

[No database/cluster active] ..fi epodoc

 Database: EPODOC

[EPODOC: SS 1] (removal or extractor) 1w bearing

Results in EPODOC 100

[SS 2] tool and shaft

Results in EPODOC 111.031

[SS 3] 1 and 2

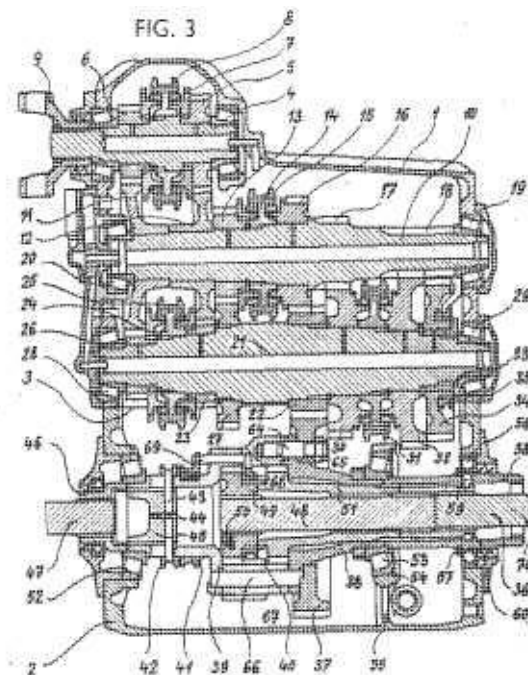
Results in EPODOC 1

[SS 4] ..li



1/1 © EPODOC / EPO

PN - [GB1324765](#) A 19730725
PR - CS19700001505 19700305
AP - GB19710024077 19710419
DT - **
CCI - [F16H3/091](#) ; [F16H3/093](#)
CCA - [F16H2200/006](#) ; [F16H2200/0065](#)
PA - TATRA NP
TI - CHANGE SPEED GEAR
TRANSMISSION SYSTEMS
AB - 1324765 Change-speed gear
TATRA NARODNI PODNIK 19 April
1971 [5 March 1970] 24077/71
Heading F2D A series splitter and
main change-speed gear
combined in a single casing on a
heavy motor vehicle having a
backbone chassis and a
multi-axle (two rear, one front)
drive, is arranged to facilitate
dismantling without the
necessity for disturbing the
chassis backbone. For this
purpose the gear casing is split
in a horizontal plane 3, the lower



part 2 forming part of the backbone structure, and housing a final drive, whilst the upper part 1 houses the splitter 5, 6, 11, 12, and the main change-speed gear 10, 21, the upper whole being detachable as an assembly, after which the final drive in the lower casing part 2 can be dismantled as detailed below. Eight, ten or twelve forward ratios may be provided, and in Fig. 5, not shown, these may be doubled to twenty-four by an additional two-speed clutch on the final output **shaft**. The main gear provides a single reverse. In the twelve-ratio form shown, an enginedriven input **shaft** 4 drives a countershaft 10 at two speeds through a clutch 8 and splitter wheelpairs 6, 11; 5, 12. The countershaft 10 drives an intermediate **shaft** 21, arranged in the same horizontal plane (Fig. 2, not shown), at six ratios through clutches 14, 25 and 31, and one reverse through a clutch 35 and idler (61, Fig. 1, not shown) meshing wheels 18, 34. The intermediate **shaft** 21 drives a final output **shaft** assembly 36 through a single wheel 37, or pair of clutched wheels (Fig. 5, not shown). Final drive.-The output wheel 37 carries intermeshed planets of a torque-dividing differential, the pins 49, 51 of which are connected respectively through splined stub shafts 48, 60 to one rear axle drive **shaft** 70, and through an internally splined sleeve 58 to a second rear axle drive **shaft**, not shown. The output wheel 37 can also be clutched directly at 45, 46 to a front axle drive **shaft** 47. The differential drive

between the two rear axles can be locked by a dog clutch 68. Dismantling is as follows. First the upper casing section 1, complete with shafts 4, 10, 21 and their wheels, is removed as an assembly, leaving the lower casing section 2, open at the top, still associated with the chassis backbone. **Removal of bearing** retaining rings 54, 57 then permits the differential assembly 37, complete with sleeve **shaft** 58, to be moved to the right, which causes one rear axle drive **shaft** 70 to thrust the inner stub **shaft** 48 leftwards relative to the differential assembly, overcoming a ball detent 50, so that the assembly is now free of the one axle **shaft** 70. The assembly is next moved left to release external splines on the differential wheel 51 from the sleeve 58, after which the assembly is free of both rear axle shafts, and can be lifted out, either by splitting a divided bearing wall 55, or by tilting the assembly to pass through an undivided wall. Assembly reverses the above procedure, the inner **shaft** 48 being finally moved to its rightward position, shown, by inserting a **tool** through openings in the differential wall 39.

[SS 4] /ic B23P19/00 or B23P19/04

Results in EPODOC 56.607

[SS 5] 1 and 4

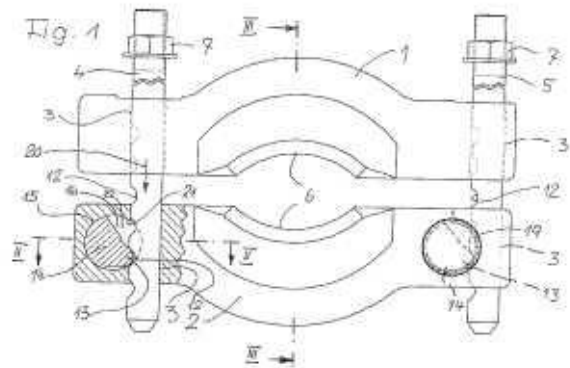
Results in EPODOC 2

[SS 6] ..li



1/2 © EPODOC / EPO

- PN - [US6006409](#) A 19991228
- PR - DE1998106965 19980219
- AP - US19980206006 19981204
- DT - **
- CT - || STSE (A)
[US1349225](#) A 19200810 [
] (ROSENBLUM HENRY I)
- CCI - [B25B27/06](#)
- CCA - [Y10T29/53683](#)
- TI - Clamping and separating device,
 especially for pulling off bearing
 shells
- AB - A clamping and separating
 device for **removal of bearing**
 shells has first and second jaws
 and at least one bolt inserted in
 an insertion direction into the
 first and second jaws for
 clamping the first and second
 jaws relative to one another. The
 bolt has depressions arranged in
 a longitudinal direction of the
 bolt and spaced relative to one
 another in the longitudinal
 direction. A locking element is
 mounted in the first jaw and
 selectively engages in a locking
 position one of the depressions
 for locking the bolt. A spring
 biases the locking element in a
 direction counter to the insertion
 direction into a rest position.
 The locking element is
 releaseable from the locking
 position against the force of the
 spring to allow removal of the
 bolt in a direction counter to the
 insertion direction.



2/2 © EPODOC / EPO

- PN - [CA1086035](#) A 19800923
- PR - US19770850280 19771110
- AP - CA19780312257 19780928
- DT - I
- CCI - [B23P19/025](#) ; [B25B27/064](#)

CCA - [Y10T29/49815](#) ; [Y10T29/53439](#)
 PA - GEN MOTORS CORP
 TI - HOT AIR ARBOR EXTRACTOR
 AB - HOT AIR ARBOR **EXTRACTOR** **bearing** sleeve extractor assembly includes a movable workpiece support on a stand having an overhead circular spray head to receive a multi-surfaced elongated bearing sleeve connected to a support member and wherein the spray head includes a perforated inner wall and an insulated outer wall having a heated vapor chamber therebetween connected to a heat source for directing heated vapor into the spray head for distribution therefrom to produce even convection heating of the bearing sleeve continuously circumferentially therearound so as to produce a non-mechanical thermal release of the bearing sleeve from its support member.

[SS 6] ..v

[EPODOC: SS 6] 2 and 4

Results in EPODOC 756

[SS 7] **press** and 6

Results in EPODOC 40

[SS 8] ..li



1/40 © EPODOC / EPO

PN - [JP2017196708](#) A 20171102
 PR - JP20160090523 20160428
 AP - JP20160090523 20160428
 DT - I
 FI - B23P19/00&304A; B23P19/02&B; B23P21/00&303B
 FT - 3C030/BC19; 3C030/BC26; 3C030/CC07; 3C030/DA38
 PA - ISUZU MOTORS LTD
 TI - **PRESS-IN JIG**
 AB - PROBLEM TO BE SOLVED: To properly **press**-fit a second cylindrical surface of an annular plate around a first cylindrical surface of the annular member.SOLUTION: A **press**-in jig 40 is provided, which is coaxially **press**-fitted with an annular plate 3 into an annular member 1. The annular member is coaxially fixed around a fixed **shaft** 2, and the fixed **shaft** coaxially has a center hole 6 on a front end surface. The annular member coaxially has a first cylindrical surface 8 on the front end surface, and the annular plate coaxially has a second cylindrical surface 10 at a center portion. The **press**-in jig is applied to coaxially **press**-fit the second cylindrical surface around the first cylindrical surface. The **press**-in jig is equipped with a centering pin 41 inserted into the center hole of the fixed **shaft**, a guide **shaft** 42 fitted around the

centering pin, and a **press-in tool** 43 disposed so as to axially slide around the guide **shaft**, and configured to **press** a peripheral part 10C of the second cylindrical surface on the annular plate.SELECTED DRAWING: Figure 2

2/40 © EPODOC / EPO

- PN - [CN107138938](#) A 20170908
- PR - CN20171521655 20170630
- AP - CN20171521655 20170630
- DT - I
- CNOI - [B23P19/04](#)
- PA - ZHUZHOU LINCE GROUP CO LTD; ZHUZHOU LINCE GROUP SHOCK ABSORBER CO LTD
- TI - Inner screw cap tightening device of oil pressure vibration reducer
- AB - The invention provides an inner screw cap tightening device of an oil pressure vibration reducer. The device comprises a frame, a rotating base, a guide support positioning **tool**, a guide rod, and a clamping and pressing mechanism; the clamping and pressing mechanism comprises a clamping and pressing block and a driving module 1; the clamping and pressing block is driven by the driving module 1 to downwards move in the axial direction of a rotating **shaft** to center and **press** the top of an inner screw cap prescewed in a guide support, and enables the inner screw cap and the guide support to gradually screw along with the rotation of the guide support; the clamping and pressing block comprises a fixed block and a movable block; a positioning key rotated in the screwing process of the inner screw cap and the guide support is arranged at the bottom of the movable block; the fixed block is provided with a guide hole matched with the guide rod; the movable block is fixedly connected with the guide rod; and the guide rod can downwards move and rotate up and down in the guide hole, so that the movable block can move and rotate up and down relative to the fixed block to achieve combination between the movable block and the inner screw cap. The device uses a motor as a power source to replace manual screwing, is stable and reliable, is higher in efficiency, and is fast and convenient.

3/40 © EPODOC / EPO

- PN - [CN206185425U](#) U 20170524
- PR - CN201621153710U 20161031
- AP - CN201621153710U 20161031
- DT - I
- PA - SHANGHAI FUTURE HI-TECH CO LTD
- TI - Axle card assembly quality
- AB - The utility model provides an axle card assembly quality, includes feed mechanism, feed mechanism, feeding agencies and assembly devices. Feed mechanism and feed mechanism are connected. Feeding agencies is including getting material smelting **tool** and being used for driving the servo who gets material smelting **tool** and remove. The one end of getting material smelting **tool** has C shape opening to set up the incision that links to each other with C shape opening. Assembly devices is including being used for fixed carrier and the carousel of treating the dress piece, and the carrier is installed on the carousel. After above -mentioned axle card assembly quality, feed mechanism

accomplished the material loading, feed mechanism separated specific position with the axle card with a fixed gesture, afterwards private clothes system drive get material smelting **tool press** from both sides get the axle clamp join in marriage to by assembly devices in advance fixed treat dress on. Among the assembling process, the manual work volume is less, and efficiency is higher, and intensity of labour is less, and simultaneously, the C shape opening of getting material smelting **tool** tip presss from both sides the outside deforming force that brings with the effectual formation elastic force of incision design when getting the clamp **shaft** card and absorbing the assembly, avoided the axle card because the great plastic deformation who causes of external force.

4/40 © EPODOC / EPO

- PN - [CN105921964](#) A 20160907
- PR - CN20161359111 20160527
- AP - CN20161359111 20160527
- DT - I
- CT - || STSE (A)
[EP1908548](#) A1 20080409 [A] (COSBERG SPA [IT])
 [A] 1-5
 * 全文 *;
[CN101733634](#) A 20100616 [A] (FOSHAN SHUNDE ADAMS METAL MFG)
 [A] 1-5
 * 全文 *;
[CN102773704](#) A 20121114 [X] (SHENGJIN LIU)
 [X] 1-5
 * 说明书第27-33段及附图1-11 *;
[CN102848191](#) A 20130102 [A] (SHANGHAI ELECTRIC MACHINE TOOLS & ENGINEERING CO LTD)
 [A] 1-5
 * 全文 *;
[CN102862050](#) A 20130109 [A] (SHANGHAI ELECTRIC MACHINE TOOLS & ENGINEERING CO LTD)
 [A] 1-5
 * 全文 *;
[CN203197526U](#) U 20130918 [A] (WUJIANG SOURTON ELECTRONIC CO LTD)
 [A] 1-5
 * 全文 *;
[WO2013180439](#) A1 20131205 [A] (LG HAUSYS LTD [KR])
 [A] 1-5
 * 全文 *;
[CN105014370](#) A 20151104 [A] (SHANGHAI AAIMU ELECTRICAL APPLIANCE CO LTD)
 [A] 1-5
 * 全文 *
- CNOI - [B23P19/006](#) ; [B23P19/027](#)
- CNOA - [B23P2700/50](#)
- PA - FENGYE DIMUSI (WUHU) AUTO PARTS CO LTD
- TI - Automatic assembling device for automobile door hinge

AB - The invention aims at providing an automatic assembling device for an automobile door hinge. Firstly, a door hinge body is placed at the position of a positioning block of a sliding track; then, bush pressing cylinders are started and **press** bushes at the tail end of a bush feeding track to the inner side to reach the interiors of the left side and the right side of the door hinge body; then a forwards-pushing cylinder is started and pushes the door hinge body forwards to the front end of the sliding track; then the door hinge body provided with the bushes is placed on a **tool** block; a shell is placed on the door hinge body and matched with the door hinge body; then, a clamping cylinder is started and clamps the door hinge body; a fixing cylinder is started and clamps the shell and the door hinge body; then the clamping cylinder is started, clamps a **shaft** rod and pushes the **shaft** rod forwards to the right side of a through hole; a **shaft** rod pressing cylinder is started and presses the **shaft** rod into the through hole so that the shell and the door hinge body can be assembled together; and an adjusting cylinder adjusts the **shaft** rod, operation is quite convenient, the door hinge can be automatically assembled, the production efficiency is greatly improved, and the automatic assembling device is suitable for production.

5/40 © EPODOC / EPO

PN - [CN205363172U](#) U 20160706

PR - CN201521133205U 20151231

AP - CN201521133205U 20151231

DT - I

PA - JIAXING HONGYUAN ELECTROMECHANICAL TECH CO LTD

TI - Universal wheel pivot machine **tool** loading attachment

AB - The utility model provides an universal wheel pivot machine **tool** loading attachment installs on the frame, and is located punching **press** head below, loading attachment includes carousel, motor and flourishing material platform, it is cyclic annular that the carousel is the disc, the intra -annular is equipped with centrosymmetric rice style of calligraphy link, the link center is equipped with the pivot seat, carousel upper surface central symmetry sets up stamping base, stamping base is the cylinder section of thick bamboo of central trompil, the pivot seat is connected with motor **shaft**, the motor is installed in the frame, the carousel is located the frame top, the the central axis and the stamping base the central axis coincidence of punching **press** head, the platform that flourishing material platform was placed for the level, install on the frame of carousel both sides, one end is fixed on the frame, the other end is connected with the support frame and is fixed subaerial. Utilize the rotary gap of carousel, put into stamping base with the bearing in proper order, then put into the dead eye with the connecting axle, through the below realization punching **press** pressure equipment of carousel rotation to punching **press** head, practiced thrift the material loading time, improved the ram efficiency, and met accident in avoiding the stamping process, cause operating personnel to receive the injury.

6/40 © EPODOC / EPO

PN - [CN105215646](#) A 20160106

PR - CN20151624036 20150925

AP - CN20151624036 20150925

- DT - I
- CT - || STSE (A)
US4712459 A 19871215 [A] (WALKIEWICZ JR ZIGMUNT J [US], et al)
 [A] 1-8
 * 全文 *;
CN202646267U U 20130102 [Y] (DONGGUAN JUSHENG PLASTIC & ELECTRONIC PRODUCTS CO LTD)
 [Y] 1-8
 * 说明书第16-17段及附图1 *;
CN203844370U U 20140924 [Y] (JIANGSU ZHENGJI ELEVATOR FITTINGS CO LTD)
 [Y] 1-8
 * 说明书第17-22段及附图1 *;
CN204079053U U 20150107 [A] (HANGZHOU LIANGLIN ELECTRONIC TECHNOLOGY CO LTD)
 [A] 1-8
 * 全文 *;
CN204547276U U 20150812 [A] (RAY HOME ELECTRIC KUNSHAN CO LTD)
 [A] 1-8
 * 全文 *
- PA - NINGBO HONGXIE AUTOMOTIVE PARTS CO LTD
- TI - **Tool** device for pasting adhesive tape to decorative strips and glass clamping strips of automobile
- AB - The invention relates to a **tool** device for pasting adhesive tape to decorative strips and glass clamping strips of an automobile. The **tool** device comprises an upper **press** wheel floating mechanism, a bottom board and a pressure adjusting handle. Side boards are arranged on the upper end face of the bottom board side by side. A top board is installed at the upper ends of the side boards. A rotary wheel **shaft** is installed between the side boards. The middle of the rotary wheel **shaft** is sleeved with a fixed wheel. The upper **press** wheel floating mechanism comprises a fixing support, fixing blocks and an upper **press** wheel. Through holes are formed in the middle portions of the side boards. The two ends of the fixing support extend into the through holes and are fixedly connected with the fixing blocks. The portions, extending into the through holes, of the fixing support are connected with the side boards through multiple springs. The rotary wheel **shaft** is installed at the lower end of the fixing support, the middle of the rotary wheel **shaft** is sleeved with the upper **press** wheel, the upper **press** wheel is provided with a **press** block, spring **press** boards are arranged above the fixing support in parallel and connected with the fixing support through the springs, and the pressure adjusting handle vertically penetrates the top board so as to be fixedly connected with the spring **press** boards. The **tool** device has the beneficial effects of being simple in structure, low in cost, high in work efficiency, high in practicality and the like.

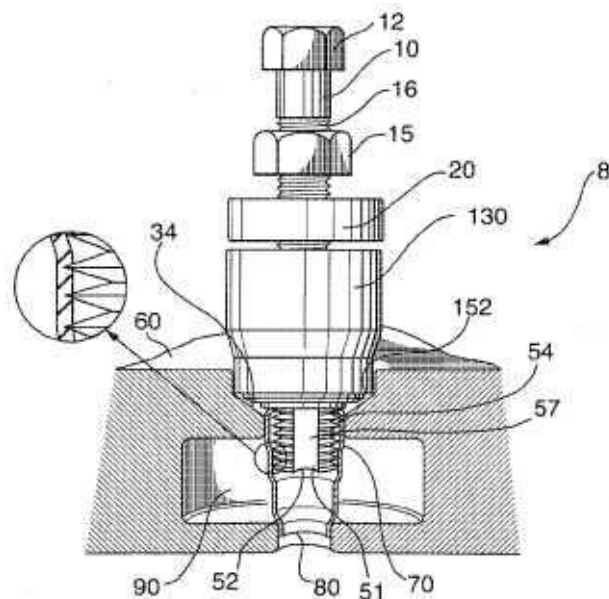
7/40 © EPODOC / EPO

- PN - CN204108600U U 20150121
- PR - CN20142408911U 20140723
- AP - CN20142408911U 20140723
- DT - I
- PA - ZHUHAI GREE ELEC APPLIANCES

- TI - Snap spring **press-in tool**
- AB - The utility model provides a snap spring **press-in tool**. The snap spring **press-in tool** comprises a platform, a driving mechanism, two positioning installation mechanisms and two supporting mechanisms. The driving mechanism, the two supporting mechanisms and the two positioning installation mechanisms are all arranged on the platform. The two positioning installation mechanisms are located on the two sides of the driving mechanisms and are oppositely arranged. The end, to be provided with a snap spring, of an output **shaft** of a motor penetrates through the platform to be matched with the positioning installation mechanisms, and therefore the aims of saving labor, reducing the production cost and improving the production efficiency are achieved.

8/40 © EPODOC / EPO

- PN - [US2014366351](#) A1 20141218
- PNFP - US9827656 B2 20171128
- PR - US201414120190
20140502; US201313987420
20130723; US201361854947P
20130506
- AP - US201414120190 20140502
- DT - *
- CT - || R141 (A1)
[US4204784](#) A 19800527 [
] (ECKENDORFF JEAN-PIERRE [FR]);
[US6637089](#) B1 20031028 [
] (ENGLISH RICHARD LEROY [US]);
[US7475465](#) B1 20090113 [
] (WEISS JAMES [US])
- || STSE (B2)
[US4204784](#) A 19800527 [
] (ECKENDORFF JEAN-PIERRE [FR]);
[US6637089](#) B1 20031028 [
] (ENGLISH RICHARD LEROY [US]);
[US7475465](#) B1 20090113 [
] (WEISS JAMES [US])
- CCI - [B25B27/0035](#) ; [B25B27/023](#) ;
[B25B27/062](#) ; [F02M61/14](#)
- CCA - [Y10T29/53883](#)
- PA - (A1)
WHITAKER TONY [US]
- (B2)
WHITAKER TONY [US]; WHITAKER
TOOLS INC [US]
- TI - (A1 B2)
Injector sleeve installation **tool**
and removal **tool** kit



AB

- (A1 B2)

A **tool** for inserting and fastening a replacement injector sleeve in the cylinder head of a diesel engine. The **tool** is part of an injector sleeve **tool** kit which also includes an injector sleeve removal **tool**. The installation **tool** includes an expandable mandril which is inserted into the injector sleeve and expands a portion of the sleeve causing a **press** fit of the sleeve within the cylinder head. The sleeve removal **tool** includes a tap having a longitudinal body and a threaded cutting head at one end and a bolt having a head at the other end. An extraction nut is threaded onto the threaded **shaft** of the drive member followed by a bearing surface member such as a spacer. A hollow cylinder or support sleeve having an internal diameter greater than the injector sleeve to be removed and an external diameter less than the diameter of the sleeve bore includes a shoulder member.

9/40 © EPODOC / EPO

PN - [CN103962818](#) A 20140806

PNFP - CN103962818B B 20160622

PR - CN2013135029 20130130

AP - CN2013135029 20130130

DT - I

CT - || STSE (A)

[US2006068690](#) A1 20060330 [A] (KOSCHEL CHRISTIAN [DE], et al)
[A] 1—10

* 全文 *;

[CN1590012](#) A 20050309 [A] (SUZHOU BAOSHIDE ELECTRIC TOOL [CN])
[A] 1—10

* 全文 *;

[CN1648475](#) A 20050803 [A] (JUNKERS JOHN K [US])
[A] 1—10

* 全文 *;

[CN101890631](#) A 20101124 [A] (KUNSHAN HIECISE HEAVY MACHINES CO LTD)

[A] 1-10

* 全文 *;

[CN202147295U](#) U 20120222 [A] (CHENGHAO TECHNOLOGY CO LTD)

[A] 1-10

* 全文 *

- CNOI - (A)
[B25F5/00](#)
- PA - (A)
POSITEC POWER TOOLS SUZHOU CO
- TI - (A)
Operation method for mounting and dismounting working head on and from power **tool**
- AB - (A)
The invention provides an operation method for mounting and dismounting a working head on and from a power **tool**. The power **tool** comprises an output **shaft**, a fastening piece and a locking piece, wherein the output **shaft** is used for mounting the working head and driving the working head to work; the fastening piece is used for fixing the working head on the output **shaft**; and the locking piece is used for locking and releasing the working head and moves between the locked position and the released position. The operation method comprises the following steps: a) the working head is mounted between a mounting part and a **press** plate; a rod part penetrates through the working head and extends into an accommodating hole; b) the **press** plate is pressed in the axial direction of the output **shaft** to enable the locking piece to move and clamp the fastening piece. The working head can be easily mounted on the output **shaft** without other auxiliary tools, so that the operation is very convenient.

10/40 © EPODOC / EPO

PN - [CN103962817](#) A 20140806

PR - CN2013134904 20130130

AP - CN2013134904 20130130

DT - I

CT - || STSE (A)
[CN88211472U](#) U 19881228 [A]

[A] 1-7

全文

[CN1893009](#) A 20070110 [A] (MATSUSHITA ELECTRIC IND CO LTD [JP])

[A] 1-7

全文

[CN101258338](#) A 20080903 [X] (BLACK & DECKER INC [US])

[X] 1-7

说明书第4页第2段到第7页第6段,附图1-7

[JPH05183300](#) A 19930723 [A] (KOMATSU GIKEN KK)

[A] 1-7

全文

[US2003079331](#) A1 20030501 [A] (BATRIN MARIUS [CA], et al)

[A] 1-7

全文

CNOI - [B23D45/16](#) ; [B25F5/00](#)
PA - POSITEC POWER TOOLS SUZHOU CO
TI - Operation method for dismounting working head from power **tool**
AB - The invention provides an operation method for mounting and dismounting a working head on and from a power **tool**. The power **tool** comprises an output **shaft**, a fastening piece, a locking piece and a driving piece, wherein the output **shaft** is used for mounting the working head and driving the working head to work; the fastening piece is used for fixing the working head on the output **shaft**; the locking piece is used for locking and releasing the working head and moves between the locked position and the released position; and the driving piece is used for being movably arranged on the output **shaft**. The operation method comprises the following steps: a) pressing the driving piece to drive the locking piece to move so as to release the fastening piece; b) taking out the working head. The operation method has the benefits that an operator is only required to **press** the driving piece to drive the locking piece to move so as to release the fastening piece, so that the fastening piece can be easily dismounted from the output **shaft**, and the convenience for operation is improved.

11/40 © EPODOC / EPO

PN - [CN203079544U](#) U 20130724
PR - CN20122678463U 20121211
AP - CN20122678463U 20121211
DT - I
PA - SHANGHAI HEAVY MACHINE PLANT
TI - Large free forging oil **press** pull rod and upright post combined assembling and lifting **tool**
AB - The utility model discloses a large free forging oil **press** pull rod and upright post combined assembling and lifting **tool** which is used for performing combined assembling and lifting on a pull rod with the length of not less than 17m and an upright post. The **tool** comprises a sling body, wherein lifting lugs are fixedly arranged on two sides of the sling body; lifting pin shafts are further fixedly arranged on two sides of the sling body; a **shaft** sleeve is sleeved on each lifting pin **shaft**; one end of each lifting pin **shaft** is provided with an end cover; and the end covers are fixedly connected with the lifting pin shafts through bolts. According to the **tool**, the pull rod and the upright post can be combined to form a whole body, and a stress state of the lifting point is improved, so that the combined pull rod and upright post can be lifted from a horizontal ground state to a vertical state by using a traveling crane under the condition that the lifting hook is not replaced.

12/40 © EPODOC / EPO

PN - [CN202943421U](#) U 20130522
PR - CN20122603230U 20121115
AP - CN20122603230U 20121115
DT - I
PA - PINGGAO GROUP CO LTD; STATE GRID CORP CHINA

- TI - Finger-touch spring assembling **tool**
- AB - The utility model discloses a finger-touch spring assembling **tool** which comprises an electric hand drill. A connecting connector is fixed at the output end of the power-output **shaft** of the electric hand drill, the connecting connector is provided with a clamping through groove used for containing the external spring of a finger-touch spring, and an ejecting-pressing screw is inserted in the clamping through hole in a spiral matching mode, wherein the ejecting-pressing screw is used for screwing in the clamping through groove to **press** and fix the external spring of the finger-touch spring in the clamping through groove. According to the finger-touch spring assembling **tool**, the connecting connector fixes the external spring, the electric hand drill drives the connecting connector to rotate and further drives the external spring to rotate to store elastic force, the labor intensity of a worker is further relieved, the manufacturing difficulty of the finger-touch spring is lowered, and the manufacturing efficiency of the finger-touch spring is effectively improved.

13/40 © EPODOC / EPO

- PN - [CN202878173U](#) U 20130417
- PR - CN20122611162U 20121117
- AP - CN20122611162U 20121117
- DT - I
- PA - WUXI NEW HONGTAI ELECTRICAL TECHNOLOGY CO LTD
- TI - **Tool** clamp for pressing spring of cambered plate assembly
- AB - The utility model discloses a **tool** clamp for pressing a spring of a cambered plate assembly. The **tool** clamp comprises a pedestal and a pressing head; a plurality of pressing plates are connected with the lower end of the pressing head; the pedestal comprises a positioning seat and an installing seat at the upper end of the positioning seat; a positioning through hole is formed in the middle of the positioning seat; an installing through hole is formed in the middle of the installing seat; a positioning **shaft** in match with the positioning through hole is arranged in the positioning through hole; the upper end of the positioning **shaft** extends out of the installing through hole and is sleeved with a guiding **shaft**; an installing **shaft** is sleeved on a position the lower end of the positioning **shaft** and placed at the guiding **shaft**; the lower end of the installing **shaft** props against the positioning seat; the diameter of the guiding **shaft** is sequentially increased from top to bottom; and the lower part of the guiding **shaft** is lengthways provided with a guiding groove which is in match with the pressing plates. The **tool** clamp for pressing the spring of the cambered plate assembly is simple in structure, easy to accomplish and low in manufacturing cost; the pressing head is driven by a **press** machine to downwards **press**, and then the pressing plates are driven to vertically and downwards **press** the spring, so that the spring is buckled into an end head of the cambered plate assembly; the operation is convenient; and the production efficiency is effectively improved.

14/40 © EPODOC / EPO

- PN - [CN102922265](#) A 20130213
- PNFP - CN102922265B B 20151028
- PR - CN20121465310 20121117

AP - CN20121465310 20121117

DT - I

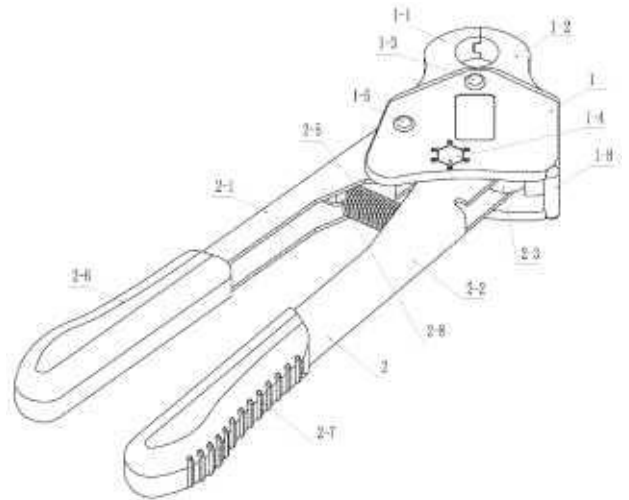
CT - || STSE (A)
[CN1937134](#) A 20070328 [] (JIYUAN ELECTRIC GROUP CO LTD Z [CN])
[DE19962307](#) A1 20020307 [] (HEUSER DIRK [DE])
[CN102490135](#) A 20120613 [] (TIANJIN BAILI ELECTRIC CO LTD)
[CN201126798Y](#) Y 20081001 [] (TIANJIN BAILI ELECTRIC CO LTD [CN])
[EP1498224](#) A2 20050119 [] (JUNKER & PARTNER GMBH [DE])
[CN202878173U](#) U 20130417 [] (WUXI NEW HONGTAI ELECTRICAL TECHNOLOGY CO LTD)
[CN201741605U](#) U 20110209 [] (ANHUI XINLONG ELECTRICAL CO)

PA - (A)
WUXI NEW HONGTAI ELECTRICAL APPLIANCE TECHNOLOGY CO LTD

TI - (A)
Tool clamp for bow plate component crimping spring

AB - (A)
The invention discloses a **tool** clamp for a bow plate component crimping spring. The **tool** clamp comprises a base and a pressure head, wherein a plurality of pressure plates are connected with the lower end of the pressure head; the base is composed of a locating seat and a mounting seat at the upper end of the locating seat; a locating through hole is arranged in the middle of the locating seat; a mounting through hole is arranged in the middle of the mounting seat; a locating **shaft** matched with the locating through hole is arranged inside the locating through hole; the upper end of the locating **shaft** extends out of the mounting through hole; a guide **shaft** is sleeved on the locating **shaft**; a mounting **shaft** is sleeved at the lower end of a guide **shaft** on the locating **shaft**; the lower end of the mounting **shaft** resists against the locating seat; the diameter of the guide **shaft** orderly increases from top to bottom; and guide grooves matched with the pressure plates are arranged at the lower part of the guide **shaft** along a longitudinal manner. The **tool** clamp for the bow plate component crimping spring is simple in structure, easy to achieve, and low in manufacturing cost, and the pressure head is driven to **press** downwards by a **press**, so as to drive the pressure plate to vertically **press** the spring, so that the spring is buckled into the tip of the bow plate component, the operation is convenient, and the production efficiency is effectively improved.

PN - [US2012159756](#) A1 20120628
 PR - CN20102682053U 20101227
 AP - US20110984578 20110104
 DT - *; Rep
 CT - || R141 (A1)
[US113670](#) A [];
[US118997](#) A [];
[US433978](#) A [];
[US993646](#) A [];
[US1435131](#) A [];
[US1448238](#) A [];
[US1653182](#) A [];
[US1850664](#) A [];
[US2319558](#) A [];
[US2619138](#) A [];
[US2647312](#) A [];
[US2682795](#) A [];
[US2836089](#) A [];
[US2874465](#) A [];
[US3842650](#) A [];
[US4048877](#) A [];
[US4058893](#) A [];
[US4249308](#) A [];
[US5187869](#) A [];
[US5289712](#) A [];
[US5839195](#) A [];
[US6470575](#) B2 [];
[US7536896](#) B1 [];
[US7698925](#) B2 [];
[US2010293720](#) A1 [];
[US7854185](#) B2 [];
[US8046924](#) B2 [];
[US8051572](#) B2 [];
[US2012096994](#) A1 [];
[US2012125074](#) A1 [];
[US8342001](#) B2 []
 CCI - [B25B27/10](#) ; [B25B27/146](#)
 CCA - [Y10T29/5367](#)
 PA - ZHANG LEI [CN]; LINK TECH
 TIANJIN METAL PRODUCTS CO LTD
 TI - **Press tool** with a biased jaw
 AB - A **press tool** with a biased jaw,
 includes: a clamp head portion
 and a clamp handle portion
 connected with the clamp head
 portion. The clamp head portion
 includes a fixed clamp head and



a movable clamp head. The clamp head portion includes a fixed clamp handle and a movable clamp handle. The fixed clamp handle is fixedly connected with the fixed clamp handle. The movable clamp head is movably connected with the movable clamp handle via a pin and a guiding wheel. The movable clamp head has a guiding groove for guiding the guiding wheel. The fixed clamp head is rotatably connected with the moving clamp head via a rotating pin. The fixed clamp head is connected with the movable clamp handle via an eccentric **shaft**. The fixed clamp handle is connected with the movable clamp handle via a tension spring.

16/40 © EPODOC / EPO

PN - [TW201116199](#) A 20110501

PNFP - TWI377902B B 20121121

PR - TW20090135246 20091019

AP - TW20090135246 20091019

DT - I

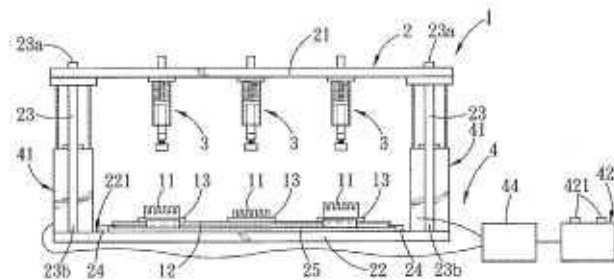
CCI - [B23P19/00](#) ; [H01L21/67092](#) ;
[H01L21/67138](#)

CCA - [B23P2700/10](#) ; [Y10T29/53265](#) ;
[Y10T29/5327](#) ; [Y10T29/53383](#) ;
[Y10T29/53396](#)

PA - (A B)
WISTRON CORP [TW]

TI - (A B)
Pressing device for heat sink and
pressing **tool** of the pressing
device

AB - (A)
A pressing device for pressing
heat sinks on a PCB comprises a
rack and a plurality of pressing
tools provided on the rack. Each
of the pressing tools includes
a **shaft** elastically movable in an



up-and-down manner, a pressing head connected to a bottom end of the **shaft** through the universal joint unit for contacting the heat sink, and a universal joint unit. Processing time can be shortened by using these tools to **press** the heat sinks on the PCB at the same time. With the universal joint unit, the inclination angle of the pressing head can be adjusted automatically when contacting with the heat sink so as to permit conforming of the pressing head to an out surface of the heat sink.

17/40 © EPODOC / EPO

- PN - [JP2011062785](#) A 20110331
- PR - JP20090216773 20090918
- AP - JP20090216773 20090918
- DT - I
- FI - B23P19/00&304C; B23P19/02&B; B23P21/00&303Z; B62K1/00; B62K17/00; B62M13/00
- FT - 3C030/BB01; 3C030/BC19; 3C030/CC00; 3D212/BB01; 3D212/BB03; 3D212/BB12; 3D212/BB23; 3D212/BB36; 3D212/BB42; 3D212/BB51; 3D212/BB66
- PA - HONDA MOTOR CO LTD
- TI - METHOD AND **TOOL** FOR ASSEMBLING ROLLER ASSEMBLY
- AB - PROBLEM TO BE SOLVED: To efficiently and easily assemble a roller even by using a general-purpose **press**-fitting machine.
- SOLUTION: An angle block 114 provided on a workpiece mounting surface 102 of the **press**-fitting machine 100 having a **press**-fitting **tool** 106 moving in a Z-axis direction orthogonal to the workpiece mounting surface 102 is used to support a drive disk 47L to be rotatable around a center axis line of the drive disk 47L in a tilting posture having a center axis line of a bearing hole 51 located in one rotation position aligning with the Z-axis direction. The **press**-fitting **tool** 106 is moved in the Z-axis direction to push a support **shaft** 54L into the bearing hole 51 located in the one rotation position and a center hole 561 aligning with the bearing hole 51.
- COPYRIGHT: (C)2011,JPO&INPIT

18/40 © EPODOC / EPO

PN - [US2010236044](#) A1 20100923

PR - US20090407655 20090319

AP - US20090407655 20090319

DT - *; Rep

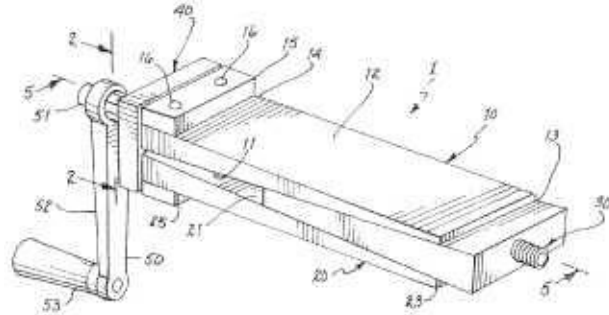
CT - || R141 (A1)
[US3727490](#) A [];
[US4086828](#) A [];
[US4288899](#) A [];
[US4809567](#) A [];
[US4833767](#) A [];
[US5018261](#) A [];
[US6085398](#) A [];
[US6195863](#) B1 [];
[US6209427](#) B1 [];
[US4896862](#) A [];
[US4903391](#) A [];
[US6523238](#) B1 [];
[US4333330](#) A [];
[US7059223](#) B1 [];
[US3835522](#) A [];
[US5269053](#) A []

CCI - [B25B27/0021](#) ; [B25B27/0035](#)

CCA - [Y10T29/49826](#) ; [Y10T29/53848](#)

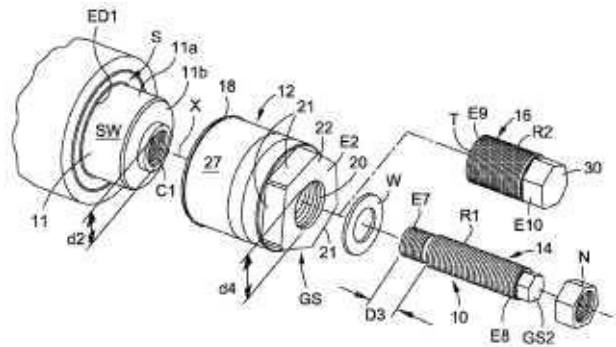
TI - DISC BRAKE PISTON
RETRACTION **TOOL**

AB - A disc brake **tool** to assist brake maintenance by forcing retraction of a brake piston. Two plates are inserted into the open area of a brake caliper while a third central member is forced between the plates. A crank-rotatable threaded **shaft** engages the central member to control central member movement along the **shaft**. The plates engage the caliper directly or indirectly and force pressure on the outside of a piston to cause it to retract back into the caliper. A method is also disclosed for retracting a brake piston by placing plates within the open area of a caliper. The method includes rotating a **shaft** to cause a third member to **press** apart the plates so as to force pressure on a piston.



19/40 © EPODOC / EPO

- PN - [US2009077783](#) A1 20090326
- PNFP - US7849575 B2 20101214
- PR - US20070858524 20070920
- AP - US20070858524 20070920
- DT - *; Rep
- CT - || STSE (B2)
[US2614318](#) A 19521021 [] (LEE MCCORD JESSE)
[US2646619](#) A 19530728 [] (MCCORD HESTER E)
[US3611540](#) A 19711012 [] (GIBU TADASHI)
[US4507837](#) A 19850402 [] (HINKLE DONALD H [US])
[US5692282](#) A 19971202 [] (BACA FRANK M [US])
[US5709018](#) A 19980120 [] (DUGAN CHARLES E [US])
[US6065198](#) A 20000523 [] (VITOUS STEPHAN A [US], et al)
- || R141 (A1)
[US5709018](#) A [];
[US4507837](#) A [];
[US6065198](#) A [];
[US2646619](#) A [];
[US2614318](#) A [];
[US3611540](#) A [];
[US5692282](#) A []
- CCI - [B25B27/0028](#)
- CCA - [Y10T29/53657](#) ; [Y10T29/53878](#)
- PA - (B2)
SCHLEM PRODUCTS INC [US]
- TI - (A1 B2)
Seal Removal **Tool** And Method
- AB - (A1 B2)
A seal removal **tool** includes a hollow cylindrical member, an advancing device, and an extracting device. The cylindrical member has an open, circular first end with a barbed knife-edge that has a perimeter with a diameter substantially equal to an inside diameter of an inner



circular edge of an annular seal fitting snugly around an exposed end of a **shaft**. A second end of the cylindrical member is partially closed with an enlarged threaded opening therein. The advancing device comprises a first threaded elongated rod element and a pressing portion for pressing against the partially closed second end. The extracting device comprises a second threaded elongated rod element having an enlarged tip for engaging the exposed end of the **shaft** after disengaging the advancing device. The enlarged tip is configured to screw into an enlarged threaded opening in the cylindrical member and to advance axially and **press** against the exposed end of the **shaft** as the second threaded elongated rod element is rotated.

20/40 © EPODOC / EPO

PN - [CN201090406Y](#) Y 20080723

PR - CN20072121366U 20070711

AP - CN20072121366U 20070711

DT - I

PA - BYD CO LTD

TI - Compressor rotor crankshaft installing **tool**

AB - The utility model relates to an assembling fixture for compressor rotor crankshaft, which comprises a base, the base is provided with an inner cavity for accommodating and positioning the iron core of the rotor, the bottom wall of the base is provided with a through-hole that the straight rod section of the core **shaft** of the rotor can pass through, wherein the utility model also comprises a **press** head, the **press** head is provided with an accommodation cavity that is corresponding to the shape of the crankshaft section of the core **shaft** of the rotor and can position the crankshaft section, a guide post that can guide the **press** head to move along the core **shaft** of the rotor in the axial direction is arranged on the base, the **press** rod of **press** machine pressurizes the crankshaft section by the **press** head, the straight rod section of the core **shaft** is pressed smoothly into the iron core under the guide of the guide post, so as to prevent the **press** rod from directly be pressed on the crankshaft section so as to make the core **shaft** be subject to uneven stressing to result in deflection of the core **shaft**, thereby protecting the iron core of the rotor properly, therefore when the utility model is utilized to assemble the compressor rotor, the compressor rotor crankshaft can be smoothly

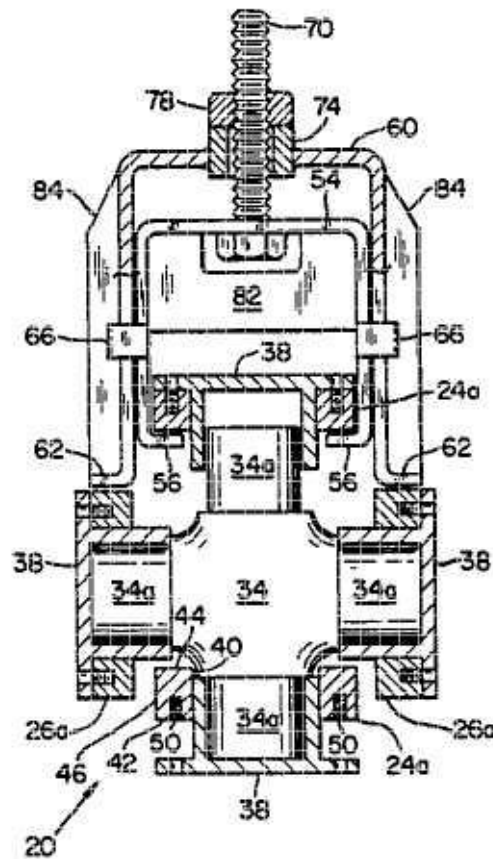
assembled on the iron core of the rotor.

21/40 © EPODOC / EPO

- PN - [US6415490](#) B1 20020709
- PR - US20010809956 20010316
- AP - US20010809956 20010316
- DT - *; Rep
- CT - || STSE (B1)
[US3654792](#) A 19720411 [] (MEAD DANIEL R);
[US4321814](#) A 19820330 [] (MARTIN ALAN);
[US4368631](#) A 19830118 [] (TANIKAWA OSAMU [JP]);
[US5555613](#) A 19960917 [] (SCHMIDT HEINZ [DE], et al)
- CCI - [B25B27/023](#) ; [B25B27/062](#)
- CCA - [Y10T29/53848](#) ; [Y10T29/53878](#) ; [Y10T29/53883](#) ; [Y10T29/53987](#)
- PA - ATLAS COPCO TOOLS AB [SE]
- TI - Portable power **tool** for mounting via a **press** fit a machine part onto a **shaft**
- AB - A portable power **tool** for mounting via **press** fit a machine part, like a pulley (37) onto a **shaft** (16) by the application of an axial **press** force on the pulley (37), comprises a housing (17), a reaction spindle (23) with a threaded end portion (34) for engaging a threaded bore (35) in the **shaft** (16), a push-carrier (44) axially movable by a motion converting device (40,41) rotationally powered by a standard type power wrench (10) via a planetary gearing (24) including a planet wheel carrier (28) connected to the output spindle (15) of the power wrench (10), a sun gear (26) on the reaction spindle (23) and a ring gear (29) connected to the motion converting device (40,41). A reset spring (50) is arranged to exert a biasing force on the motion converting device (40,41) such that the reaction spindle (23) only is rotated as long as the torque resistance on the reaction spindle (23) is below a certain level, whereby an axial displacement of the push-carrier (44) and the pulley (37) is delayed until the reaction spindle (23) is fully engaged and properly anchored relative to the **shaft** (16).

22/40 © EPODOC / EPO

PN - [US4658488](#) A 19870421
 PR - US19850706656 19850228
 AP - US19850706656 19850228
 DT - *; Rep
 CT - || STSE (A)
 [US1469076](#) A 19230925 [] (HAROLD FABER);
 [US1513031](#) A 19241028 [] (BROWN OLIVER M);
 [US2257318](#) A 19410930 [] (WILBORN JOYCE W);
 [US2992478](#) A 19610718 [] (BAKER THOMAS E);
 [US3076259](#) A 19630205 [] (STEBBINS RAY M);
 [US3142897](#) A 19640804 [] (DAVIS WALTER T);
 [US3487528](#) A 19700106 [] (WILLIAM E SHULTZ);
 [US3579796](#) A 19710525 [] (WALTER A FILLION);
 [US4019233](#) A 19770426 [] (OWATONNA TOOL CO);
 [US4123838](#) A 19781107 [] (MAGAVERO CARLA);
 [US4343075](#) A 19820810 [] (GUPTILL ROBERT H);
 [US4463489](#) A 19840807 [] (JAMES WILLIAM G);
 [US4570319](#) A 19860218 [] (SKOWORODKO MIKE)
 CTNP - [] POSI Lock ad slick by Octagon Tool, Inc., 7/84
 [] Exhibit B, Photograph of sketch of U Joint Magic universal joint pulling tool
 CCI - [B25B27/023](#) ; [B25B27/062](#)
 CCA - [Y10T29/53861](#)
 PA - JOHNSTEAD PARK L
 TI - Drive-line puller
 AB - A **tool** for uncoupling a drive member and driven member joined together at a universal joint includes a pulling member and pushing member, both having a substantially U-shaped configuration such that they are



disposed in nested relationship with the pushing member substantially surrounding the pulling member. In one embodiment, both such members are coupled together by a threaded drive member rigidly secured to the pulling member. The drive member threadably receives a nut, rotation of which causes the nut to bear against the pushing member to urge the pushing member in one direction and simultaneously urge the pulling member in the opposite direction. In operation, the pull member exerts a pulling force on an end yoke of, for example, the drive member, which seats by interference fit a **press** fit bearing to be removed, while the pushing member exerts a pushing force against an end yoke of the driven member. Thus, the end yoke of the drive **shaft** is urged toward the **tool** as the end yoke of the driven **shaft** is urged away from the **tool**, releasing one of the bearings seated by the drive **shaft** end yoke from its interference fit.

PN - [US5065486](#) A 19911119

PR - GB19890025206 19891108

AP - US19900601878 19901022

DT - **

CT - || STSE (A)
[US4747197](#) A 19880531 [] (CHARRON ELI A [US])
[US4760636](#) A 19880802 [] (ST ANGELO JR STEPHEN [US], et al)
[EP0253599](#) A2 19880120 [] (ST ANGELO STEPHEN JR, et al)
[GB2215762](#) A 19890927 [] (BRIGHT ROBERT GRANVILLE, et al)
[GB2227779](#) A 19900808 [] (GOEDDERZ DIETER, et al)

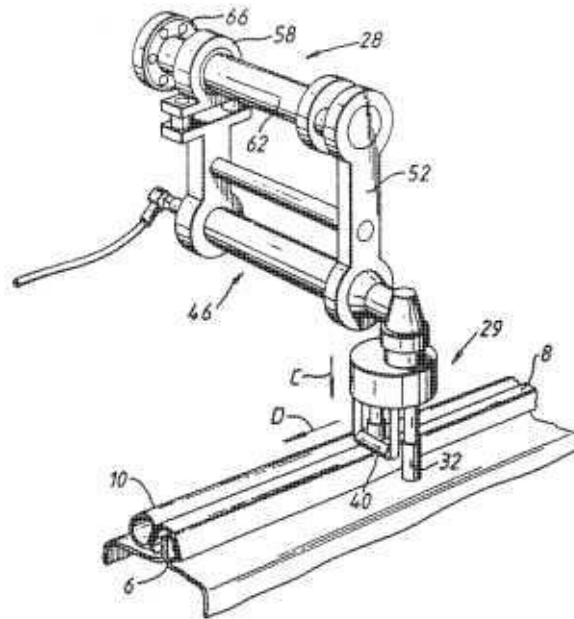
CCI - [B23P19/047](#) ; [B62D65/14](#) ; [B60J10/45](#)

CCA - [Y10T292/0838](#)

PA - DRAFTEX IND LTD [GB]

TI - Apparatus for fitting flexible strips

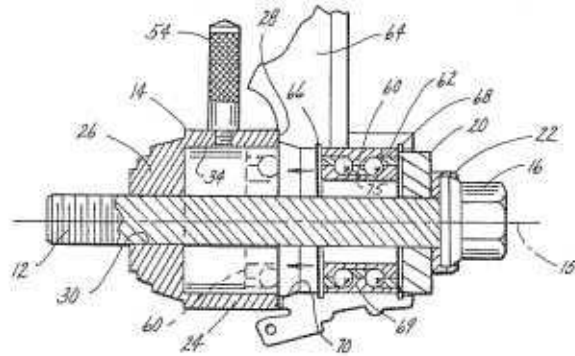
AB - A robot-held **tool** for applying a sealing strip to a flange comprises rollers which are contra-rotated by a motor within a housing and which engage opposite sides of the sealing strip to **press** it onto the flange, downward pressure onto the sealing strip being maintained by a non-driven roller. The housing is carried by a frame which is in turn connected to the robot via a coupling. The frame is freely angularly movable relative to a **shaft** which supports the housing. When the rollers are energized, they pull the **tool** along the flange. When a curve in the flange is reached, the housing and its supporting **shaft** automatically swivel relative to the remainder of the frame and to the robot. The robot then thereafter re-positions the frame back into the



previous position which it had relative to the housing. In this way, the majority of the guiding of the **tool** along the flange is carried out by the **tool** itself and programming and adjustment of the robot are simplified. A hand-operated version is also disclosed.

24/40 © EPODOC / EPO

- PN - [US4509241](#) A 19850409
- PR - US19840597886 19840409
- AP - US19840597886 19840409
- DT - *; Rep
- CT - || STSE (A)
[US1422390](#) A 19220711 [] (TIMM OTTO F);
[US1585176](#) A 19260518 [] (STUMBAUGH ROY W);
[US1608800](#) A 19261130 [] (MARTIN ORRIN B);
[US2914330](#) A 19591124 [] (WHEELER HAROLD W);
[US4050136](#) A 19770927 [] (SHULTZ WILLIAM E);
[GB238478](#) A 19250820 [] (FRITZ TRAUTWEIN)
- CCI - [B25B27/062](#) ; [F16C35/062](#) ;
[F16C35/067](#)
- CCA - [F16C19/184](#) ; [Y10T29/53878](#)
- PA - FREELANDJOHNA;FREELAND ROBERT D
- TI - Combination bearing removal and installation **tool**
- AB - A combination bearing removal and installation **tool** provides for the removal and installation of an annular bearing assembly from and in a spindle-receiving bore of a strut type vehicle wheel spindle supporting system without the need to disassemble any of the supporting system from the vehicle. The **tool** comprises a threaded **shaft** having a head at one end and a



cup threaded onto the **shaft** from the other end. In the bearing removal mode of operation the open end of the cup faces the head end so that when the head is actuated to remove a bearing from the bore the bearing passes into the cup. In the bearing installation mode of operation the cup is reversed on the **shaft** so that an end wall of the cup bears against the end of the bore. This end of the cup comprises at least one frusto-conically tapered surface seating the cup against a corresponding tapered surface at the end of the bore and a locator projects from the end of the cup to be abutted by a set of bearings being installed thereby accurately locating the bearings when the head of the **shaft** is actuated to advance a new set of bearings into the bore. The **tool** can also be used to **press** a wheel spindle into a newly installed set of bearings.

25/40 © EPODOC / EPO

- PN - [US6305061](#) B1 20011023
- PR - US20000499383 20000207; US19990120762P 19990219
- AP - US20000499383 20000207
- DT - *; Rep
- CT - || STSE (B1)
[US3298681](#) A 19670117 [] (YOUNGBLOOD SIDNEY C);
[US5692282](#) A 19971202 [] (BACA FRANK M [US])
- CCI - [B25B27/023](#)
- CCA - [Y10T29/53861](#)
- TI - Combination steering wheel puller and locking disc removal and installation **tool** for vehicles
- AB - A combination **tool** provides for removing a steering wheel from its **press** fit on a steering wheel **shaft** in a vehicle, or for compressing the locking disc disposed beneath the steering wheel hub for removal of its retaining ring and of the disc after the steering wheel has been removed. The **tool** is also useful in reinstalling the locking disc for reassembly after maintenance. The present **tool** includes a plate having a central threaded passage larger than the diameter of the threaded steering wheel **shaft** with

26/40 © EPODOC / EPO

PN - [US4936003](#) A 19900626

PR - US19890320910
 19890307; US19870034999
 19870406

AP - US19890320910 19890307

DT - *; Rep

CT - || STSE (A)
 [US236723](#) A 18810118 [];
 [US341146](#) A 18860504 [];
 [US875940](#) A 19080107 []
 (MASON DANIEL LEE [US]);
 [US1364489](#) A 19210104 []
 (EDELBLUT LOUIS C);
 [US3290822](#) A 19661213 []
 (MAUGET JAMES J);
 [US4675968](#) A 19870630 []
 (BARTLETT WILLIAM T [US])

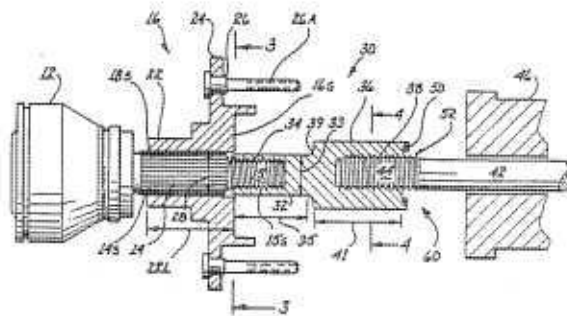
CCI - [B25B27/02](#) ; [B25D1/16](#)

CCA - [Y10T29/53839](#) ; [Y10T29/5393](#)

PA - GLOE WAYNE C [US]

TI - Improved splined joint remover

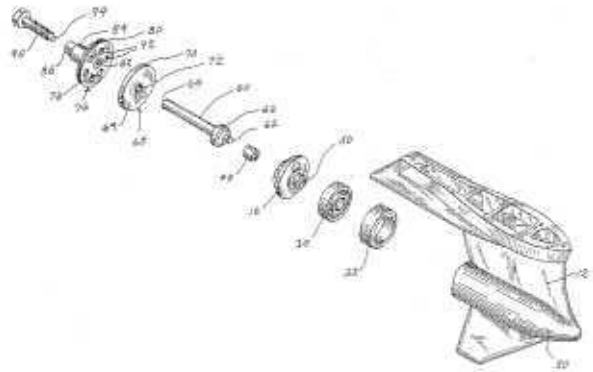
AB - A **tool** is described for mounting and demounting splined joints, especially those found in the front-wheel drive assemblies of cars. A special **tool** is provided which can be inserted into the internally splined wheel hub rotatably fixed to the vehicle and which screws on to one end of the externally splined drive **shaft** portion being installed in the hub. The other end of the **tool**



mounts to a slide hammer. When the slide hammer weight is banged against the **tool** or against the oppositely located hammer stop, the momentum impulse is transmitted to the splined **shaft** to push it out of or into the splined wheel hub, depending upon the direction of movement of the hammer weight. The **tool** is successful even with interference fit splined joints otherwise requiring large **press** forces for assembly or disassembly.

27/40 © EPODOC / EPO

- PN - [US4896412](#) A 19900130
- PR - US19890316093 19890227
- AP - US19890316093 19890227
- DT - *; Rep
- CT - || STSE (A)
[US1438039](#) A 19221205 [] (HURLBUT HARDEN R);
[US2104967](#) A 19380111 [] (BERGERT HENRY A);
[US2899741](#) A 19590818 [];
[US4259774](#) A 19810407 [] (DOLINSKI STANLEY R, et al);
[US4530667](#) A 19850723 [] (MCCORMICK DANIEL F [US]);
[US4682395](#) A 19870728 [] (KLANN HORST [DE]);
[US4792313](#) A 19881220 [] (MEISENBURG GARY L [US])
- CCI - [B25B27/023](#) ; [B25B27/062](#) ;
[B63H23/34](#) ; [B63H21/28](#) ;
[F16H57/023](#)
- CCA - [F16H2057/0062](#) ;
[F16H2057/0206](#) ;
[Y10T29/53848](#) ; [Y10T29/53857](#) ;
[Y10T29/53878](#) ; [Y10T29/53883](#)
- PA - BRUNSWICK CORP [US]
- TI - Assembly **tool** for marine drive lower gearcase
- AB - An assembly method and **tool** is provided for installing a front



driven gear (18) in a torpedo housing bore (24) in the lower gearcase (12) of a marine drive, without hammer blow impacting of the gear. An axial **shaft** (60) has a front end (62) inserted into the gear and an annular shoulder (66) for **press**-fitting the gear into the reduced diameter front portion (28) of the torpedo housing bore (24). A front aligner (68) is provided by an annular disc (69) having an outer circumference (70) loosely engaging the torpedo housing bore (24) and having a central opening (72) axially sliding over the axial **shaft** (60). A rear **shaft** aligner (76) has a threaded outer circumference (80) threadingly engaging a rear threaded portion (26) of the torpedo housing bore (24), and having a central axial opening (82) axially sliding over the rear end (64) of the axial **shaft**. The central opening (82) of the rear aligner (76) is extended axially at a stem (84) which has a rear end (86) which is internally threaded (88) and receives a threaded bolt (90) which is turned to engage the rear end (64) of the axial **shaft** and drive the latter axially forwardly such that its annular shoulder (66) pushes the gear (18) axially forwardly to **press**-fit the latter into the noted reduced diameter front portion (28) of the torpedo housing bore (24).

PN - [US4761868](#) A 19880809

PR - US19870060231 19870610

AP - US19870060231 19870610

DT - *; Rep

CT - || STSE (A)
[US668831](#) A 19010226 [
] (CHAPIN & MANION LTD [ZA]);
[US1280233](#) A 19181001 [
] (JONES FRANK C [US]);
[US1346857](#) A 19200720 [
] (NOAH SRADER CHARLES);
[US1465124](#) A 19230814 [
] (GARDNER JR HIRAM E);
[US1498638](#) A 19240624 [
] (PERIOLAT CHARLES B);
[US1554468](#) A 19250922 [
] (TAGUE WILLIAM R);
[US3007241](#) A 19611107 [
] (GONZALEZ MARCOS L)

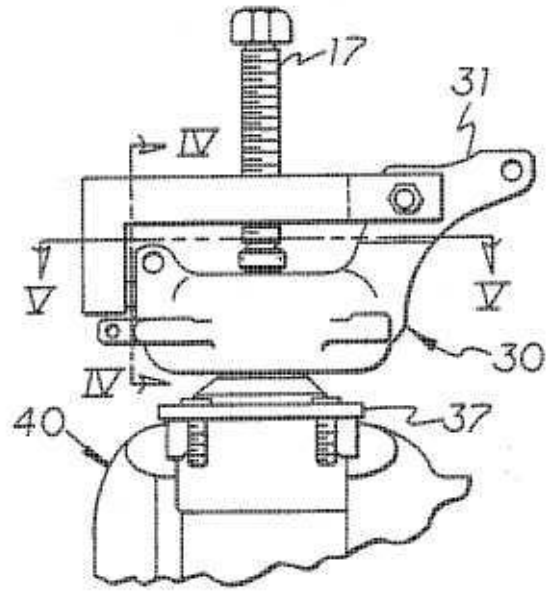
CCI - [B25B27/023](#) ; [B25B27/062](#)

CCA - [Y10T29/53848](#)

PA - ALLISON LARRY S [US]

TI - **Tool** for bearing removal

AB - A **tool** is provided for sequentially axially separating a housing and the **shaft** and bearing components which were originally **press** fitted into it. The **tool** is provided with means to detachably secure it to the housing to permit it to generate the pressures necessary to either push the components out of the housing or to lift the housing off the components one by one.



29/40 © EPODOC / EPO

PN - [JP2006007371](#) A 20060112

PR - JP20040188594 20040625

AP - JP20040188594 20040625

DT - I

FI - B23P19/00&302P; B23P19/00&303A; B23P19/02&B; B23P19/027; B23P19/04&A; B23P19/04&D; B23P19/06&M

FT - 3C030/BC04; 3C030/BC10; 3C030/BC14; 3C030/BC19; 3C030/BC25; 3C030/BC34; 3C030/BD00; 3C030/BD03; 3C030/DA28; 3C030/DA34; 3C030/DA36; 3C030/DA37

PA - AISIN AW CO

TI - ASSEMBLING MACHINE

AB - PROBLEM TO BE SOLVED: To provide an assembling machine capable of being compactly composed.

- SOLUTION: A composite assembling machine (the assembling machine) 1 carries out at least two or more kinds of assembling works such as fastening, **press** fitting, caulking, bending or measurement of assembling components to a work. The composite assembling machine 1 comprises a **tool** placing stand 25 for keeping working tools 4 and 5, a working head part 21 for holding the working **tool** 4 or 5, a head moving mechanism 2 for moving the working head part 21, and a rotation table 3 for holding and rotating the work 91. The composite assembling machine 1 is designed to make the working **tool** 4 or 5 approach an assembling working site in the work 91 held by the rotation table 3 by the movement of the working head part 21 moved by a forward/backward moving **shaft** (a second moving **shaft**) 22, a vertical moving **shaft** (a first moving **shaft**) 23 of the head moving mechanism 2 and the rotation of the rotation table 3.

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30/40 © EPODOC / EPO

PN - [JP2003251533](#) A 20030909

PNFP - JP3954867B B2 20070808

PR - JP20020054081 20020228

AP - JP20020054081 20020228

DT - I

FI - B23P19/00&302H; B23P19/00&302J; B23P19/02&B; B23P19/027

FT - 3C030/BC19; 3C030/BC28; 3C030/DA14; 3C030/DA25; 3C030/DA29; 3C030/DA34; 3C030/DA38

PA - (A)
DAIHATSU MOTOR CO LTD

TI - (A)
ASSEMBLY PART **PRESS** FITTING DEVICE

AB - (A)
PROBLEM TO BE SOLVED: To provide an assembly part **press** fitting device capable of **press** fitting without transferring a workpiece carried by a carrying device to a **press** fitting machine.

- (A)
SOLUTION: A horizontally circulating track 10 and a pallet 20, which is carried on the horizontally circulating track 10, are arranged below a floor plate 50, and a pole stand type **tool** 30 is attached to the post 21 of the pallet 20, which is projected from a slit 50a, and a workpiece support member 40 is attached to the pole stand type **tool** 30 through a support **shaft** 35 so as to be rotatable. On the side of the slit 50a, the **press** fitting machine 60 having a U-shaped column 61, which can move upward and downward and surrounds the advance passage of the workpiece support member 40, is installed. The column 61 and a balancing weight 69 are hung through a pulley 67 and a wire 68 between them, and the column 61 is lifted by a balancing cylinder 70, and a **press** fitting part 76 is **press** fitted in the workpiece W by a **press** fitting head 74,

which is provided at the lower end of a **press** fitting cylinder 72.

- (A)

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31/40 © EPODOC / EPO

PN - [JP2002283150](#) A 20021003
PR - JP20010086900 20010326
AP - JP20010086900 20010326
DT - I
FI - B23P19/00&304E; B23P19/02&B
FT - 3C030/AA08; 3C030/AA15; 3C030/BB05; 3C030/BC07; 3C030/BC09; 3C030/BC10;
3C030/BC19
PA - TOYODA MACHINE WORKS LTD
TI - METAL **PRESS**-IN DEVICE
AB - PROBLEM TO BE SOLVED: To prevent a reaction force of pressing-in from adding on a main **shaft** bearing even if metal **press**-in is conducted by installing a pressing-in **tool** to a main **shaft** of a working machine. SOLUTION: The main **shaft** 14 equipped with a **tool** holder 20 at a tip end is rotatably supported by a main **shaft** housing 13 provided so as to relatively move in the three-dimensional direction relative to work. At the tip end portion of a supporting arm 30 provided on the **tool** holder and extending from a rotational axis of the main **shaft** in the radius direction, the middle portion of a pressing **shaft** 31 is guided and supported so as to slide a specified distance in parallel with the main **shaft**, and energized to the main **shaft** housing side by a spring 33. Under the condition that the **tool** holder is installed to the main **shaft**, one end of the pressing **shaft** is made to abut on the front side end surface 13b of the main **shaft** housing through an engaging means C. At the other end of the pressing **shaft**, a holding means 40 detachably holding metal M to be pressed in the work is provided.

32/40 © EPODOC / EPO

PN - [JPH079376](#) A 19950113
PR - JP19930160733 19930630
AP - JP19930160733 19930630
DT - I
FI - B23P19/04&D; B25J15/00&E; B25J15/04&B
FT - 3C007/DS08; 3C007/ES03; 3C007/ET00; 3C007/EV00; 3C007/EW00; 3C007/EW14;
3C007/GS00; 3C007/NS11; 3C030/BC09; 3C030/DA31; 3C707/DS08; 3C707/ES03;
3C707/ET00; 3C707/EV00; 3C707/EW00; 3C707/EW14; 3C707/GS00; 3C707/NS11;
3F061/AA07; 3F061/BA03; 3F061/BB00; 3F061/BE00; 3F061/BF00; 3F061/BF14;
3F061/DA00; 3F061/DB00
PA - RICOH KK
TI - TURRETHAND DEVICE
AB - PURPOSE:To shorten a tact time, and there by enhance working efficiency by shorting positioning time when each mechanical hand is switched over with rotating turret rotated, in the turret hand device applied to an industrial robot which owed out three-

dimensional assembly works such as the insertion, the **press**-in and the like of a plurality of mechanical hands installed in advance in response to works.

CONSTITUTION: The device is equipped with a rotating turret 18 fixed onto a rotating **shaft** 17 rotated by a motor 16, a plurality of **tool** installation blocks 20 including a **tool** 19a or 19b, and with a fixing means 21 which allows a fixed section 21d with each installation block 20, holds the installation block 20 so as to fix it between fixed pins 21b and 21d, and releases the installation block 20 with the fixed section 21d disengaged so as to support the installation block with a support plate in such a way as to be freely moved.

33/40 © EPODOC / EPO

PN - [JPS6221075](#) A 19870129

PNFP - JPH0619369B B2 19940316

PR - JP19850159534 19850719

AP - JP19850159534 19850719

DT - I

FI - B23P19/00; B23P21/00&301Z; G01R1/067; G01R1/067&Z; G01R31/02; H05K13/08&D

FT - 2G011/AA02; 2G011/AB01; 2G011/AB03; 2G011/AB05; 2G011/AC02; 2G011/AE01; 2G014/AA13; 2G014/AB59; 2G014/AC10; 2G014/AC19; 3C030/CA15

PA - (A)
CITIZEN WATCH CO LTD

TI - (A)
APPARATUS FOR ASSEMBLING CONTACT PROBE PIN

AB - (A)
PURPOSE: To efficiently assemble a contact probe pin having stable quality, by caulking the caulking **tool** mounted to an apparatus in contact with the predetermined throttled part of the pipe mounted to a lower jig. CONSTITUTION: An upper jig 20 is positioned above a pipe 1 and a rotary **press** member 44 falls while pressing the head part 4a of a plunger 4 to stop at the predetermined position between the throttled part of the pipe 1 and the head part 4a of the plunger 4. Subsequently, the rotation of a motor 57 is transmitted to the gear 24 of a jig 21 from a gear 62 through a pulley 59, a timing belt 60 and a pulley 61 and the **shaft** body 23 integrally constituted along with the gear rotates to allow the pipe 1 to rotate. A caulking **tool** 53 advances along with the slider 52 of a caulking apparatus 17 to perform caulking work on the pipe 1 and a caulking part is formed at the predetermined position of the pipe 1 to efficiently perform the assembling of a contact probe pin.

34/40 © EPODOC / EPO

PN - [JPH01271135](#) A 19891030

PNFP - JPH0532182B B2 19930514

PR - JP19880101139 19880422

AP - JP19880101139 19880422

DT - I

FI - B23P19/04&H; H05K13/04&B

FT - 3C030/BC02; 3C030/BC09; 5E313/AA11; 5E313/CC07; 5E313/CC09; 5E313/CD04;

5E313/CD05; 5E313/EE24; 5E353/EE51; 5E353/JJ46; 5E353/PP01

PA - (A)
SANYO ELECTRIC CO

TI - (A)
TOOL SELECTING DEVICE

AB - (A)
PURPOSE:To facilitate the approach to a locking pin without hindering the stiffness security of a device by the arrangement of the locking pin by fitting the turret provided with a rotation to be transmitted part on the end face of one part and the fitting part corresponding to each **tool** at the other part to the fitting **shaft** projected from the supporting member supporting the locking pin freely rotatably. CONSTITUTION:When a turret 1 is stopped by its arrival at the time when a lever 43 is located at a lift position, a rotation transmitting member 41 is faced to a rotation to be transmitted part 8 and a **press** member 42 is faced to a locking release pin 31. when a connecting rod 47 is descended now, the lever 43 is rocked downward, the transmission member 41 is linked to the part 8 to be transmitted, a seesaw lever 51 is rocked by being pulled by a spring 53 and a rocking release pin 31 is pushed by the **press** member 42. The pin 31 is then retreated and pushes a linking body 25 as well, separating a rocking pin 24 from an engaging part 9. The turret 1 thus becomes freely turnable completely and the rotation at the specified angle can be given to the turret 1 by the transmission member 41.

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PN - [JPH03248727](#) A 19911106

PNFP - JP2790699B B2 19980827

PR - JP19900040970 19900223

AP - JP19900040970 19900223

DT - I

FI - B21D39/00&B; B21K1/14&A; B21K25/00&Z; B23P19/04&A; B23P21/00&306Z; F16B4/00&E; F16D1/06; F16D1/06&D; F16D1/06&130; F16D3/26&X

FT - 3C030/BD03; 3C030/CA11; 3J026/BA25; 3J026/BA34; 4E087/AA08; 4E087/AA10; 4E087/BA11; 4E087/BA17; 4E087/BA20; 4E087/CA52; 4E087/DB04; 4E087/DB11; 4E087/DB22; 4E087/HA26; 4E087/HB15

PA - (A)
MATSUI MFG CO

TI - (A)
MANUFACTURE OF YORK OF UNIVERSAL JOINT

AB - (A)
PURPOSE:To keep a high accuracy without being exposed to a high temperature by forming, on a spline **shaft** part, a shoulder part on which one end of a force feeding part can be positioned in a york part as a calking allowance, **press** fitting the force feeding part into a hole formed in the york part and calking one end of the **press** fit part. CONSTITUTION:After a spline 8 is formed on a spline **shaft** part 4, the diameter of a spline crest of a part fitting to a spline groove hole 6 of the york part 2 is made a little smaller to form the **press** fit part 10 and to generate the shoulder part 12. The **press** fit part 10 of the spline **shaft** part 4 is **press** fit the spline groove hole 6, the end part on the side of the york part 2 of the spline **shaft** part 4 is projected a little on the york side. The

periphery of the end part of the spline **shaft** part is calked by a calking **tool** 13 to the yolk and the spline **shaft** part 4 is fixed by a calking part 14 to the yolk part 2. Since torque is transmitted by the spline, the spline **shaft** part 4 and the yolk part 2 do not rotate relatively. In this way, while they are assembled, they are not exposed to a high temperature and a high accuracy can be maintained.

36/40 © EPODOC / EPO

PN - [JPH03227862](#) A 19911008
 PR - JP19900022885 19900131
 AP - JP19900022885 19900131
 DT - I
 FI - B23P19/04&K; B65H19/30; B65H19/30&Z
 FT - 3C030/BA02; 3C030/BC04; 3C030/BC11; 3F064/AA01; 3F064/AA03; 3F064/EB15
 PA - GOYO SHIKO KK
 TI - AIR **SHAFT** EXTRACTING MACHINE
 AB - PURPOSE:To facilitate the work by vertically providing a pair of right and left male screw bars inside a squared supporting frame having a pair of right and left main wheels in the lower part, link-providing a lift unit, provided with a chuck means, liftably between the male screw bars and turnably supporting a Y-shaped supporting leg to both right and left outsides of the supporting frame. CONSTITUTION:An auxiliary leg 45 of a supporting leg 26, connected in Y-shape, is vertically placed during waiting to stop the supporting leg 26 to a supporting frame 21, when a parking leg 49 is protruded diagonally downward of a machine body, so that it is supported by four points of a main wheel 29 and a grounding **tool** 48 by grounding it. In order to extract an air **shaft** 62 from a paper pipe 61 of a rewound product 60 on a carriage 59, after the center of an outer cylinder 35 agrees with the axial center of the **shaft** 62 by loosening a brake to **press** the machine body, forward by a hand **press** handle 31, **press**-advanced with the grounding **tool** 48 floated and by rotating both male screw bars 22 to lift a lift unit 23, the **shaft** 62 is inserted to an outer cylinder 35 and extracted by retracting the machine body after the **shaft** end is grasped by a chuck 37.

37/40 © EPODOC / EPO

PN - [JPS62181843](#) A 19870810
 PNFP - JPH0338058B B2 19910607
 PR - JP19860020478 19860201
 AP - JP19860020478 19860201
 DT - I
 CT - (A)
 [JPS554531](#) A []; [JPS5826187U](#) U [];
 [JPS5939135U](#) U []
 FI - B23P19/00&302P; B23P19/04&F; B23P19/06&M
 FT - 3C030/BC11; 3C030/BC21; 3C030/BC31; 3C030/DA04; 3C030/DA32; 3C030/DA37
 PA - (A)
 ARAYA IND

TI - (A)
TOOL POSITIONING DEVICE

AB - (A)
 PURPOSE:To perform a precise positioning to decrease the possibility of erroneous insertion, in a **tool** positioning device in a driver device for tightening a bolt into a screw hole, by providing an insertion device, an auxiliary movable member, an urging means, a pressurizing means and a fixing means. CONSTITUTION:An abutting plate 33 attached to the output **shaft** of a first air cylinder 30 in an auxiliary movable member 3, and a **shaft** section 32 are urged toward their initial positions by means of a first spring 35. When a workpiece 10 with which the **shaft** section 32 is makes into **press**-contact, is moved by one stroke, the **shaft** section 32 is fitted into a screw hole 13 and is moved to the final position. Further, a **tool** 44 in an insertion device 4 which is attached to a rail 45 parallel with the workpiece 10 is made into contact with an abutting plate 33 serving as a stopper, by means of a second cylinder 46 as a pressing means and a second spring 47 as a resilient means, and is therefore located with respect to a screw hole 13. Further, it is secured by a brake device 50 as a fixing means, and is then a bolt 40 are inserted. Further, the positioning bolt is tightened by means of a stopper 31 and a spring in a driver device 2.

38/40 © EPODOC / EPO

PN - [JPH06206170](#) A 19940726

PR - JP19930002917 19930111

AP - JP19930002917 19930111

DT - I

FI - B23P19/00&304Z; B25B11/00&Z

FT - 3C020/XX01

PA - HONDA MOTOR CO LTD

TI - SUPPORTING **TOOL**

AB - PURPOSE:To facilitate installation and demounting by **press**-attaching a supporting **tool** on a base body by screwingly installing an installation **shaft** on a base plate, as for a supporting **tool** for temporarily opening a hood, etc., in order to apply the rustproof painting in the manufacturing process for an automobile. CONSTITUTION:When a supporting **tool** 40 is installed on a base body 34 forming the inner plate of the hood of an automobile, a bass plate 50 is inserted into a hole 38, and when the base platr 50 passes through the hole 38, the supporting **tool** 40 is tilted to set a substrate surface 51 parallel to the base body 34. Then, after the position of the supporting **tool** 40 is adjusted so that the holding piece 37 of a hood lock striker 36 is placed on the bottom 76 of an enfolding part 74, an arm 56 is bent by about 90 deg., and the top edge of a screw part 62 is set at a screw hole 68, and an installation **shaft** 60 is screwingly inserted into the screw hole 68 by turning a knob 64, and is fixed. In this state, when the inner plate of the hood is coated, the working hand of a robot is attached on a hooking part 48 in the coating process, and the hood is opened by lifting the hooking part 48 upwardly.

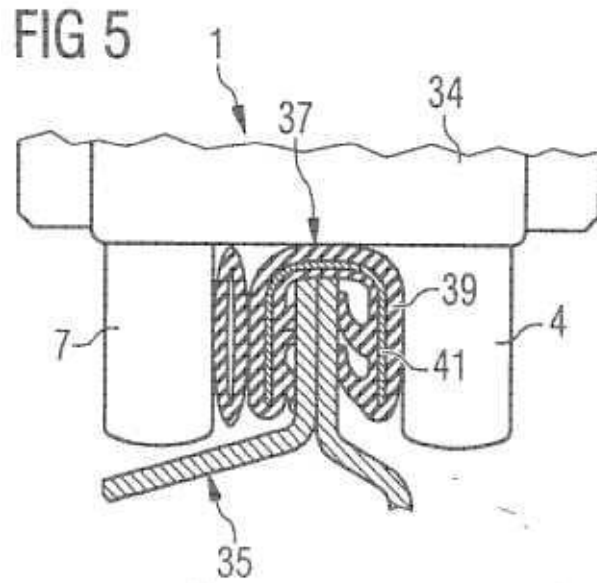
39/40 © EPODOC / EPO

PN - [EP1479552](#) A1 20041124
 PNFP - EP1479552 B1 20060719
 PR - DE2003122874 20030521
 AP - EP20040011344 20040513
 DT - *; Rep
 CT - || STSE (A1)
 [GB2327698](#) A 19990203
 [AX] (DRAFTEX IND LTD [GB])
 [A] 1-9
 * pages 11,13; figure 5 *
 [X] 10;
 [GB2324327](#) A 19981021
 [AX] (STANDARD PROD LTD [GB])
 [A] 1-9
 * page 4; figure 4 *
 [X] 10;
 [WO0018601](#) A1 20000406
 [AX] (DRAFTEX IND LTD [GB], et al)
 [A] 1-9
 * abstract *
 [X] 10

 CCI - [B23P19/047](#) ; [B60J10/45](#)
 PA - (A1 B1)
 OPEL ADAM AG [DE]

 TI - (A1 B1)
 Tool for fitting channel shaped
 seals onto motor vehicle bodies

 AB - (A1)
 The contact pressure device (1)
 for the fitting of sealing profiles
 (37) on especially sheet metal
 components of motor vehicle
 bodies has a pressure roller (4)
 driven via a pneumatically
 operated drive **shaft**, and with a
 forming roller (7) driven via a
 secondary **shaft**. The drive **shaft**
 and secondary **shaft** are
 pivotable around an axis,
 whereby a pneumatic pressure
 device is provided to **press** the
 pressure roller and forming
 roller one against the other. The
 drive **shaft** and secondary **shaft**
 inter-engage via a gear stages.
 An independent claim is
 included for a method for the



fitting of sealing profiles on
sheet metal components of
motor vehicle bodies.

40/40 © EPODOC / EPO

PN - [DE20311755U](#) U1 20031002

PR - DE2003211755U 20030730

AP - DE2003211755U 20030730

DT - *; Rep

CCI - [B25B27/0035](#) ; [F16D65/0043](#)

PA - KANG HSIN FA [TW]

TI - **Tool** for replacing disc pads has two spreader plates operated by a threaded drive and with a parallel guide **shaft**

AB - A **tool** for replacing disc pads has two spreader plates (3, 4) linked by a threaded **shaft** (7) and a parallel guide **shaft** (5) to **press** back the brake cylinders to release the old brake pads and to provide room for the new pads to be installed. The two shafts are secured to one plate (3) via circlips (6) while the second plate has a threaded hole (40) for the threaded **shaft** and a sliding fit (41) for the guide **shaft**. The free end of the threaded **shaft** has a hexagonal cross section and can be gripped by a socket spanner and can be fitted with a tommy bar.

[SS 8] ..v

[EPODOC: SS 8]