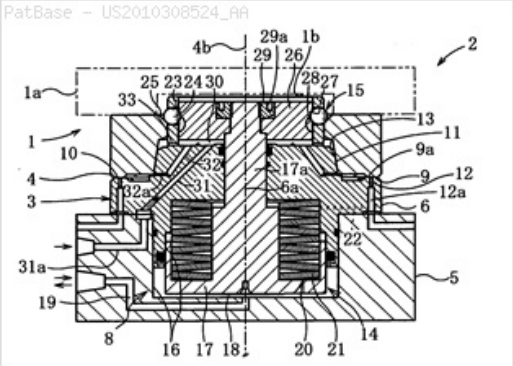
Priority:
JP20170194167 20171004

Probable Assignee:	JTEKT CORP
Assignee(s): (std):	JTEKT CORP
Assignee(s):	N A
Inventor(s): (std):	KATO IKUYA ; KIYOTA DAI

527) Family number: 43574947 (US2010308524A)

Title: WORK PALLET POSITIONING AND FIXING DEVICE

Abstract: A positioning and fixing device positions a work pallet in the vertical and horizontal directions relative to a base member via a ring member, and also restricts its rotation around the vertical axis. The base member has Z reference surfaces that can stop a lower end reference surface of the ring member and position it in the vertical direction, and a tapered male engagement portion whose horizontal cross section is formed as a regular polygon having a plurality of outwardly convex circular arcuate vertex portions and a plurality of side portions, and that reduces in diameter upwards. The ring member has a tapered female engagement portion that can engage with the tapered male engagement portion so that its lower end reference surface is in contact against the Z reference surfaces. A clamp mechanism for fixing the ring member to the base member is provided, and the side portions of at least one of the tapered female engagement portion and the tapered male engagement portion are adapted to engage in close contact with the other via elastic deformation.
Classifications:
International (IPC 8-9): B23Q16/04 B23Q16/06 B23Q3/00 B23Q3/06 B23Q3/18 (Advanced/Invention);
B23Q16/04 B23Q16/06 B23Q3/00 B23Q3/06 (Advanced/Non-invention);
B23Q3/00 B23Q3/18 (Core/Non-invention)
CPC: B23Q1/0081
European: B23Q1/00D B23Q1/00D3
US: 269/289R 269/309 269/309P 269/313



Family:

Publication number	Publication date	Application number	Application date
AT554878 E	20120515	AT20090706185T	20090120
CN101925439 A	20101222	CN200980103537	20090120
CN101925439 B	20120704	CN200980103537	20090120
DE602009006539 D1	20120621	DE200960006539T	20090120
EP2239089 A1	20101013	EP20090706185	20090120
EP2239089 A4	20110615	EP20090706185	20090120
EP2239089 B1	20120425	EP20090706185	20090120
JP2009096150 A1	20110526	JP20090551418T	20090120
JP5357058 B1	20131204	JP20090551418T	20090120
JP5357058 B2	20131204	JP20090551418T	20090120
KR101475784 B1	20141223	KR20107016211	20090120
KR20100105858 A	20100930	KR20107016211	20090120
TW200940248 A	20091001	TW20090102209	20090121
TWI440524 B	20140611	TW20090102209	20090121
US2010308524 AA	20101209	US20090735546	20090120
US8613434 BB	20131224	US20090735546	20090120
WO09096150 A1	20090806	WO2009JP00179	20090120

Priority:

JP20080016406 20080128 JP20080139515 20080528 JP20080237739 20080917
EP20090706185 20090120 WO2009JP00179 20090120 JP20090551418 20090120

Probable Assignee: PASCAL ENGINEERING CORP

Assignee(s): (std): KITAURA ICHIRO ; MUNECHIKA TAKAYUKI ; PASCAL ENG CORP

Assignee(s): PASCAL ENGINEERING CORP ; PASCAL ENGINEERING CORP ITAMI

Inventor(s): (std): KITAURA ICHIRO ; MUNECHIKA TAKAYUKI ; ICHIRO KITAURA ; TAKAYUKI MUNECHIKA

Inventor(s): KITAURA, Ichiro ; MUNECHIKA, Takayuki

Agent(s): LORENZ SEIDLER GOSSEL RECHTSANWAELTE PATENTANWAELTE PARTNERSCHAFT MBB; ROBERTS MARK PETER; OKAMURA TOSHIO; JORDAN AND HAMBURG LLP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

528) Family number: 13414949 (US6244928B)

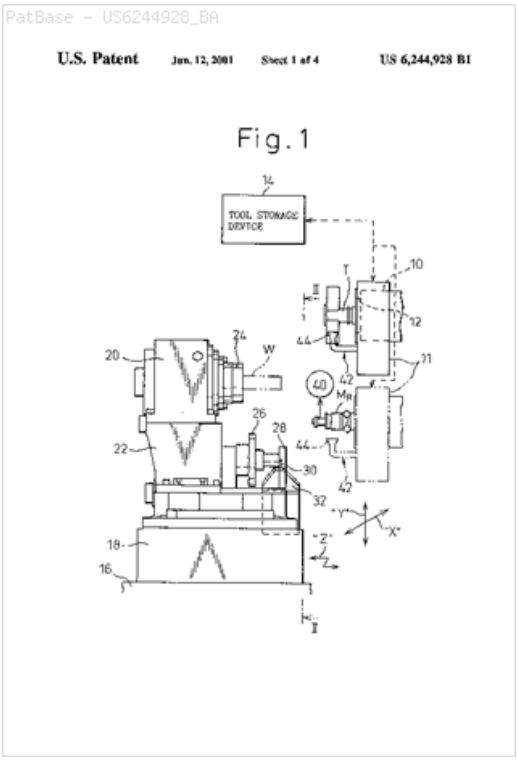
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Title: MACHINE TOOL SYSTEM AND MACHINING METHOD

Abstract: When machining a workpiece (W) with a tool (T) detachably mounted on a spindle (12) included in a machine tool, a machining liquid supply system (42) for supplying a machining liquid into a machining region in which the tool (T) machines has a machining liquid spouting nozzle (44) having a machining liquid spouting opening (44a), the machining liquid spouting nozzle (44) is supported by a support rod (48) and a bracket (50) so as to be moved by moving means (54, 74) in radial directions and circumferential direction with respect to the axis of the spindle (12) in a region around a headstock (10) supporting the spindle (12). The diameter of the tool (T) held on the spindle (12) can be measured by an automatic tool measuring device (30) installed on the machine tool. The position of the machining liquid spouting nozzle (44) of the machining liquid supply system (42) with respect to radial and circumferential directions can be adjusted and changed according to the diameter of the tool (T) and to the change of the diameter of the tool (T) with the progress of a machining operation.

Classifications:
International (IPC 8-9): B05B15/08 B05B15/68 B23Q11/10 B23Q17/09 B24B49/00 B24B5/04 B24B51/00 B24B55/02 B24B7/00 (Advanced/Invention)
International (IPC 1-7): B05B15/08 B23Q11/10 B24B49/00 B24B55/02 B24B7/00 B32B
CPC: B23Q11/10 B23Q17/09 B24B5/04 B24B49/00 B24B51/00 B24B55/02 G05B2219/50248
European: B23Q11/10 B23Q17/09 B24B49/00 B24B5/04 B24B51/00 B24B55/02 S05B219/50248
US: 451/449 451/5

PatBase - US6244928_BA



Family:

Publication number	Publication date	Application number	Application date
AT344709 E	20061115	AT19980919655T	19980519
CA2276724 AA	19990705	CA19982276724	19980519
DE69836381 D1	20061221	DE19986036381	19980519
DE69836381 D1	20061221	DE19986036381T	19980519
DE69836381 T2	20070906	DE19986036381T	19980519
EP1004396 A1	20000531	EP19980919655	19980519
EP1004396 A4	20010912	EP19980919655	19980519
EP1004396 B1	20061108	EP19980919655	19980519
IL131061 A0	20010128	IL19980131061	19980519
JP3672325 B1	20050720	JP19990533566T	19980519
JP3672325 B2	20050720	JP19990533566T	19980519
US6244928 BA	20010612	US20000331738	20000218
WO9959774 A1	19991125	WO1998JP02195	19980519

Priority:

EP19980919655 19980519 WO1998JP02195 19980519

Probable Assignee: MAKINO MILLING MACHINE CO LTD

Assignee(s): (std): HIRAMOTO KAZUYUKI ; MAKINO MILLING MACHINE

Assignee(s): MAKINO MILLING MACHINE CO ; MAKINO MILLING MACHINE CO LTD

Inventor(s): (std): HIRAMOTO KAZUYUKI

Inventor(s): HIRAMOTO ; HIRAMOTO KAZUYUKI MAKINO

Agent(s): GOUDREAU GAGE DUBUC

Designated states: AT BE CA CH CY DE DK ES FI FR GB GR IE IL IT JP KR LI LU MC NL NO PT SE SG US

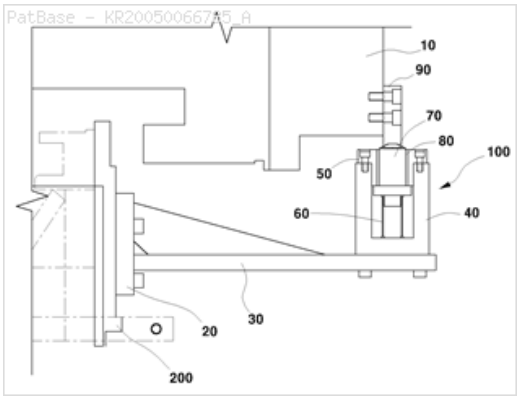
529) Family number: 33758952 (KR20050066785A)

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Title: PALLET POSITION FIXING UNIT FOR MERCHINE CENTER

Abstract: Source: KR101023688B **Machine translation:** The present invention can be balanced machining centers (especially the workpiece to exchange) attached to the workpiece, especially pallets in pallets processing side and the atmosphere side in a desired location of the atmosphere side, in particular, be sure not to disturb the pallet is to provide a device that secure the machining center, characterized in that relates to a positioning device, table 200 formed on pallets 10 is mounted horizontally movable palette of the machining center, the pallets (10) exchange apparatus, at least one side of the table, and the 90 to 200 has the temporary bonding a stopper (90), the stopper unit 100 unit 100, and fixed to the side of the table 200 is made by installing a bracket 30; the stopper unit 100 is inserted into the groove 91, so that the center of the (90) is protruding stopper 70 and the stopper 70 ever supporting Tan to coil 60 provided in the lower part of the spring 60, the stopper 70 and a retainer 50 and surrounding the cylindrical housing 40 is characterized by also including the configuration. **By**micro-machining center, pallets, stopper unit, a spring, a base

Classifications:
International (IPC 8-9): B23Q7/00 (Advanced/Invention);
B23Q7/00 (Advanced/Non-invention);
B23Q7/00 (Core/Invention)
International (IPC 1-7): B23Q7/00
CPC: B23Q7/00 B23Q15/225 B23Q7/1431



Family:

Publication number	Publication date	Application number	Application date
KR101023688 B1	20110325	KR20030098265	20031227
KR20050066785 A	20050630	KR20030098265	20031227

Priority:

KR20030098265 20031227

Probable Assignee: DOOSAN INFRACORE CO LTD

Assignee(s): (std)**:** DOOSAN INFRACORE CO LTD

Assignee(s): DOOSAN INFRACORE CO

Inventor(s): (std)**:** PARK SA YONG ; PARK YONG SA

530) Family number: 200953 (BRPI8704251A)

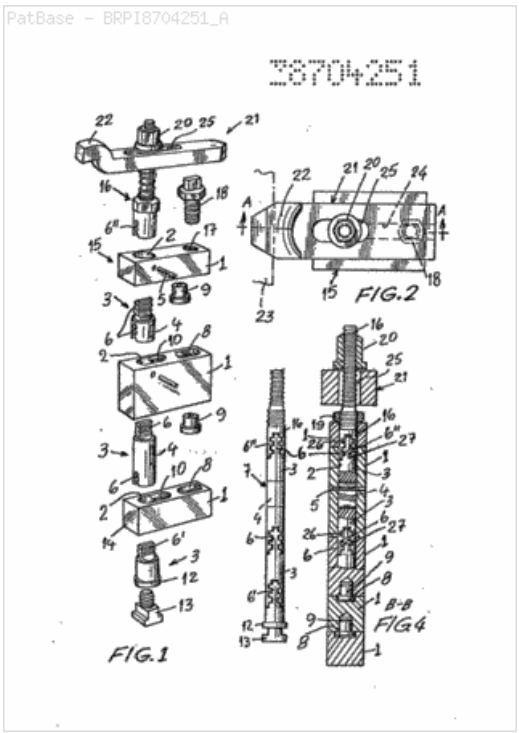
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Title: CONJUNTO FIXADOR DE PECAS PARA USINAGEM MACHINING PARTS FOR CLAMP SET (Machine translation)

Abstract: Source: BRPI8704251A [PT] ftft »«•« mm ¦ ftss ft ft ss • ii ft ft ft ft ft • • • ft # ft •• ft ft ft ft ft and ft ft n ftfti • # ft ss « ft ftftftss ft ft ft ft ft ft ¦ ft ft a ft ft «••ft ft ft ft •• • ft**# • • ft #•• Resumo Pa tente de Invencao para "CONJIM TO FIXADOR DE PECAS PARA USINAGEM", utilizavel em fresa- doras, mandr11hadoras, furadelras e demais similares, 1 5. composto por diversos blocos prismaticos (I) alojando I£ ternamente segmentos cilindricos (3) interligados axial - mente atravas de encaixes complementares macho femea (6), formando um tirante tencionador (7), o bloco Inferior ss configurando uma base de assentamento (14) fixa a mesa 1 10-. da maquina atraves de porca "T" (13), enquanto que o blo- co superior (15) 5 encimada por um ferro de fixacao (21), todo o conjunto apos a montagem configurando uma unica- 1 torre rigida, com possibilidade de ser confeccionada em1 diversas alturas,dependendo da necessidade.

Machine translation: , where ft » «• «mm ¦ ft ss ft ss ft ft ft ft ft ii • ft • • • • • ft ft ft # ft ft ft ft ft and ft ft n ftfti • # ft ss ft ss ft ft ft ftftft ft ft ft ft ft ft ft ¦ «• • ft ft ft ft • • • ft ss ss • • ft # • • Summary Pa try Bonbons to "CONJIM TO MACHINING PARTS for CLAMP", utilizavel mill-doras, mandr11hadoras, furadelras and other similar, 1 5. composed of several blocks crystals (I) lodging I £ tenderly cylindrical threads (3) axial atravas-interconnected of supplementary female male fittings (6), forming a tencionador rod (7), the Lower Block ss configuring a bedplate (14) sets the table-1 10. of the machine by "T" nut (13), whereas the blo-co higher (15) 5 surmounted by an iron fixation (21), all set after the installation by setting a single-Tower 1 rigida, with possibility to be made several times, depending on the em1 need.

Classifications:
International (IPC 8-9): B23Q3/06 (Advanced/Invention); B23Q3/06 (Core/Invention)
International (IPC 1-7): B23Q3/06



Family:

Publication number	Publication date	Application number	Application date

BRPI8704251 A	19890228	BR1987PI04251	19870818

Priority:

BR1987PI04251 19870818

Probable Assignee: INDUSTECNICA EQUIPAMENTOS IND

Assignee(s): (std)**:** INDUSTECNICA EQUIPAMENTOS IND

Assignee(s): INDUSTECNICA EQUIPAMENTOS INDUSTRIAIS LTDA

Inventor(s): (std)**:** METZLER MARTINO THOMAZ

Inventor(s): MARTINO THOMAZ METZLER

531) Family number: 69736954 (US2018133807A)

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Title: PROCESSING APPARATUS AND PROCESSING METHOD

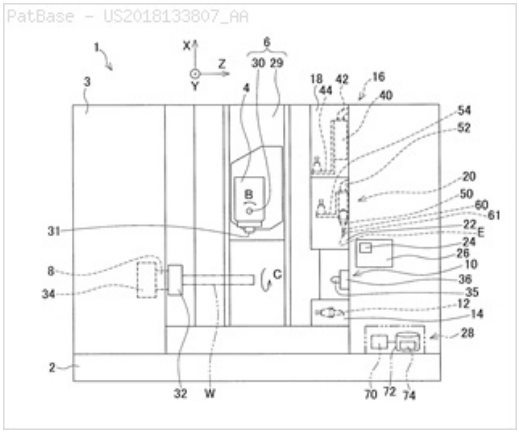
Abstract: A processing apparatus includes a cutting tool that processes a clamped workpiece, a quenching unit capable of emitting a laser beam, and a vibration cutting unit capable of vibrating a distal end with a vibration cutting tool mounted thereon. The cutting tool, the quenching unit, and the vibration cutting unit are movable relative to the workpiece. The cutting tool cuts the workpiece before being quenched. The quenching unit applies laser quenching as a surface hardening treatment to the workpiece. The vibration cutting unit finishes the quenched workpiece by applying the vibration cutting tool to the workpiece while vibrating the vibration cutting tool.

Classifications:

International (IPC 8-9): B23B1/00 B23B29/12 B23B5/36 B23K26/00 B23P13/00 B23P23/04 B23P23/06 B23P9/00 C21D1/09 C21D1/18 C25D5/00 (Advanced/Invention)

CPC: B23B29/125 C21D9/28 B23B1/00 B23B5/36 C21D1/09 C21D2261/00 B23B2260/092 B23B2260/108 B23K26/57 B23P25/00 B23P23/06 B23K26/0093 B23P23/04

US: 409/293



Family:

Publication number	Publication date	Application number	Application date
CN108067882 A	20180525	CN201711119488	20171114
DE102017220092 A1	20180517	DE201710220092	20171110
JP2018079540 A2	20180524	JP20160223470	20161116
US2018133807 AA	20180517	US20170790218	20171023

Priority:

JP20160223470 20161116

Probable Assignee: OKUMA CORP

Assignee(s): (std)**:** OKUMA MACHINERY WORKS LTD ; UNIV NAGOYA

Assignee(s): NAGOYA UNIV ; OKUMA CORP

Inventor(s): (std)**:** SHAMOTO EIJI ; UEDA TAKASHI ; YAMAMOTO SEIEI ; EIJI SHAMOTO ; TAKASHI UEDA ; SEIEI YAMAMOTO

532) Family number: 41901955 (US2010202848A)

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Title: MACHINE TOOL

Abstract: A machine tool including a base frame, a workpiece table, a machining unit, and a connection portion is disclosed. The base frame has a machining area. The base frame includes two left and right side frames and a connection frame connecting the two side frames. The workpiece table is arranged on the base frame in the machining area. The machining unit is arranged on an upper portion of the base frame and includes a spindle device. A connection portion connects the machining unit and the base frame in a detachable manner.

Classifications:

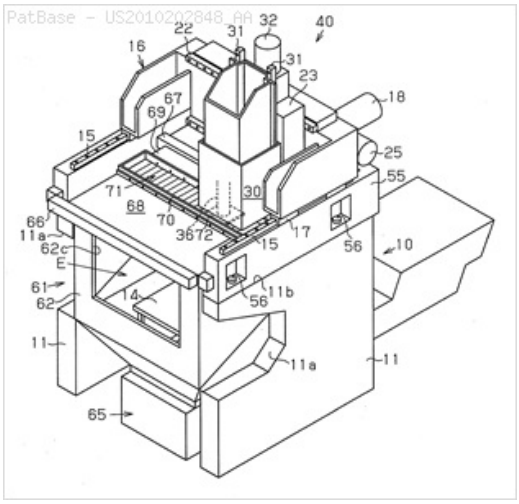
International (IPC 8-9): B23C1/06 B23Q1/00 B23Q1/01 B23Q11/08 B23Q3/00 B23Q3/157 B23Q5/22 (Advanced/Invention); B23Q1/00 B23Q11/08 B23Q5/22 (Core/Invention)

International (IPC 1-7): B23Q1/00

CPC: Y10T29/50 Y10T409/30392 Y10T409/304088 Y10T409/308288 Y10T409/309576 Y10T409/309912 Y10T483/115 Y10T483/1795 B23Q1/015 B23Q11/0891

European: B23Q1/01B B23Q11/08K

US: 29/560 29/DIG.102 29/DIG.56 29/DIG.94 409/134 409/134P 409/137 409/212 409/235 409/241 409/241S 483/3 483/56



Family:

Publication number	Publication date	Application number	Application date
CN101663128 A	20100303	CN200880010276	20080226
CN101663128 B	20130403	CN200880010276	20080226
DE112008000973 T5	20100318	DE200811000973T	20080226
IN05698CN2009 A	20100611	IN2009CN05698	20090925
IN294443 B	20180323	IN2009CN05698	20090925
JP2008105173 A2	20080508	JP20070254870	20070928
JP5080188 B2	20121121	JP20070254870	20070928
KR101408668 B1	20140617	KR20097019862	20080226
KR20100074087 A	20100701	KR20097019862	20080226
TW200821081 A	20080516	TW20070136584	20070929
US2010202848 AA	20100812	US20080532734	20080226
US8562497 BB	20131022	US20080532734	20080226
WO09041078 A1	20090402	WO2008JP53294	20080226

Priority:

JP20060269234 20060929 JP20070254870 20070928 WO2008JP53294 20080226

Probable Assignee: KOMATSU NTC LTD

Assignee(s): (std)**:** HASEGAWA YASUO ; KAMIKONYA FUMIHIRO ; KAWASAKI YUKIO ; KOMATSU NTC LTD ; MURAI SHIRO ; NIPPEI TOYAMA CORP ; NAKAMURA KINYA ; TANIZAKI AKIRA ; TAKASE AKIRA

Inventor(s): (std)**:** AKIRA TAKASE ; AKIRA TANIZAKI ; FUMIHIRO KAMIKONYA ; HASEGAWA YASUO ; KAMIKONYA FUMIHIRO ; KAWASAKI YUKIO ; KINYA NAKAMURA ; MURAI SHIRO ; NAKAMURA KINYA ; SHIRO MURAI ; TAKASE AKIRA ; TANIZAKI HIROSHI ; YASUO HASEGAWA ; YUKIO KAWASAKI ; TANIZAKI AKIRA

Inventor(s): NAKAMURA KINYA AND

Agent(s): CAESAR RIVISE BERNSTEIN COHEN AND POKOTILOW LTD; ONDA HIRONORI

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

533) Family number: 45550955 (US2011241331A)

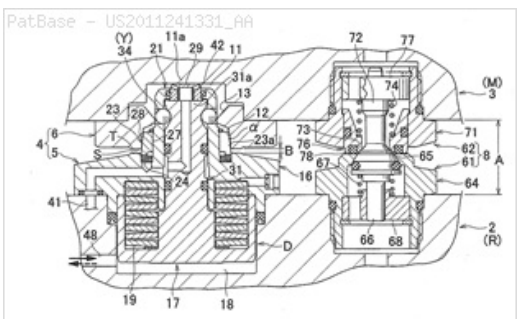
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Title: CLAMPING SYSTEM WITH FLUID COUPLER

Abstract: During a released state of a clamping apparatus (4), a predetermined contact gap (B) is formed between a support surface (S) of a reference block (R) and a supported surface (T) of a movable block (M). By switching the clamping apparatus (4) from the released state to a locked state, an output member (31) provided to the reference block (R) causes, through an engaging member (34), the movable block (M) to move towards the reference block (R), thereby contacting the supported surface (T) to the support surface (S). A fluid coupler (8) has a butting contact stroke for ensuring an open state with a predetermined opening, which is set to a value not more than a dimension of the contact gap (B), and is structured so that, during the released state, respective leading end portions of a first joint (61) and a second joint (62) contact each other. Thereby, when the clamping apparatus (4) is switched to the locked state, the fluid coupler (8) is switched to the open state with the predetermined opening.

Classifications:

International (IPC 8-9): B23Q1/00 B23Q3/00 F16B2/16 F16B7/04 F16B7/14 F16L37/00 F16L37/30 F16L37/32 F16L37/36 (Advanced/Invention);
B23Q3/00 F16B2/02 F16B7/00 F16B7/04 F16L37/28 (Core/Invention)
CPC: B23Q1/0018 F16L37/32 F16L37/36 B23Q1/0081
European: B23Q1/00B2 B23Q1/00D B23Q1/00D3 F16L37/32 F16L37/36
US: 285/18 285/18P



Family:

Publication number	Publication date	Application number	Application date

CN102256741 A	20111123	CN200980150742	20091210
EP2383070 A1	20111102	EP20090833375	20091210
EP2383070 A4	20130424	EP20090833375	20091210
JP2010071072 A1	20120531	JP20100542946T	20091210
JP4864164 B1	20120201	JP20100542946T	20091210
JP4864164 B2	20120201	JP20100542946T	20091210
US2011241331 AA	20111006	US20090140050	20091210
WO10071072 A1	20100624	WO2009JP70683	20091210

Priority:

JP20080336109 20081217 JP20100542946 20091210 WO2009JP70683 20091210

Probable Assignee: KOSMEK LTD

Assignee(s): (std)**:** ARISATO AKIRA ; KOSMEK LTD

Inventor(s): (std)**:** ARISATO AKIRA ; AKIRA ARISATO

Agent(s): HORTON ANDREW ROBERT GRANT; KAJI YOSHIYUKI; SUHARA MAKOTO; KAJI YOSHIYUKI ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

534) Family number: 68838956 (BR102016011315A)

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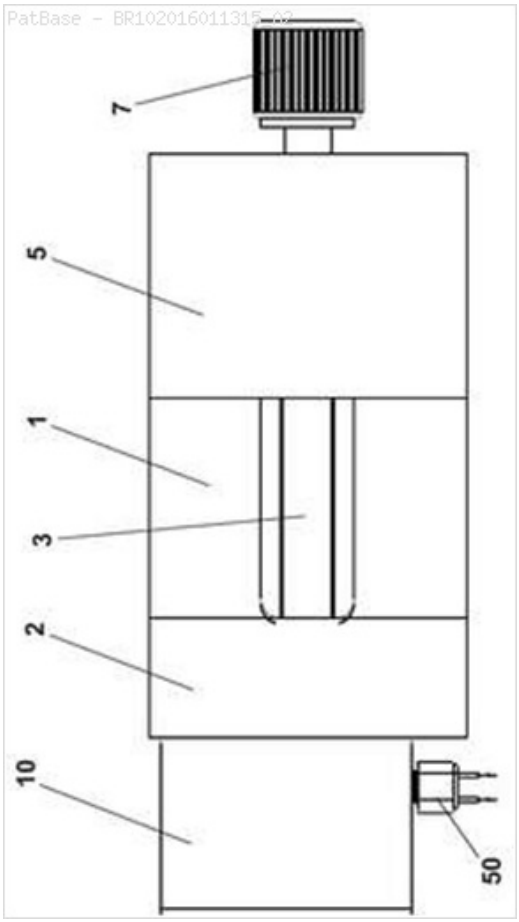
Title: MORSA DE ACAO HIDRAULICA QUE PERMITE AUTOMACAO E COMANDO A DISTANCIA Vise HYDRAULIC ACTION THAT ENABLES AUTOMATION AND REMOTE COMMAND (Machine translation)

Abstract: Source: BR102016011315A [PT] RESUMO MORSA DE ACAO HIDRAULICA QUE PERMITE AUTOMACAO E COMANDO A DISTANCIA Trata-se a presente patente de invencao, de uma morsa de acao hidraulica que permite automacao e comando a distancia, para fixacao de pecas a serem usinadas em maquinas operatrizes, mais particularmente trata- se de uma morsa com acao hidraulica que podera atuar de forma automatica, semiautomatica ou manualmente, a qual permite a troca rapida da peca, com precisao de posicionamento e reducao substancial no tempo de parada da maquina operatriz. A morsa hidraulica compreende um bloco hidraulico (10) fixo a base (1) da morsa onde a cabeca do fuso (3') fica alojada na haste (21) do bloco hidraulico (10) que e dotado de furo passante (11) para acoplamento do sistema de deslocamento (20) do fuso (3), e furo (12) para acoplamento do sistema de retencao (30) ligados pelo canal de interligacao (13) e do lado oposto e previsto um canal de ligacao (15) ate o alojamento (16) do pressostato (50). O furo (12) e ligado ainda as tomadas de pressoes para avanco (17) e de retomo (18) atraves dos canais (17' e 18'), sendo que o canal (18') liga tambem a tomada de retomo (18) ao furo passante (11). Peuecao 870160021115, de 18/05/2016, pag. 28/28

Machine translation: Summary VISE HYDRAULIC ACTION THAT ENABLES AUTOMATION AND REMOTE COMMAND the present invention patent of a vise hydraulic action that enables automation and remote command for attachment of workpieces are machined in operational machines, more particularly comes from a vise with hydraulic action that can actuate the semi-automatically, or manually, which allows the exchange of the piece with precision placement and substantial reduction in the downtime of the machine tool builder. The vise hydraulic (10) comprises a fixed hydraulic block (1) from the vise base where the head of the spindle (3') is housed on the rod (21) of the hydraulic block (10) that is provided with through hole (11) for coupling the displacement (20) from spindle (3), and hole (12) for coupling the retaining system (30) connected by interconnecting channel (13) and opposite a bonding channel (15) through the housing (16) of the pressure switch (50). Hole (12) is bonded further advancing outlets (17) and return pressures for (18) through the channels (17' and 18', the channel (18') (18) Alloy also return decision through hole (11). The 870160021115 include 05/18/2016, pp. 28/28

Classifications:
International (IPC 8-9): B23Q3/00 B23Q3/08 (Advanced/Invention)
International (IPC 1-7): B23Q3/00 B23Q3/08

PatBase - BR102016011315 A2



Family:

Publication number	Publication date	Application number	Application date
BR102016011315 A2	20171205	BR20161011315	20160518

Priority:

BR20161011315 20160518

Probable Assignee: MARA SILVIA DE JESUS LORO

Assignee(s): (std)**:** MARA SILVIA DE JESUS LORO

Inventor(s): (std)**:** JOSE LUIZ POLASTRO XAVIER

535) Family number: 68944962 (DE102017121983A1)

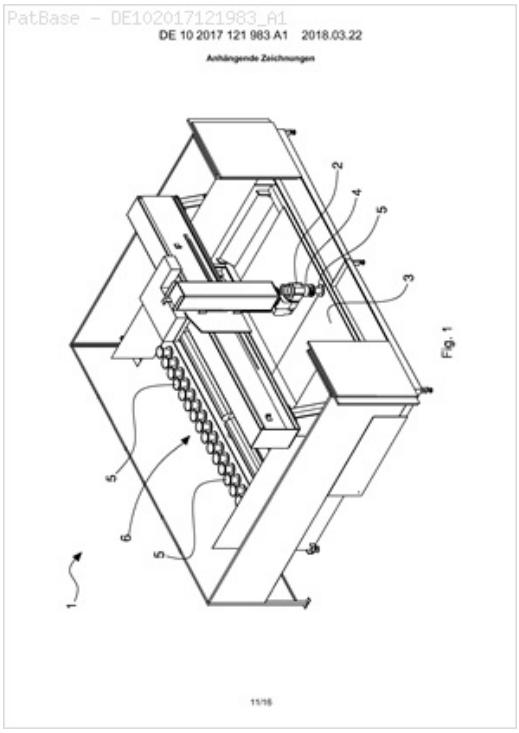
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Title: SPANNVORRICHTUNG Clamping Device (Machine translation)

Abstract: Source: DE102017121983A1 [DE] Beschrieben wird eine Spannvorrichtung, wobei ein Koerper mithilfe von ersten Saugnapfmitteln auf einer Arbeitsflaeche eines CNC-Bearbeitungszentrum festgespannt ist, ein Werkstueck mithilfe von zweiten Saugnapfmitteln an dem Koerper festgespannt ist, ein System mit Venturi-Effekt innerhalb des Koerpers einen mit einer externen Quelle mit Fluidumdurchsatz verbundenen Eingang und einem mit zweiten Saugnapfmitteln verbundenen Ausgang aufweist, um nach Abschluss der Bearbeitung das Abloesen des Werkstuecks vom Koerper zu erleichtern, waehrend eine Absaugung des Systems mit Venturi-Effekt mit den ersten Saugnapfmitteln verbunden ist, um waehrend des Abloesens des Werkstuecks das Festhalten des Koerpers an der Arbeitsflaeche zu beguenstigen.

Machine translation: A tensioning device, wherein a body with the aid of first suction cup on a working surface of a CNC machining center, a workpiece is clamped by means of second suction cup means to the clamped body, a system with a venturi effect within the body with an external source and a second input connected with FLUIDUM throughput with suction cup means output connected to after completion of the machining of the workpiece from the body to facilitate the peeling, while an aspiration of the system with venturi effect with the first suction cup means is connected to the workpiece during the detachment of the holding of the body on the working surface to promote.

Classifications:
International (IPC 8-9): B23Q1/03 B23Q1/25 B23Q1/66 B23Q3/08 (Advanced/Invention)
CPC: B23Q1/037 B23Q3/088 B23Q2230/002



Family:

Publication number	Publication date	Application number	Application date
DE102017121983 A1	20180322	DE201710121983	20170922
IT201600095504 A1	20180322	IT201610000095504	20160922

Priority:

IT201610000095504 20160922

Probable Assignee: CMS SPA

Assignee(s): (std)**:** CMS SPA

Inventor(s): (std)**:** TISI FULVIO ; TIRABOSCHI MAURO ; FUMAGALLI DAVIDE ; COLLEONI MARCO

536) Family number: 56929965 (RU2012156178A)

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Title: PRECISION MACHINING CENTRE WITH BUILT dust collection systems (Machine translation)

Abstract: Source: RU2012156178A **Machine translation:** Precision machining center with integrated dust collection system, consisting of a base, with installed skids, moving along the ground by transmitting "screw-nut rolling" column of the table, moving along the slide, the tool magazine mounted on a bracket, wherein that is equipped with a high speed spindle which is a rotor rotating inside the stator of radial electromagnetic two supports and axle support, and to ensure safe operation, provides support for the rotor and the catcher measuring sensors, radial and axial, the signals from which are converted into control computer excitation current in the coils than the magnetomotive force is regulated, the rotor returns to the original position besides machining center equipped with a dust removal system of a working area comprising a removable dust receptacle configured to fit the shape of the workpiece, and to maximize the processing zone of the intake of dust released which by a pivot connection which allows to select the optimum absorption of dust duct connected to the inlet of the cyclone having the outlet helically cover the exhaust pipe, a cylindrical and a conical part of the housing, while the outlet connection is attached a filter element, wherein the cyclone is mounted on a pedestal, in which is situated a hopper for collecting dust, sealingly connected to the conical portion of the cyclone body.

Classifications:
International (IPC 8-9): B23B39/02 (Advanced/Invention)

Family:

Publication number	Publication date	Application number	Application date
RU2012156178 A	20140627	RU20120156178	20121225

Priority:

RU20120156178 20121225

Probable Assignee: KOCHETOV OLEG SAVELIEVICH

Assignee(s): (std)**:** KOCHETOV OLEG SAVELIEVICH

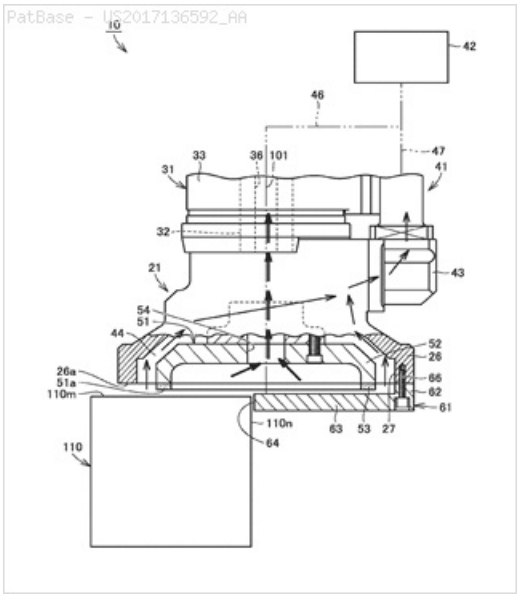
537) Family number: 65129966 (US2017136592A)

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Title: CHIP SUCTION COVER AND MACHINE TOOL

Abstract: A chip suction cover is used for a machine tool including: a spindle configured to rotate a tool; and a suction mechanism unit configured to suck chips of a workpiece that are produced in accordance with rotation of the tool. The chip suction cover includes: a hollow body that is provided with an opening through which a rotation central axis of the spindle extends and that is arranged so as to surround the tool; and a cover body that is provided in the hollow body so as to partially close the opening and that is configured to cover a part of a tip end portion of the tool while exposing a remaining part of the tip end portion of the tool. A chip suction cover having such a configuration that improves the efficiency of sucking

chips produced due to workpiece machining is provided.
Classifications:
International (IPC 8-9): B23C9/00 B23Q11/00 B23Q11/08 B24B55/06 B24B55/12 (Advanced/Invention)
CPC: B24B55/12 B24B55/04 B24B55/06 B24D7/16 B23Q11/0046 B23Q11/0883



Family:

Publication number	Publication date	Application number	Application date
CN206230314 U	20170609	CN201621248785U	20161116
DE202016006675 U1	20170309	DE201620006675U	20161027
JP2017087383 A2	20170525	JP20150223737	20151116
US2017136592 AA	20170518	US20160290458	20161011

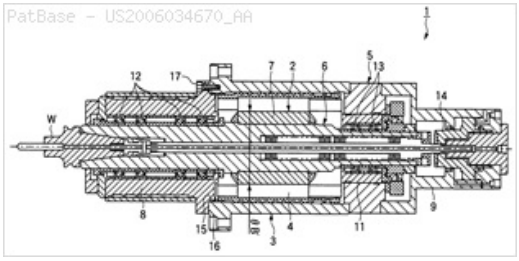
Priority:
JP20150223737 20151116 JP20150223737U 20151116

Probable Assignee: DMG MORI CO LTD
Assignee(s): (std)**:** DMG MORI CO LTD ; DMG MORI SEIKI CO LTD
Assignee(s): DMG MORI CO ; DMG MORI SEIKI CO
Inventor(s): (std)**:** IKAI KEISUKE ; IUMI KEISUKE ; IUME KEISUKE
Agent(s): FUKAMI PATENT OFFICE PC

538) Family number: 31055968 (US2006034670A)

Title: MAIN SHAFT DEVICE AND MACHINE TOOL WITH THE SAME

Abstract: An object of the invention is to provide a spindle apparatus which facilitates assembling and removing operations at the time of maintenance and which is low cost. In the invention, the diameter becomes smaller in the order of an inner peripheral diameter of an outer cylinder (3), an inside diameter of a stator (4), and an outside diameter of a bearing sleeve (11); a sub-assembly (2) made up of a front housing (8), a rotating shaft (6), and the bearing sleeve (11) is withdrawable from the outer cylinder (3); and the diameter of a rotating part in an arbitrary section located rearwardly of the bearing sleeve (11) is made smaller than a minimum diameter of a non-rotating part between a rear end of the bearing sleeve (11) and the section.
Classifications:
International (IPC 8-9): B23B19/02 B23B31/26 B23C1/00 B23C5/26 B23C5/28 B23C9/00 B23Q1/00 B23Q1/25 B23Q1/26 B23Q1/40 B23Q1/70 B23Q11/00 B23Q11/12 B23Q5/04 B23Q5/10 F16C25/08 F16C35/12 F16J15/46 (Advanced/Invention);
B23Q5/10 (Advanced/Non-invention);
B23B19/00 B23Q1/00 B23Q1/25 B23Q1/26 B23Q11/00 B23Q11/12 (Core/Invention);
B23Q5/00 (Core/Non-invention)
International (IPC 1-7): B23B19/02 B23Q1/00 B23Q1/25 B23Q1/40 B23Q11/00 B23Q11/12 B23Q5/04 B23Q5/10 F16C25/08
CPC: Y10T29/4973 Y10T408/95 Y10T409/303976 Y10T409/309352 Y10T409/309464 Y10T409/309912 B23Q11/123 B23B31/265 B23Q1/70 B23Q5/10
European: B23B31/26B2 B23Q1/70 B23Q11/12B4 B23Q5/10
US: 29/402.08 408/239R 409/135 409/135P 409/135S 409/231 409/231P 409/231S 409/233 409/233S 409/241 409/241S



Family:

Publication number	Publication date	Application number	Application date
AT511933 E	20110615	AT20040724728T	20040331
CN100556588 C	20091104	CN200480009088	20040331
CN101185975 A	20080528	CN200710165872	20040331
CN101185975 B	20140716	CN200710165872	20040331
CN1767917 A	20060503	CN200480009088	20040331
DE602004032964 D1	20110721	DE200460032964T	20040331
EP1609549 A1	20051228	EP20040724728	20040331
EP1609549 A4	20080416	EP20040724728	20040331
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JP2004087353 A1	20060629	JP20050504256T	20040331
JP2004299008 A2	20041028	JP20030096503	20030331
JP2004322306 A2	20041118	JP20030419854	20031217

JP2006007328 A2	20060112	JP20030384703	20031114
JP2006007329 A2	20060112	JP20040000261	20040105
JP2007229920 A2	20070913	JP20070121625	20070502
JP2007245344 A2	20070927	JP20070121626	20070502
JP3901680 B2	20070404	JP20030384703	20031114
JP4041986 B2	20080206	JP20040000261	20040105
JP4139971 B2	20080827	JP20030419854	20031217
JP4325254 B2	20090902	JP20030096503	20030331
KR100658406 B1	20061215	KR20057017668	20040331
KR20050114251 A	20051205	KR20057017668	20040331
TW200422136 A	20041101	TW20040108988	20040331
TWI295216 B	20080401	TW20040108988	20040331
US2006034670 AA	20060216	US20050534354	20050509
US2008118319 AA	20080522	US20070907761	20071017
US2008118321 AA	20080522	US20070907760	20071017
US7311482 BB	20071225	US20050534354	20050509
US7690873 BB	20100406	US20070907761	20071017
US8052362 BB	20111108	US20070907760	20071017
WO04087353 A1	20041014	WO2004JP04591	20040331

Priority:

JP20030096503	20030331	JP20030103219	20030407	JP20030384703	20031114
JP20030419854	20031217	JP20040000261	20040105	EP20040724728	20040331
WO2004JP04591	20040331	US20040534354	20040331	JP20050504256	20040331
US20050534354	20050509	JP20070121625	20070502	JP20070121626	20070502
US20070907760	20071017	US20070907761	20071017		

Probable Assignee: NSK LTD

Assignee(s): (std)**:** AOKI MITSUHO ; INAGAKI YOSHIFUMI ; MORITA YASUSHI ; NSK LTD ; SUGITA SUMIO

Inventor(s): (std)**:** AOKI MITSUHO ; INAGAKI YOSHIFUMI ; SUGITA SUMIO ; YASUSHI SUGITA SUMIO AOKI MITS ; YOSHIFUMI INAGAKI ; YASUSHI MORITA ; SUMIO SUGITA ; MITSUHO AOKI ; MORITA YASUSHI

Inventor(s): MORITA YASUSHI FUJISAWA SHI ; SUGITA SUMIO AOKI MITSUHO INAGAKI YOSHIFUMI ; SUGITA SUMIO AOKI MITSUHO INAGAKI YOSHIFUMI MORITA ; SUGITA SUMIO AOKI MITSUHO INAGAKI YOSHIFUMI MORITA YASUSHI ; SUGITA SUMIO FUJISAWA SHI ; INAGAKI YOSHIFUMI FUJISAWA SHI ; AOKI MITSUHO FUJISAWA SHI

Agent(s): GRUENECKER PATENT U RECHTSANWAELTE PARTG MBB; GRUENECKER KINKELDEY STOCKMAIR AND SCHWANHAEUSSER ANWALTSSOZIETAET; SUGHRUE MION PLLC; SUGHRUE-265550; SUGHRUE 265550

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

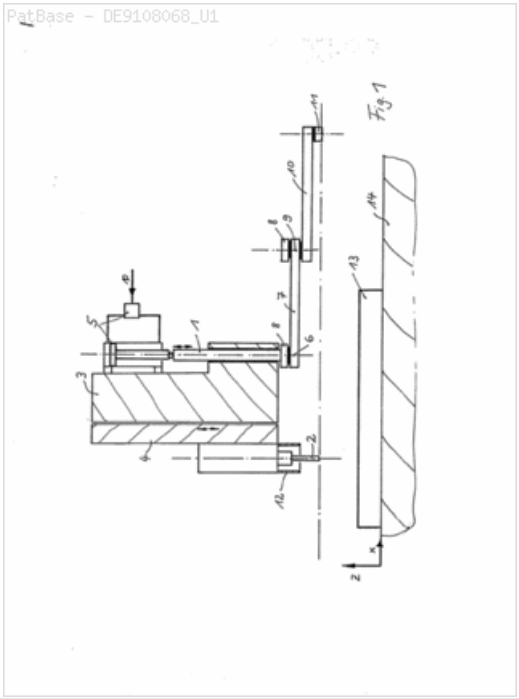
539) Family number: 17702968 (DE9108068U1)

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Abstract: Source: DE9108068U1 [DE] (Claim 1) Schutzansprueche Vorrichtung zum Spannen von Werkstuecken auf einem Maschinentisch 1. Vorrichtung zum Spannen von Werkstuecken auf einem Maschinentisch, z. B einer CNC-Oberfraesmaschine, dadurch gekennzeichnet, dass der Spanner sich am Bearbeitungsaggregat (3) abstuetzt und Maschinentisch (14) und Bearbeitungsaggregat (3) relativ zueinander in 3 translatorischen Koordinaten x-y-z beweglich sind.

Machine translation: (Claim 1) Schutzansprueche device for clamping of workpieces on a machine table first Device for clamping of workpieces on a machine table, eg a CNC Oberfraesmaschine, wherein the clamp on the processing unit (3) supports and machine table (14) and processing unit (3) relative to each other are xyz move in three translational coordinates.

Classifications:
International (IPC 8-9): B25B5/06 B25B5/16 B27C5/06 B27G21/00 F16P7/00 (Advanced/Invention);
B25B5/00 B27C5/00 B27G21/00 F16P7/00 (Core/Invention)
International (IPC 1-7): B23Q1/20 B23Q3/02 B27C5/06
CPC: B27C5/06 B25B5/061 B25B5/163 B27G21/00 F16P7/00
European: B25B5/06B B25B5/16B B27C5/06 B27G21/00 F16P7/00



Family:

Publication number	Publication date	Application number	Application date
DE9108068 U1	19921210	DE19910008068U	19910701

Priority:

DE19910008068U 19910701

Probable Assignee: HOFFMANN WILHELM DR ING

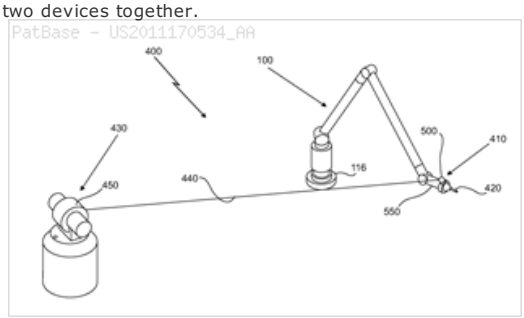
Assignee(s): HOFFMANN WILHELM DR ING ; HOFFMANN WILHELM DR ING 4840 RHEDA WIEDENBRUECK DE

540) Family number: 49243972 (US2011170534A)

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Title: METHOD AND APPARATUS FOR SYNCHRONIZING MEASUREMENTS TAKEN BY MULTIPLE METROLOGY DEVICES

Abstract: Apparatus includes at least two devices that communicate with each other, wherein a first one of the at least two devices having an IEEE 1588 precision time protocol interface, the interface including one or more components configured for communications in both a wired manner and a wireless manner with a second one of the at least two devices. The second one of the at least two devices having an IEEE 1588 precision time protocol interface, the interface including one or more components configured for communications in both a wired manner and a wireless manner with the first one of the at least two devices. Wherein one of the at least two devices includes a master clock and the other one of the at least two devices includes a slave clock, wherein the master clock communicates a time to the slave clock and the slave clock is responsive to the communicated time from the master clock to adjust a time of the slave clock if necessary to substantially correspond to the time of the master clock, thereby time synchronizing the at least two devices together.



Classifications:

International (IPC 8-9): B25J9/16 G01B11/00 G01B11/02 G01B11/03 G01B11/14 G01B11/24 G01B11/245 G01B11/25 G01B15/08 G01B21/00 G01B21/04 G01B21/20 G01B3/00 G01B5/00 G01B5/004 G01B5/008 G01B5/012 G01B5/20 G01B7/00 G01B7/008 G01B7/28 G01B9/02 G01C11/00 G01C11/02 G01C15/00 G01C9/00 G01D5/12 G01D9/00 G01S17/08 G01S17/42 G01S17/89 G01S7/51 G03B21/14 G04D7/12 G05B15/02 G05B19/401 G05B19/406 G05B19/4061 G05B19/4063 G05B19/408 G05B23/02 G06F15/00 G06F19/00 G06K9/46 G06T7/13 G06T7/521 G06T7/73 G08B21/00 G08C19/00 G09G3/36 H04J3/06 H04L12/00 H04L7/00 H04N13/02 H04N13/204 H04N5/225 H04W56/00 (Advanced/Invention); G01B5/008 G01B5/012 (Advanced/Non-invention)

CPC: H04J3/0638 G01S17/89 G01S7/51 H04J3/0667 G05B19/4061 G05B19/4063 G05B23/0216 G05B23/0272 G01B5/00 G01B5/0002 G01B5/004 G01B7/008 G01B21/04 G01D9/00 G05B23/0221 G01B11/00 G01B21/045 G05B19/408 G01B11/026 G01B21/042 G05B19/406 G05B2219/24067 G05B2219/40596 G01B11/02 G01B11/002 G01B11/005 G05B2219/40555 G05B2219/33162 G01B9/02002 G01B11/03 G01B2290/15 G01S17/08 G01B11/007 G01B11/245 G01C11/02 G01S17/46 G01S7/4817 G01C15/002 G01C11/06 G01B5/008 G06T7/13 G06T7/73 G06T7/521 G06T2207/10028 G06T2200/04 G01B11/24 G06K9/4604 G05B15/02 G01B5/012 G01B11/2509 G01B11/2513 G01B21/047 G01B2210/58 G05B19/401 G05B2219/37193 G05B2219/40233 G05B2219/45061 H04N5/2252 H04N13/239 H04N13/257 H04N13/0203 H04N13/0221 H04N13/204 H04N13/0239 H04N13/0257 G01B11/028 H04N5/2251

European: G01B11/00D1B G01B21/04D G01B5/008 G01B5/012 G01C15/00A G01S17/89 G01S7/51 G05B19/401 G05B19/406 H04J3/06C1 H04J3/06C1P2B S01B210/58 S01S7/481E S05B219/24067 S05B219/33162 S05B219/37193 S05B219/40233 S05B219/40596 S05B219/45061

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WO11090903 A1	20110728	WO2011US21278	20110114
WO11090903 A4	20110909	WO2011US21278	20110114
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WO11091096 A3	20111110	WO2011US21794	20110120
WO11091096 A4	20120126	WO2011US21794	20110120
WO12033892 A1	20120315	WO2011US50787	20110908
WO13126163 A1	20130829	WO2013US22186	20130118
WO13184340 A1	20131212	WO2013US41826	20130520
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WO13188026 A1	20131219	WO2013US40321	20130509
WO16044014 A1	20160324	WO2015US49078	20150909
WO16081235 A1	20160526	WO2015US60087	20151111

Priority:

US20100293838P 20100111 US20100296555P 20100120 US20100351347P 20100604

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US20170481673	20170407	US20180876476	20180122		

Probable Assignee: FARO TECHNOLOGIES INC

Assignee(s): (std): ATWELL PAUL ; ATWELL PAUL C ; BAILEY BRENT ; BARBER MARC M ; BRIDGES ROBERT E ; FARO TECH INC ; BRIGGS CLARK H ; DANIELSON DAVID M ; MACFARLANE KEITH G ; PARKER DAVID H ; DANIELSON DAVID ; HOFFER JR JOHN M ; KRETSCHMER KLAUS ; YORK FREDERICK JOHN ; STOKES BURNHAM ; SEEGERS HERBERT GORDON ; PEREZ ORLANDO ; YORK FREDERICK ; SEEGERS HERBERT G

Assignee(s): FARO TECHNOLOGIES ; FARO TECHNOLOGIES INC

Inventor(s): (std): YORK FREDERICK JOHN ; BRIGGS CLARK H ; ATWELL PAUL C ; BAILEY BRENT ; STOKES BURNHAM ; PEREZ ORLANDO ; YORK FREDERICK ; PARKER DAVID H ; BRIDGES ROBERT E ; DANIELSON DAVID M ; BARBER MARC M ; SEEGERS HERBERT G ; MACFARLANE KEITH G ; DANIELSON DAVID ; SEEGERS HERBERT GORDON ; ATWELL PAUL ; BRENT BAILEY ; CLARK H BRIGGS ; MARC M BARBER ; FREDERICK JOHN YORK ; PAUL C ATWELL ; BURNHAM STOKES ; KRETSCHMER KLAUS ; ROBERT E BRIDGES ; JOH YORK FREDERICK ; DAVID PARKER ; JOHN YORK FREDERICK ; KLAUS KRETSCHMER ; YADAV JOYDEEP ; JOHN M HOFFER JR ; HOFFER JOHN M JR ; HOFFER JR JOHN M ; HOFFER JOHN M

Inventor(s): JOHN M HOFFER ; KEITH G MACFARLANE ; HERBERT GORDON SEEGERS ; PARKER DAVID ; DAVID H PARKER ; YORK FREDERICK JOH ; ORLANDO PEREZ ; DAVID M DANIELSON

Agent(s): SIECKER ERIC JOHANNES; YKI INTELLECTUAL PROPERTY ATTORNEYS; YKI PATENT ATTORNEYS; CANTOR COLBURN LLP; KOSAKOWSKI RICHARD H; CHRISTENSEN DAVE S; BARRY ANNE DAVIS; O BRADOVICH GREG J; BARRY ANNE DAVIS ET AL; CHRISTENSEN DAVE S ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

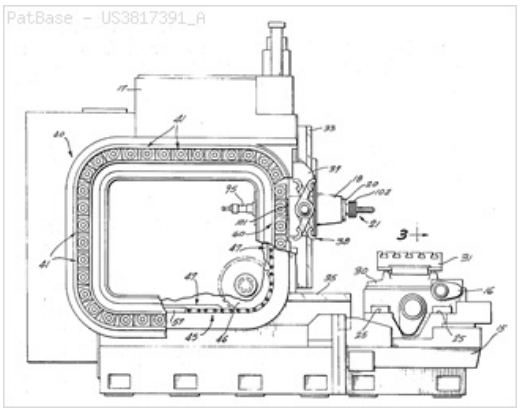
541) Family number: 30157975 (US3817391A)

© PatBase

Title: TOOL STORAGE MAGAZINE

Abstract: A tool storage magazine for storing a plurality of tools that are adapted to be used in the work station of a machine tool. The magazine includes a chain driven in an established path of travel by a suitable source of power. A plurality of cartridges are coupled to the chain for movement with it in the same path of travel. Each of the cartridges is provided with a suitable opening forming a socket for receiving the shank of a tool so that each of the cartridges in the magazine may carry a tool. A tool change station is provided in the magazine wherein the cartridges may be removed as well as returned to the magazine for storage. The cartridges are coupled to the chain in such a manner that they may be uncoupled by simply moving the cartridge away from the chain at the tool change station. Moreover, the spacing of the cartridges along the chain can be varied to accommodate different size tools to be stored. For example, if certain types of tools require more room on each side because of their configuration, the cartridges may be spaced along the chain accordingly, in the most efficient manner, to conserve the capacity of the magazine to carry tools.

Classifications:
International (IPC 8-9): A47F3/08 A47F7/00 B23Q3/155 B23Q3/157 (Advanced/Invention);
A47F3/00 A47F7/00 B23Q3/155 B23Q3/157 (Core/Invention)
International (IPC 1-7): A47F3/08 A47F7/00 B23C9/00 B23P B23Q13/00 B23Q3/00 B23Q3/15 B23Q3/155 B23Q3/157
CPC: Y10T483/1891 B23Q3/15526
European: B23Q3/155D2
US: 211/0.1.5 211/1.5 211/1.56 211/69 483/68



Family:

Publication number	Publication date	Application number	Application date
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CH557719 A	19750115	CH19730007350	19730523
DE2325629 A1	19740110	DE19732325629	19730521
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JP49056269 A2	19740531	JP19730055130	19730517
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JP55015944 Y2	19800414	JP19780029591U	19780307
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NL7306966 A	19731126	NL19730006966	19730518
US3817391 A	19740618	US19720255409	19720522

Priority:

US19720255409 19720522 US19730255409 19730522 JP19780029591U 19780307

Probable Assignee: KEARNEY AND TRECKER CORP

Assignee(s): (std): KEARNEY AND TRECKER CORP ; KEARNY AND TRECKER MILWAUKEE WISCONSIN CORP ; KEARNEY AND FRECKER CORP

Assignee(s): KEARNEY AND FRECKER CORP US ; KEARNY AND TRECKER MILWAUKEE WISCONSIN VER ST V AM CORP ; ZANKL FRANK ; LOHNEIS EARL R ; KEARNEY AND TRECKER CORP MILWAUKEE WIS US ; KEARNEY AND TRECKER CORP MILWAUKEE WIS V ST A ; KEARNEY ET TRECKER CORP ; KEARNEY ET TRECKER CORP US ; KEARNEY TRECKER CORP

Inventor(s): (std): ZANKL FRANK ; LOHNEIS EARL R ; ZANKL F ; LOHNEIS E

Inventor(s): LOHNEIS E US ; ZANKL F US

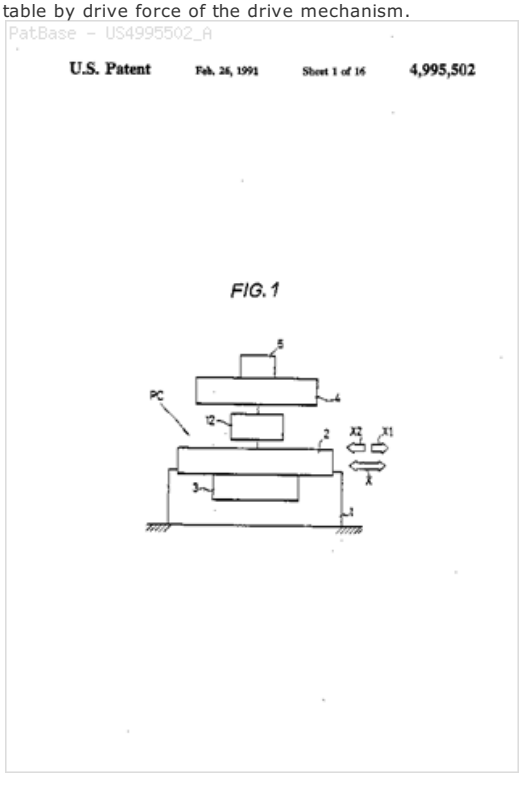
542) Family number: 3268978 (US4995502A)

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Title: Pallet changer

Abstract: A pallet changer includes a support, a table movable on the support along one direction, a plurality of pallets for holding a workpiece, a drive mechanism for moving the table, a transfer device for moving the pallet along the one direction relative to the table. The transfer device comprises a pinion shaft rotatably mounted on the table, the pinion shaft having sprockets at opposite ends thereof and a pinion at an intermediate portion thereof, a rack member movably mounted on the support, a rack displacing member mounted on the support for moving the rack member between a first position wherein the rack member can engage the pinion and a second position wherein the rack member can disengage the pinion, counter sprockets rotatably mounted on the table each cooperating with the sprocket of the pinion shaft, chains each placed between the sprocket and the counter sprocket, and an engaging mechanism for detachably engaging the chains and the pallet. The engaging mechanism includes chain hooks fixed to the chains and pallet hooks fixed to the pallet. When the rack is in the first position and the chain hook engages the pallet hook, the table is moved along the one direction by the drive mechanism so that the pinion is rotated and moved along the one direction relative to the rack, whereby the sprockets and the chains are rotated so that the pallet is moved along one direction relative to the table by drive force of the drive mechanism.

Classifications:
International (IPC 8-9): B23Q1/60 B23Q7/00 B23Q7/14 (Advanced/Invention); B23Q1/25 B23Q7/00 B23Q7/14 (Core/Invention)
International (IPC 1-7): B23Q1/26 B23Q7/00 B23Q7/08 B65G37/00
CPC: B23Q1/601 B23Q7/1431
European: B23Q1/60A B23Q7/14K2
US: 198/346.1 198/465.1



Family:

Publication number	Publication date	Application number	Application date
DE68901124 D1	19920507	DE19896001124	19891010
EP0364858 A1	19900425	EP19890118767	19891010
EP0364858 B1	19920401	EP19890118767	19891010
JP1916389 C3	19950323	JP19880259395	19881017
JP2106244 A2	19900418	JP19880259395	19881017
JP6047219 B4	19940622	JP19880259395	19881017
KR19900006073 A	19900507	KR19890014952	19891017
KR970011784 B1	19970716	KR19890014952	19891017
US4995502 A	19910226	US19890419953	19891011

Priority:

JP19880259395 19881017

Probable Assignee: KITAMURA MACHINERY CO LTD

Assignee(s): (std)**:** KITAMURA MACHINERY CO LTD ; KITAMURA MACHINERY KK

Assignee(s): KITAMURA MACHINERY CO LTD TAKAOKA TOYAMA JP ; KITAMURA MACH CO LTD

Inventor(s): (std)**:** KITAMURA KOICHIRO

Inventor(s): KITAMURA KOICHIRO TAKAOKA SHI TOYAMA KEN JP

Designated states: DE FR GB IT

543) Family number: 72976980 (US2019024729A)

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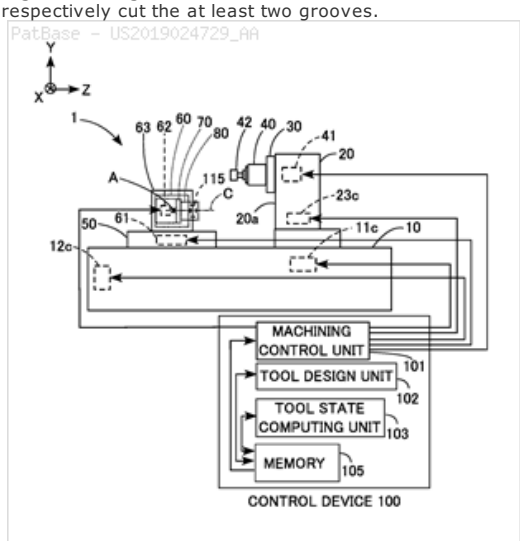
Title: MACHINING DEVICE AND MACHINING METHOD

Abstract: To provide a machining device and a machining method that can achieve a reduction in a machining time of grooves of a workpiece including grooves having different torsion angles. A machining device includes a control device configured to use a machining tool having a rotation axis, an intersection angle of which can be changed with respect to a rotation axis of a workpiece, and cut a peripheral surface of the workpiece by feeding the machining tool relatively in a direction of the rotation axis of the workpiece while rotating the machining tool synchronously with the workpiece. The peripheral surface of the workpiece includes at least two grooves having torsion angles different from each other. The control device changes the intersection angle based on the torsion angles to respectively cut the at least two grooves.

Classifications:

International (IPC 8-9): B23F1/06 B23F15/00 B23F19/10 B23F23/00 B23F5/20 B23F9/08 B23Q15/00 F16D23/06
G05B19/402 (Advanced/Invention)

CPC: F16D23/06 F16D2023/0668 F16D2023/0631 B23F1/06



Family:

Publication number	Publication date	Application number	Application date
CN109277646 A	20190129	CN201810797286	20180719
DE102018117368 A1	20190124	DE201810117368	20180718
JP2019018334 A2	20190207	JP20170142176	20170721
JP2019018335 A2	20190207	JP20170142177	20170721
US2019024729 AA	20190124	US20180039873	20180719

Priority:

JP20170142176 20170721 JP20170142177 20170721

Probable Assignee: JTEKT CORP

Assignee(s): (std)**:** JTEKT CORP

Assignee(s): N A

Inventor(s): (std)**:** OTANI HISASHI ; NAKANO HIROYUKI ; ZHANG LIN

Inventor(s): OTANI TAKASHI

544) Family number: 19156981 (WO9939855A1)

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Title: METHOD FOR PRODUCING A CIRCULAR KEY PROFILE

Abstract: The invention relates to a method for producing an inner and outer circular key profile, whereby the marginal area of a shaping tool (1, 101), said marginal area being configured as a cutter and facing the work piece, has an outer or inner contour (6, 106) which corresponds to the circular key profile to be processed. The shaping tool is mounted in a tool holder (17) such that it can rotate around the middle axis (18) of said tool. The tool holder (17) is moved with the shaping tool (1, 101) in an advance direction along the middle axis of the work piece in a manner relative to the same during a simultaneous relative rotation between the work piece (22) and the tool holder (17). In addition, the middle axis of the shaping tool (18) is inclined with respect to the advance direction (19).

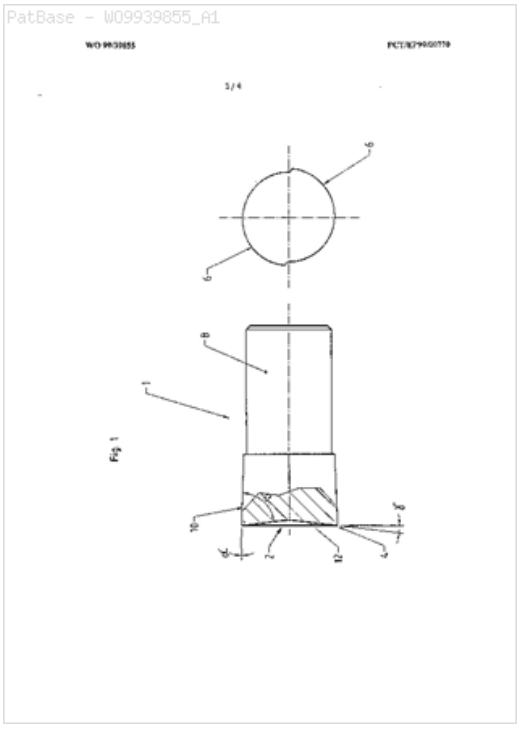
Classifications:

International (IPC 8-9): B23B41/04 B23D13/00 (Advanced/Invention);
B23B41/00 B23D13/00 (Core/Invention)

International (IPC 1-7): B23B41/04 B23D1/28 B23D13/00 B23D5/00 B23F5/12

CPC: B23B41/04 B23D13/00

European: B23B41/04 B23D13/00



Family:

Publication number	Publication date	Application number	Application date
AU199927237 A1	19990823	AU19990027237	19990204
DE19804578 C1	19990826	DE19981004578	19980205
WO9939855 A1	19990812	WO1999EP00770	19990204

Priority:

DE19981004578 19980205 WO1999EP00770 19990204

Probable Assignee: DRESSELHAUS J GMBH AND CO KG

Assignee(s): (std)**:** DRESSELHAUS J GMBH AND CO KG ; GROEBER HANS DIETER

Assignee(s): JOSEPH DRESSELHAUS GMBH AND CO KG

Inventor(s): (std)**:** GROBER HANS DIETER ; GROEBER HANS DIETER ; HANS DIETER GROBER

Designated states: AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CU CY CZ DE DK EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT UA UG US UZ VN YU ZW

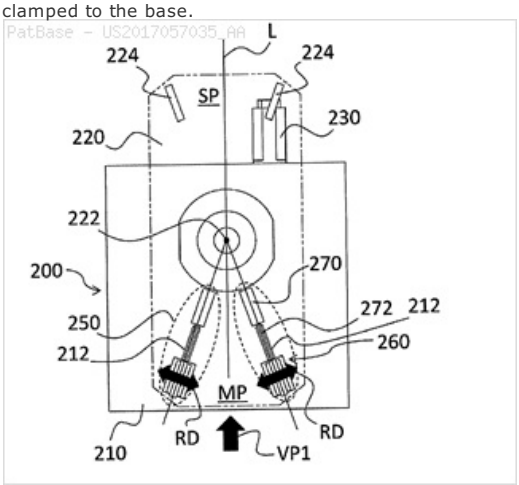
545) Family number: 61803983 (US2017057035A)

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Title: TABLE CLAMP DEVICE AND PALLET CHANGER

Abstract: A table clamp device includes a reference rail, a slider section, and a movement mechanism. The reference rail is provided on a mounting surface of a base on which a rotary table is rotatably supported. The rotary table has a first engagement part. The slider section is provided to slide along the reference rail and has a second engagement part. The movement mechanism moves the slider section along the reference rail so that the second engagement part engages with the first engagement part such that the rotary table is positioned and clamped to the base.

Classifications:
International (IPC 8-9): B23Q1/01 B23Q1/28 B23Q1/66 B23Q16/06 B23Q3/18 B23Q7/00 B23Q7/02 B23Q7/14 (Advanced/Invention)
CPC: B23Q7/1431 B65G2203/0233 B23Q1/017 B23Q2220/004 B23Q11/0891 Y10T29/5196 B23Q1/28 B23Q16/065 B23Q1/66
US: 198/346.1



Family:

Publication number	Publication date	Application number	Application date
CN105612025 A	20160525	CN201580001854	20150831
CN105612025 B	20170412	CN201580001854	20150831
DE602015023840 D1	20190228	DE201560023840T	20150831

EP3162497 A1	20170503	EP20150874423	20150831
EP3162497 A4	20171025	EP20150874423	20150831
EP3162497 B1	20190123	EP20150874423	20150831
JP2017037831 A1	20170831	JP20150553698T	20150831
JP5864827 B1	20160217	JP20150553698T	20150831
US2017057035 AA	20170302	US20160170944	20160602
US9597760 BA	20170321	US20160170944	20160602
WO17037831 A1	20170309	WO2015JP74667	20150831

Priority:

EP20150874423 20150831 JP20150553698T 20150831 WO2015JP74667 20150831
US20160170944 20160602

Probable Assignee: YAMAZAKI MAZAK CORP

Assignee(s): (std): YAMAZAKI MAZAK CORP

Assignee(s): YAMAZAKI MAZAK NIWA GUN CORP

Inventor(s): (std): MAKI KAZUHIRO ; OSAMU KAZUHIRO ; NASU KOTARO ; NISHIDA KIYOSHI

Agent(s): TBK; MORI AND WARD LLP; PATENT CORPORATE BODY DAI ICHI KOKUSAI TOKKYO JIMUSHO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

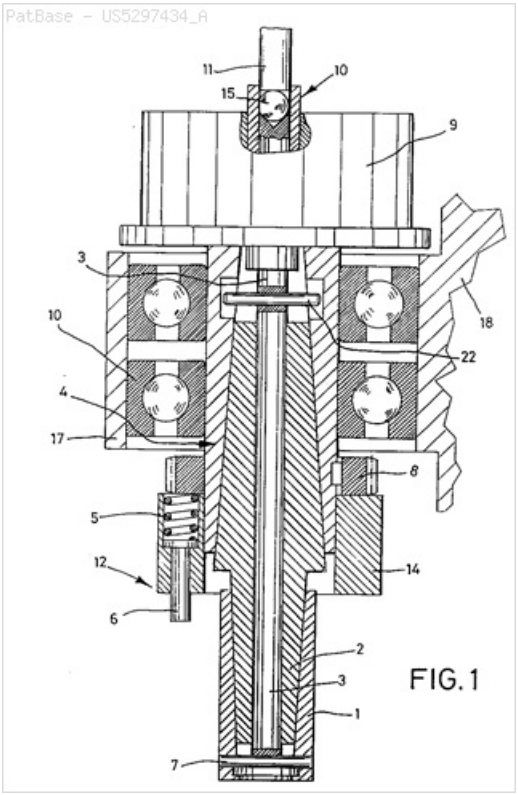
546) Family number: 11561983 (US5297434A)

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Title: Method of and apparatus for measuring workpieces

Abstract: Successive workpieces of a series of identical and/or different workpieces are measured at a monitoring station to which the workpieces are delivered by a conveyor serving to advance the workpieces along and/or against one or more orienting devices. A workpiece at the monitoring station is engaged by a clamping device which can enter an axial passage of the workpiece, or can engage a coaxial stud of the workpiece, and is mounted on an elevator which can shift a properly engaged workpiece above or below the transporting level. The workpiece is thereupon monitored by one or more sensors in suspended condition and is returned onto the conveyor. The monitoring operation can involve a single step or a number of steps, for example, to ascertain the condition and/or the shape of the peripheral surface of a cylindrical or polygonal workpiece, to determine the axial length of a workpiece, to determine the inner and/or outer diameter of a workpiece, to determine the inclination of the end faces of a workpiece relative to each other and/or relative to the rotational axis of the workpiece and/or other parameters. The workpiece may but need not rotate and/or move axially in the course of a monitoring operation.

Classifications:
International (IPC 8-9): B23B31/117 B23B31/40 B23Q17/20 G01B21/00 G01B5/00 (Advanced/Invention); B23B31/00 B23B31/10 B23Q17/20 G01B21/00 G01B5/00 (Core/Invention)
International (IPC 1-7): B23Q17/20 B66F11/00 G01B21/00 G01B21/02 G01B21/10 G01B5/00
CPC: B23B31/1173 B23B31/4033 G01B5/0002
European: B23B31/117C B23B31/40B4 G01B5/00B
US: 414/222.02 414/226 414/564 414/590 414/669 73/865.8



Family:

Publication number	Publication date	Application number	Application date
DE4107077 A1	19920813	DE19914107077	19910306
DE4107077 C2	19921112	DE19914107077	19910306
DE59105392 D1	19950608	DE19915005392	19911220
EP0496088 A2	19920729	EP19910121900	19911220
EP0496088 A3	19930303	EP19910121900	19911220
EP0496088 B1	19950503	EP19910121900	19911220
JP4310814 A2	19921102	JP19920007641	19920120
US5297434 A	19940329	US19920823677	19920121

Priority:

DE19914101702 19910122 DE19914107077 19910306 DE19915005392 19911220

Probable Assignee: KAARU BUIRUHERUMU SHIYUTERU

Assignee(s): (std): KAARU BUIRUHERUMU SHIYUTERU ; STELL KARL WILHELM ; STELL KARL WILHELM DIPL ING DR ; STELL KARL WILHELM DR DIPL ING

Assignee(s): STELL KARL WILHELM DIPL ING DR 4424 STADTLOHN DE ; STELL KARL WILHELM DIPL ING DR 48703 STADTLOHN DE

Inventor(s): (std): KAARU BUIRUHERUMU SHIYUTERU ; STELL KARL WILHELM ; STELL KARL WILHELM DIPL ING DR ; STELL KARL WILHELM DR DIPL ING

Inventor(s): STELL KARL WILHELM DIPL ING DR 4424 STADTLOHN DE ; STELL KARL WILHELM DIPL ING DR 48703 STADTLOHN DE

Designated states: DE ES FR GB IT SE

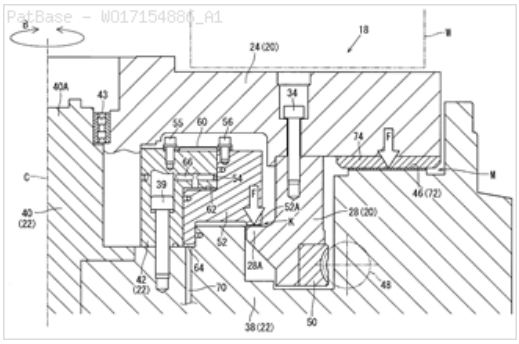
547) Family number: 66945986 (WO17154886A1)

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Title: ROTATING TABLE DEVICE, AND MACHINE TOOL PROVIDED WITH SAME

Abstract: A rotating table is rotatably and slidably disposed on a support body. A piston member is disposed so as to be capable of applying a pressing force to the rotating table along the direction of a rotational axis. The pressing force generates a rotation-direction restraining force with respect to rotation and sliding between the support body and the rotating table. The support body and the piston member are linked by a linking member. The linking member is flexible in the direction of the rotational axis and is rigid in the direction of rotation. When pressure is applied, restraining force is produced between the piston member and the rotating table.

Classifications:
International (IPC 8-9): B23Q1/01 B23Q1/28 B23Q1/52 F16C17/04 F16C33/20 F16D121/04 F16D125/04 F16D125/06 F16D55/32 F16D65/18 F16J3/02 (Advanced/Invention);
F16D121/04 F16D125/04 F16D125/06 (Advanced/Non-invention)
CPC: B23Q1/01 B23Q1/28 B23Q1/52 F16C17/04 F16C33/20 F16D55/32 F16D65/18 F16J3/02



Family:

Publication number	Publication date	Application number	Application date
CN108778615 A	20181109	CN201780015709	20170307
DE112017001226 T5	20181220	DE201711001226T	20170307
JP2017159394 A2	20170914	JP20160045099	20160309
WO17154886 A1	20170914	WO2017JP08953	20170307

Priority:

JP20160045099 20160309 WO2017JP08953 20170307

Probable Assignee: JTEKT CORP

Assignee(s): (std): JTEKT CORP

Assignee(s): N A

Inventor(s): (std): ISOGAI SHUITSU ; ISOTANI HIDEYASU ; TOYAMA KOJI ; OOTSUKA YOSHIO ; OTSUKA YOSHIO ; TOYAMA HIROHARU

Agent(s): UENO HIDEKI

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

548) Family number: 74099987 (WO19077071A1)

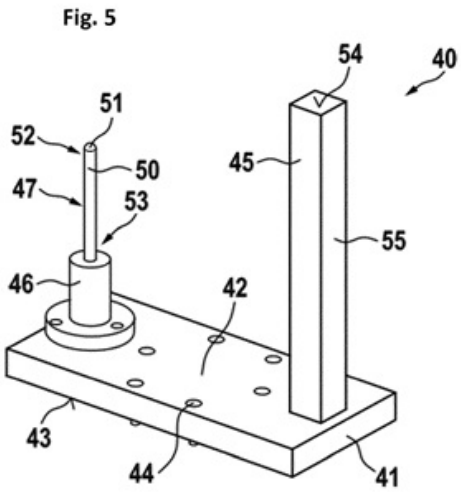
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Title: GRINDING CENTER AND METHOD FOR AXIS COMPENSATION OF A GRINDING CENTER

Abstract: A machining center (10), particularly a five-axis grinding center, comprising a control unit (26) for automatically operating the machining center (10), a grinding head (20), having a spindle (21) for clamping a machining tool (22) and a first touch probe (24) being attached to the grinding head (20) and electrically connected to the control unit (26) to provide a first touch probe signal to the control unit (26), a machining table (12) for supporting a workpiece; and a first test piece (40) being configured to be mounted on the machining table (12), wherein the first test piece (40) has a second touch probe (46) being electrically connectable to the control unit (26) to provide a second touch probe signal to the control unit (26), and in that the machining center (10) further comprises a second test piece (30) being configured to be connected to the spindle (21).

Classifications:
International (IPC 8-9): B23Q17/22 B24B47/22 G01B21/04 G05B19/401 (Advanced/Invention)
CPC: B23Q17/2233 B24B27/0084 B24B47/22 B24B49/00

PatBase - WO19077071_A1



Family:

Publication number	Publication date	Application number	Application date
EP3473379 A1	20190424	EP20170197459	20171020
WO19077071 A1	20190425	WO2018EP78630	20181018

Priority:

EP20170197459 20171020

Probable Assignee: ISOG TECH GMBH

Assignee(s): (std)**:** ISOG TECH GMBH

Assignee(s): ISOG TECHNOLOGY GMBH

Inventor(s): (std)**:** WILDEGGER BENJAMIN

Agent(s): LOHR JOESTINGMEIER AND PARTNER; JOESTINGMEIER MARTIN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

549) Family number: 65315989 (US2017087679A)

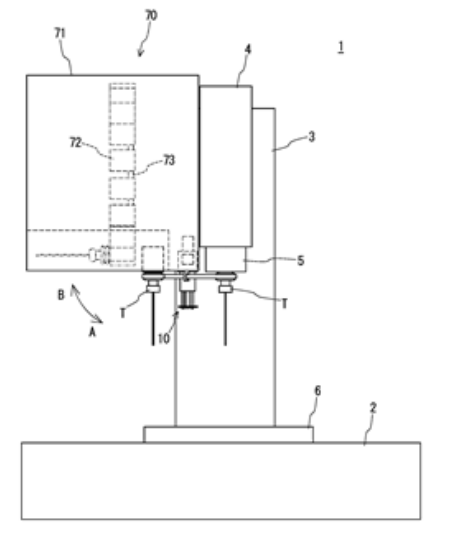
© PatBase

Title: TOOL CHANGER

Abstract: A tool changer includes a holding member having a tool change arm, a rotating mechanism for rotating the holding member, a forward/backward moving mechanism for moving the holding member forward and backward, and a controller controlling the mechanisms. A zero return controller determines whether the tool change arm is holding tools. When it is not holding tools, the tool change arm is rotated to a predetermined non-interference angle, the tool change arm is translated to a forward/backward movement zero point, and the tool change arm is rotated to a rotation zero point. When it is holding tools, the tool change arm is translated to a forward end, the tool change arm is rotated to position it on an expected path, and the tool change arm is moved along the expected path, thereby moving the tool change arm to the rotation zero point and the forward/backward movement zero point.

Classifications:
International (IPC 8-9): B23Q3/155 B23Q3/157 B23Q5/36 (Advanced/Invention); B23Q3/155 (Advanced/Non-invention)
CPC: B23Q3/15713 B23Q3/1574 B23Q3/15753 B23Q3/15746 B23Q2003/15532 B23Q2003/155414 B23Q2003/155425 B23Q2003/155439 Y10T483/13 Y10T483/1767
US: 483/44

PatBase - US2017087679_AA



Family:

Publication number	Publication date	Application number	Application date
CN106553074 A	20170405	CN201610601254	20160727
CN106553074 B	20190521	CN201610601254	20160727
DE102016217699 A1	20170330	DE201610217699	20160915
JP2017064842 A2	20170406	JP20150192686	20150930
JP6490553 B2	20190327	JP20150192686	20150930
US2017087679 AA	20170330	US20160261421	20160909
US10081085 BB	20180925	US20160261421	20160909

Priority:

JP20150192686 20150930

Probable Assignee: DMG MORI CO LTD

Assignee(s): (std): DMG MORI CO LTD ; DMG MORI SEIKI CO LTD

Assignee(s): DMG MORI CO

Inventor(s): (std): YAMAMOTO KOJI

Agent(s): MURAKAMI SATOSHI; MILLER MATTHIAS AND HULL LLP

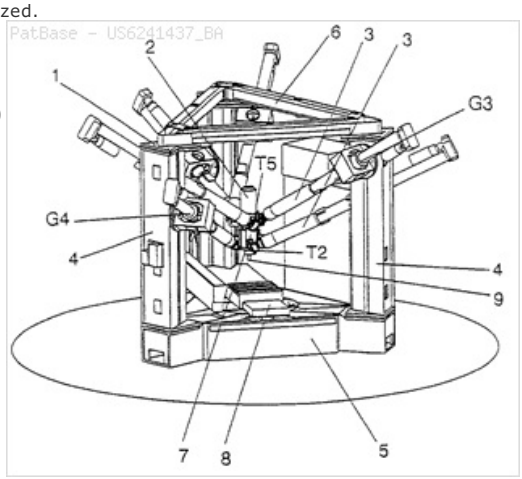
550) Family number: 30431995 (US6241437B)

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Title: HEXAPODAL MACHINING CENTER

Abstract: A hexapodal machining center comprising a fixed frame (1) and a support (2) which are interconnected via six struts (3) of an adjustable length. The connecting points (T1, T2, T3) of three struts on the support form a first working plane, whereas a further working plane is formed by the connecting points (T4, T5, T6) of the three further struts on the support. The frame connection points (G1, G2, G3, G4, G5, G6) of the struts are also arranged in two separate working planes. The connecting points of the two working planes of the support are superimposed such that the connecting lines of the superimposed pairs of connecting points (T1, T4; T2, T5; T3, T6) extend in parallel with each other. This allows a high degree of movability of the support in all of the six degrees of freedom. In particular, the movability in the three rotational degrees of freedom and the force receiving capacity of the support are optimized.

Classifications:
International (IPC 8-9): B23Q1/00 B23Q1/44 B23Q1/54 (Advanced/Invention); B23Q1/00 B23Q1/25 (Core/Invention)
International (IPC 1-7): B23B39/00 B23C1/12 B23P21/00 B23P23/00 B23Q1/01 B23Q1/44 B23Q1/54 B23Q39/00 F16H21/54
CPC: Y10T408/91 Y10T409/307672 Y10T409/308512 Y10T409/309576 B23Q1/5462
European: B23Q1/54B3
US: 248/631 408/234 409/201 409/216 409/235 901/41



Family:

Publication number	Publication date	Application number	Application date
DE29803454 U1	19990805	DE19982003454U	19980227
DE59803796 D1	20020516	DE19985003796	19981125
EP1058593 A1	20001213	EP19980964438	19981125
EP1058593 B1	20020410	EP19980964438	19981125
JP2002504437 T2	20020212	JP20000533250T	19981125
JP3373496 B2	20030204	JP20000533250T	19981125
US6241437 BA	20010605	US20000645885	20000825
WO9943463 A1	19990902	WO1998EP07593	19981125

Priority:

DE19982003454U 19980227 DE19985003796 19981125 WO1998EP07593 19981125

Probable Assignee: FRAUNHOFER GES

Assignee(s): (std): FRAUNHOFER GES FORSCHUNG ; WIELAND FRANK

Assignee(s): FRAUNHOFER GESELLSCHAFT ZUR ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWAN ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E V 80636 MUENCHEN DE ; FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E V ; FRAUNHOFER GES ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV ; FRAUNHOFER GES ZUR ; FRAUNHOFER GES ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG EV ; FRAUNHOFER GES ZUR FORDERUNG DER ANGEWANDTEN FORSC ; FRAUNHOFER GES

Inventor(s): (std): WIELAND FRANK

Agent(s): NAGAI HIROSHI

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT JP LI LU MC NL PT SE US

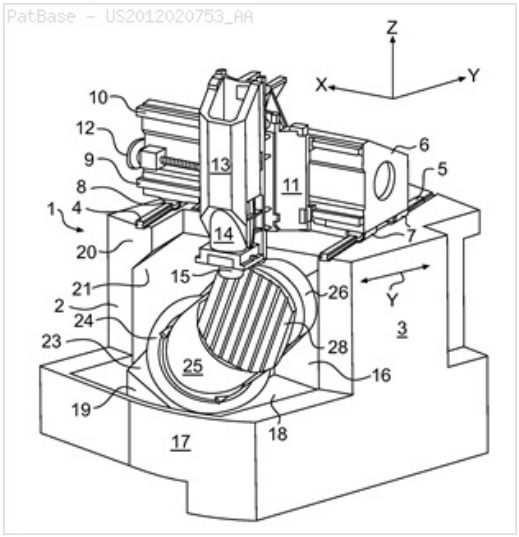
551) Family number: 49248996 (US2012020753A)

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Title: MACHINE TOOL

Abstract: A machine tool comprising a machine frame having dimensionally rigid side walls, each including top-side horizontal guide rails. A compound slide is displaceable in or on the guide rails. On the front of the compound slide is a machining unit comprising a spindle head which is vertically displaceable. A workpiece mounting unit is disposed in the space between the side walls. The workpiece mounting unit may have a workpiece table or a workpiece chucking device. In order to form an enlarged access to the work area of the machine tool, one side wall is shorter at the front than the other side wall. Further, the linear guides or guide rails mounted to the side walls of the machine frame may be aligned at an acute angle a to the vertical center plane of the machine frame.

Classifications:
International (IPC 8-9): B23Q1/01 B23Q1/03 B23Q1/26 B23Q1/28 B23Q1/48 B23Q1/52 B23Q15/12 (Advanced/Invention)
CPC: B23Q1/012 B23Q1/015 Y10T409/307 Y10T409/30784 Y10T409/30896 Y10T409/305824 Y10T409/307056 Y10T409/307672 Y10T409/307728 Y10T409/308288 Y10T409/309576
European: B23Q1/01A B23Q1/01B
US: 409/168 409/168P 409/189 409/190 409/201 409/201S 409/202 409/204 409/204S 409/212 409/212S 409/224 409/224S 409/235 409/235S



Family:

Publication number	Publication date	Application number	Application date
CN102152128 A	20110817	CN201110021825	20110119
CN102152128 B	20140409	CN201110021825	20110119
DE102010004990 A1	20110721	DE201010004990	20100119
DE102010004990 B4	20120119	DE201010004990	20100119
DE502011006244 D1	20150430	DE201150006244T	20110113
EP2345503 A2	20110720	EP20110000218	20110113
EP2345503 A3	20130605	EP20110000218	20110113
EP2345503 B1	20150318	EP20110000218	20110113
ES2539273 T3	20150629	ES20110000218T	20110113
IN00045KO2011 A	20111216	IN2011KO00045	20110113
JP2011148086 A2	20110804	JP20110007504	20110118
JP5763928 B2	20150812	JP20110007504	20110118
US2012020753 AA	20120126	US20110009479	20110119
US8845246 BB	20140930	US20110009479	20110119

Priority:

DE201010004990 20100119 EP20110000218 20110113

Probable Assignee: DECKEL MAHO SEEBACH GMBH

Assignee(s): (std): BRAND MATTHIAS ; DECKEL MAHO SEEBACH GMBH ; TUELLMANN UDO

Inventor(s): (std): TUELLMANN UDO DR ING ; BRAND MATTHIAS DIPL ING ; TUELLMANN UDO ; BRANDT MATTHIAS ; BRAND MATTHIAS

Inventor(s): MATTHIAS BRAND ; UDO TUELLMANN

Agent(s): BEETZ AND PARTNER; BEETZ AND PARTNER MBB; MORI TOHRU; ASAMURA KIYOSHI; ASAMURA PATENT OFFICE PC; YOSHIDA YUTAKA; ASAMURA HAJIME; MAKHAM FIRM

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

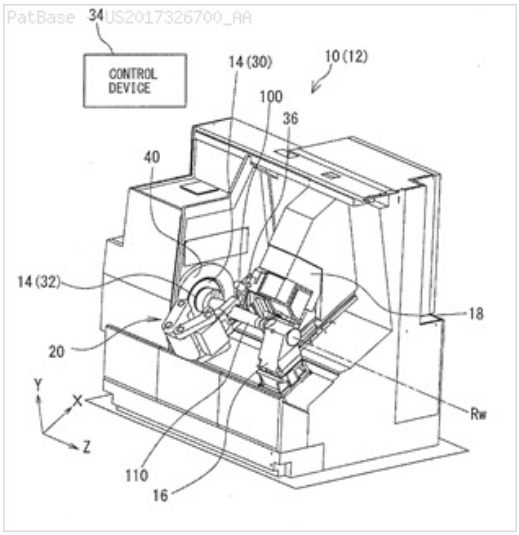
552) Family number: 67490997 (US2017326700A)

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Title: MACHINE TOOL

Abstract: A machine tool that machines a workpiece by a tool includes a workpiece spindle device that holds the workpiece in a rotatable manner with a predefined workpiece rotational axis Rw as a center, one or more in-machine robots, and a connecting mechanism that attaches the one or more robots on the machine tool so that the one or more robots move independently from the workpiece, with the workpiece rotational axis Rw serving as a center.

Classifications:
International (IPC 8-9): B23B13/00 B23B15/00 B23B25/00 B23B25/06 B23B3/16 B23B5/12 B23C9/00 B23K26/00 B23P23/02 B23Q1/72 B23Q11/00 B23Q11/10 B23Q17/00 B23Q17/22 B23Q17/24 B23Q3/155 B23Q7/04 B24B41/06 B24B49/04 B24B5/04 B25J11/00 B25J13/00 B25J9/00 (Advanced/Invention)
CPC: B23Q11/005 B25J11/005 B25J9/0096 B23K26/0093 B23Q11/1084 B23Q17/2409 B23B3/16 B23B25/06 B23B5/12 B23C9/00 B24B5/04 B23Q2717/003 B23Q2717/006 B23Q3/15573 B23B13/00 B23Q1/76 B23Q7/04 B23Q11/0032 B23Q11/0075 B23Q17/00



Family:

Publication number	Publication date	Application number	Application date
CN107363838 A	20171121	CN201710330874	20170511
DE102017109360 A1	20171116	DE201710109360	20170502
JP2017202548 A2	20171116	JP20160095532	20160511
KR20170127369 A	20171121	KR20170058047	20170510
TW201808519 A	20180316	TW20170115550	20170511
US2017326700 AA	20171116	US20170581372	20170428

Priority:

JP20160095532 20160511 KR20170058047 20170510

Probable Assignee: OKUMA CORP

Assignee(s): (std)**:** OKUMA CORP ; OKUMA MACHINERY WORKS LTD

Assignee(s): OKUMA CORPORATION

Inventor(s): (std)**:** MORIMURA SHOICHI ; SHOICHI MORIMURA

Agent(s): YKI PATENT ATTORNEYS; YKI INTELLECTUAL PROPERTY ATTORNEYS

553) Family number: 54985997 (JP2013223919A)

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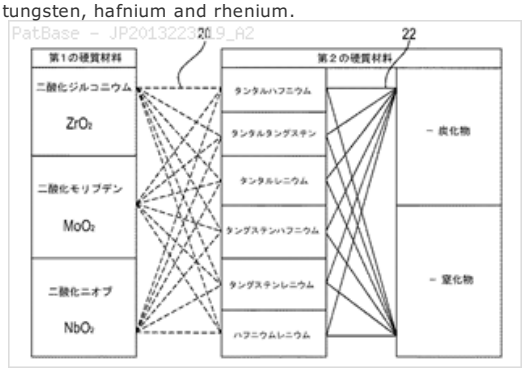
Title: MIXED-CERAMIC CUTTING TOOL, MIXTURE OF CERAMIC GRANULE THEREFOR, AND METHOD FOR MANUFACTURING CUTTING TOOL

Abstract: PROBLEM TO BE SOLVED: To produce a mixed-ceramic cutting tool which can be used for a general purpose, and to provide the mixture of ceramic granules therefor, and a method for manufacturing the mixed-ceramic cutting tool.SOLUTION: In a mixed-ceramic cutting tool having at least two ceramic hard materials, particularly, tips or throwaway tips, a first hard material contains an oxide of zirconium, molybdenum or niobium and a second hard material contains the carbide or nitride of at least two compounds selected from tantalum, tungsten, hafnium and rhenium.

Classifications:

International (IPC 8-9): B22F3/00 B23B27/14 C04B35/48 C04B35/488 C04B35/495 C04B35/56 C04B35/565 C04B35/58 C22C29/02 C22C29/12 C22C29/16 (Advanced/Invention)

CPC: C04B35/56 C04B35/58007 C04B35/58028 C04B2235/3244 C04B2235/3251 C04B2235/3256 C04B35/5607 C04B35/5622 C04B35/5626 C04B35/58 C04B35/01 C04B35/488 C04B35/495 C04B35/565 C22C29/02 C22C29/12 C22C29/16



Family:

Publication number	Publication date	Application number	Application date
CN103373852 A	20131030	CN201310135336	20130418
DE102012007991 A1	20131024	DE201210007991	20120420
JP2013223919 A2	20131031	JP20130089364	20130422
SE201350476 A1	20131021	SE20130050476	20130416
SE537828 C2	20151027	SE20130050476	20130416

Priority:

DE201210007991 20120420

Probable Assignee: BOSCH GMBH ROBERT

Assignee(s): (std)**:** BOSCH GMBH ROBERT

Assignee(s): ROBERT BOSCH GMBH

Inventor(s): (std)**:** TAVORMINA GIUSEPPE

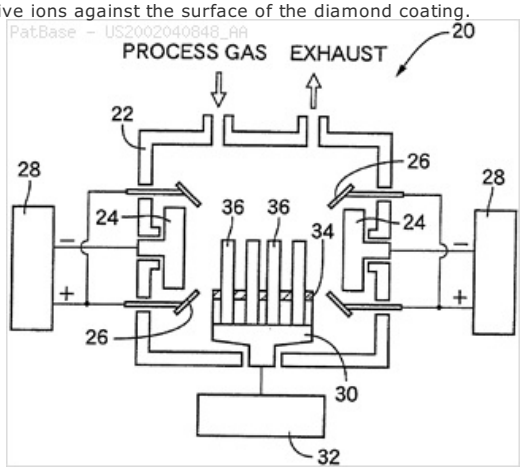
Inventor(s): GIUSEPPE TAVORMINA

554) Family number: 22322999 (US2002040848A)

Title: Method of smoothing diamond coating, and method of manufacturing diamond-coated body

Abstract: A method of smoothing a surface of a diamond coating of a diamond-coated body, by using an arc-type ion plating device in which at least one target is disposed. The method includes: (a) a step of causing arc discharge between an anode, and a cathode which is provided by each of the above-described at least one target, whereby positive ions are emitted from the above-described at least one target; and (b) a step of applying a negative bias voltage to the diamond-coated body which is disposed in the arc-type ion plating device, whereby the surface of the diamond coating is bombarded with the positive ions, so as to be smoothed by the bombardment of the positive ions against the surface of the diamond coating.

Classifications:
International (IPC 8-9): B23B27/14 B23B51/00 B23C5/16 C23C16/27 C23C16/56 C30B29/04 (Advanced/Invention); C23C16/26 (Advanced/Non-invention); B23B27/14 B23B51/00 B23C5/16 C23C16/26 C23C16/56 C30B29/04 (Core/Invention); C23C16/26 (Core/Non-invention)
International (IPC 1-7): B23B27/14 B23B51/00 B23C5/16 C23C14/00 C23C14/32 C30B29/04
CPC: C23C16/27 C23C16/56 H01J37/32055
European: C23C16/27 C23C16/56 H01J37/32M4 M23C16/26B T01J237/323G
US: 204/192.32 204/192.320S 204/192.35 204/192.350S 204/192.38 204/192.380P 427/331 427/523 427/524 427/524S 427/531 427/534 427/540



Family:

Publication number	Publication date	Application number	Application date
JP2002187793 A2	20020705	JP20010196701	20010628
US2002040848 AA	20020411	US20010927337	20010813
US6517688 BB	20030211	US20010927337	20010813

Priority:

JP20000310259 20001011 JP20010196701 20010628

Probable Assignee: OSG CORP

Assignee(s): (std)**:** OSG CORP

Inventor(s): (std)**:** SAKURAI MASATOSHI ; SUGITA HIROAKI

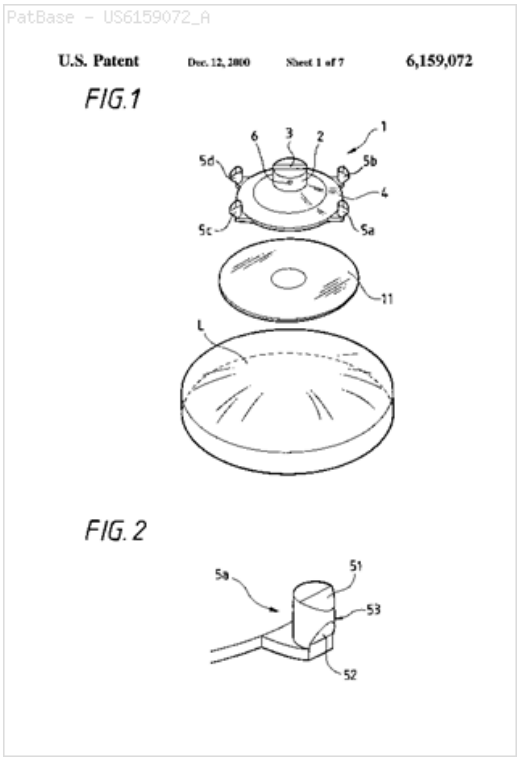
555) Family number: 14929999 (US6159072A)

Title: Lens transport apparatus, a cup for securing an eyeglass lens during transport, and a method of transporting lenses

Abstract: An eyeglass lens securing cup (1) securely mounted on an eyeglass lens has a positioning portion which engages a manipulator to determine a specified axial position and it is placed in position on a tray (400). The tray (400) is moved to a specified position by a tray transport apparatus (500). A lens transport apparatus (300) has the manipulator which, in correspondence with the positioning portion of the securing cup (1), maintains the specified axial position, picks up the securing cup (1) from the tray (400) and transports it to a machining shaft on a grinder (200). The eyeglass lens having refractive power can be transported while allowing the optical center of the lens and its axial angle to keep the desired relationships.

Classifications:
International (IPC 8-9): B23Q7/04 B24B13/00 B24B41/00 B24B9/14 B25J15/08 B65G49/06 (Advanced/Invention); B23Q7/04 B24B13/00 B24B41/00 B24B9/06 B25J15/08 B65G49/05 (Core/Invention)
International (IPC 1-7): B23Q7/4 B24B13/00 B24B41/0 B24B49/00 B24B9/14 B25J15/08 B65G49/06
CPC: B23Q7/047 B24B9/146 B24B41/005
European: B23Q7/04F B24B41/00C B24B9/14D
US: 451/381 451/390 451/6

PatBase – US6159072_A



Family:

Publication number	Publication date	Application number	Application date
DE69721441 D1	20030605	DE19976021441	19971030
DE69721441 T2	20040226	DE19976021441T	19971030
DE69721441 T3	20070104	DE19976021441T	19971030
EP0839603 A1	19980506	EP19970118972	19971030
EP0839603 B1	20030502	EP19970118972	19971030
EP0839603 B2	20060913	EP19970118972	19971030
ES2197281 T3	20040101	ES19970118972T	19971030
ES2197281 T5	20070501	ES19970118972T	19971030
JP10138107 A2	19980526	JP19960307184	19961031
JP3630888 B2	20050323	JP19960307184	19961031
US6159072 A	20001212	US19970961943	19971031

Priority:

JP19960307184 19961031

Probable Assignee: NIDEK CO LTD

Assignee(s): (std)**:** NIDEK KK

Assignee(s): NIDEK CO ; NIDEK CO LTD

Inventor(s): (std)**:** SHIBATA RYOJI

Designated states: DE ES FR GB