

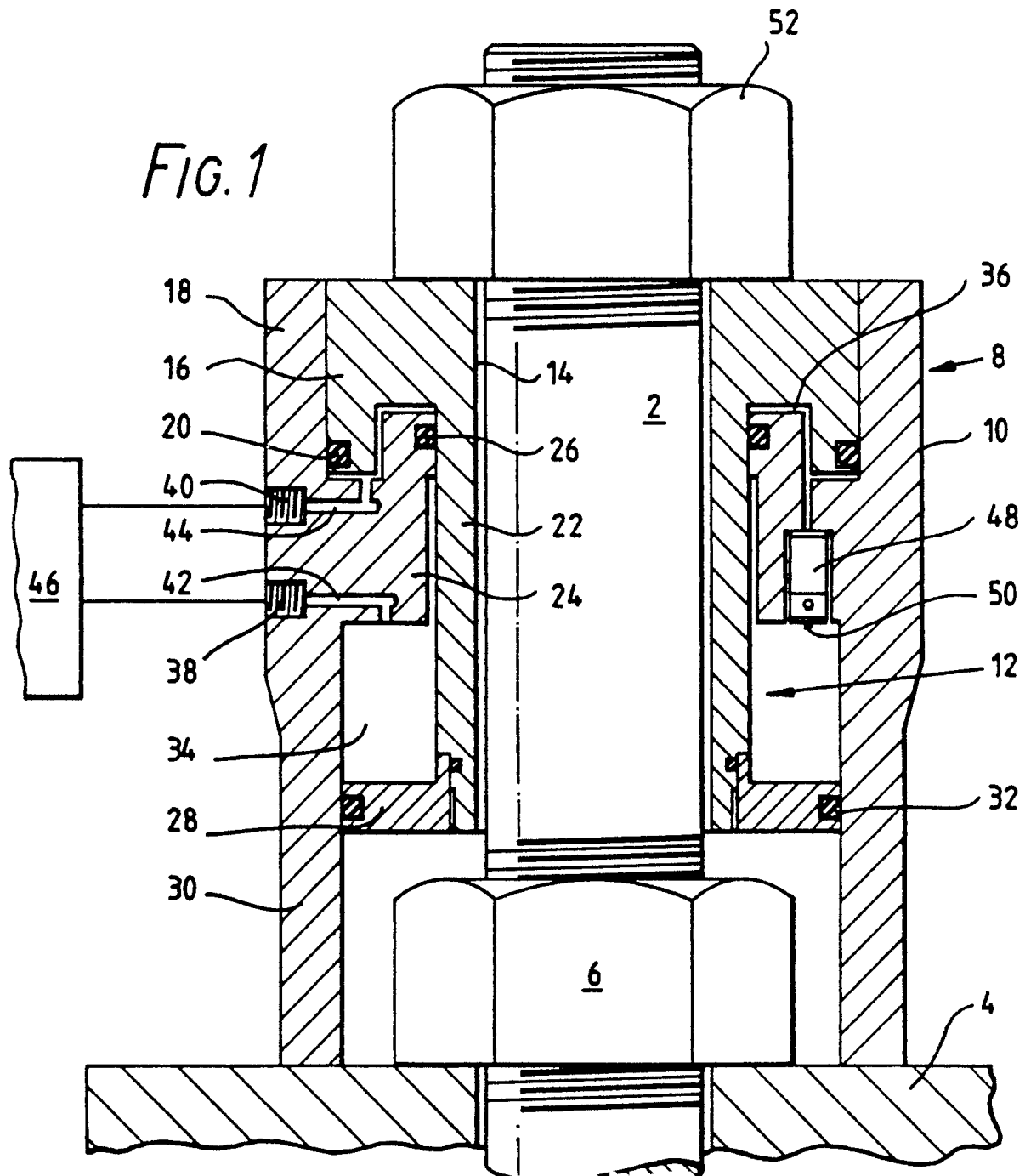
Publication numbers	Title	Current assignees
EP-365157 A1	Hydraulic bolt tensioner.	HEDLEY PURVIS
EP--81181 A2	Disc wheel body of a utility vehicle	FRAUNHOFER
CN105414948 A	Bolt-tensioning-pretightened device and assembly formed by bolt-tensioning-pretightened device	YU MING
DE2146608 A1	Reactor pressure vessel bolts pretensioned by temporary connection - of split sleeve with internal grooves clamped on bolt end	KLOCKNER WERKE
EP1849624 A1	Pitch circle packing screw or nut and method for their manufacture	GUNDEL GEORG
EP-836016 A2	Screw for wheel	PORSCHE
CN205309743U U	Tensile preloading device of bolt and subassembly of constituteing by device	YU MING
EP2719504 A1	Tension device for straining a threaded bolt	FRANK HOHMANN, ...
WO2014161697 A1	Arrangement for fastening a wheel disc made of fibre composite material to a wheel hub.	BMW - BAYERISCHE MOTOREN WERKE
EP3106683 A1	A fastener	BULTEN
EP2697077 A1	Wheel bearing assembly of a vehicle	BMW - BAYERISCHE MOTOREN WERKE
EP-807025 A1	Vehicle wheel and method of producing the same	MANNESMANN KRONPRINZ
EP1083343 A2	Sheet-like material element for a screw for a wheel	PORSCHE
US20050186050 A1	Hydraulic nut assembly	INTEGRA TECHNOLOGIES
US20120007416 A1	Wheel mounting sleeve	ACCURIDE, ...
US3877326 A	Tensioning apparatus	WIRTH MASCHINEN & BOHRGERATE FABRIK
US5435629 A	Wheel for vehicle	ENBISHI ALUMINUM WHEELS
US4659065 A	Bolt tensioning apparatus	HYDRA TIGHT
EP1656240 A1	Double nut for the controlled tightening of a part by means of a screw connection	CLARIANT
EP1593863 A1	Fluid pressure device	IMAI AKIRA, ...
EP-655025 A1	Mechanical tensioner	UNEX
GB200802282 D0	Bolt tensioners	TENTEC
WO200616162 A1	A bolt tensioner	TENTEC
EP-131739 A1	Wheel nut for the wheels of commercial vehicles	ERICH NEUMAYER
EP1126982 A1	Combined fixing device	ALTENLOH BRINCK

Publication numbers	Title	Current assignees
EP1356954 A2	Painted disk wheel of sheet metal for motor vehicle and process for producing such a wheel	SUDRAD RADTECHNIK
EP1786599 A1	Hydraulic screw clamping device	HOHMANN FRANK, ...
US20090293418 A1	Hydraulic foundation bolt tensioner	INTEGRA TECHNOLOGIES
US4898429 A	Wheel nut assembly	PLUMER MARK J
EP2316619 A1	Device and method for pre-tensioning a coupling	STATS
WO200380368 A1	Vehicle wheel	HONDA MOTOR, ...
US3386771 A	Devices for mounting vehicle wheels	MICHELIN
US5570871 A	Device for selectively tensioning and clamping studs mounted on a pressure vessel to permit nuts to be tightened or loosened	WESTFALIA BECORIT INDUSTRIETECHNIK
WO9308953 A1	Fluid operated actuator overstroke prevention	HYDRA TIGHT
EP1853436 A1	Face spline for a driven wheel hub	SCHAEFFLER TECHNOLOGIES
WO200035637 A1	Hydraulic bolt tensioner	MORE NICHOLAS
EP3113960 A1	Fastening element	BERRANG ENTW
EP-732984 A1	Hydraulic threaded-bolt clamping device	HOHMANN; FRANK, ...
EP-529492 A1	A plastic wheel	GOODYEAR TIRE & RUBBER
US2866370 A	Bolt-tensioning and nut-seating apparatus	BIACH JOHN L
EP2346643 A1	Screw tensioning device	WAGNER VERMÖGENSVERWALTUN GS
EP2906433 A1	Vehicle wheel	HUIDEKOPER LOUIS, ...
EP2875245 A1	Load-relief washer assembly for threaded fasteners	INTEGRA SERVICES TECHNOLOGIES
US3995828 A	Bolt tensioning apparatus	BIACH INDUSTRIES
DE3412689 A1	METHOD AND APPARATUS FOR PREPARATION OF THE PIN TIGHTEN SCREW	GRIPPER
EP1412646 A2	Steel washer integral with nut/cap assembly	INDUSTRY & AUTOMOTIVE FASTENERS
WO2011100259 A1	Hydraulic bolt tensioner and nut	TITAN TECHNOLOGIES INTERNATIONAL
US20040115023 A1	Tensioning apparatus and method	SIEMENS ENERGY
EP-521340 A2	Vehicle-wheel adjustable for varying track.	METALLBAU GRASDORF
EP2361722 A1	Rod tensioning device.	SKF
EP1784283 A1	Hydraulic screw clamping device	Frank Hoffman, ...
US5542753 A	Wheel opening inserts and lug nut assemblies thereof for mounting non-ferrous vehicle wheels	PLUMER; MARK J.

Publication numbers	Title	Current assignees
EP1751513 A1	Method for controlling tensile stress of a bolt shank such as a screw or dowel pin and device for carrying out said method	SKF
GB8703987 D0	Improved fastening systems	HYDRA TIGHT
DE2508057 A1	Vibration-proof safety wheel nut - has centring sleeve for accurate wheel location and pressure face to lock onto wheel	MANNESMANN KRONPRINZ
US4062254 A	Device for tightening, prestressing and untightening a threaded joint	MOTALA VERKSTAD
US3707107 A	Screw connection for high loading	BIERI HANS
US20030185642 A1	Load transfer apparatus	IMAI ATUSHI
EP1222076 A1	Vehicle wheel for goods vehicles	HAYES LEMMERZ HOLDING
US20170282312 A1	Rod tensioning device and assembly process of such a device on a rod	SKF
EP1755832 A1	Improvements to hydraulic tensioning jacks	BUCKNELL J. W., ...
US3947948 A	Method of assembling and disassembling a pre-tensioned screwed joint and a device for carrying out the method	MOTALA VERKSTAD
US4438901 A	Apparatus for tensioning a stud and method of doing same	GRIPPER, ...
EP1993853 A1	Vehicle wheel	VOLKSWAGEN
US4192621 A	Method for interconnecting two shaft-ends and a shaft coupling made in accordance with said method	SKF STEEL HOFORS, ...
EP-907466 A1	A safety device at preloaded bolts	OVAKO COUPLINGS
EP-602030 A1	Improvements in and relating to fasteners	HYDRATIGHT
US3635303 A	Bearing for wheels, particularly automotive vehicle wheels	PORSCHE
EP-948422 A1	An axial tensioned bolting system and method thereof	WESTINGHOUSE ELECTRIC, ...
US6241257 B1	Fastening device for belt pulleys	SKF
EP1286064 A1	Locking fastener assembly	MAC LEAN FOGG
EP3180199 A1	Wheel spacer system for motor vehicles	WOHLFARTH KLAUS
EP2812156 A1	Pretensioning tool and method for tightening a nut	WAERTSILAE
US4074890 A	Multi-stage hydraulic stretcher for elongated fasteners	SKF
EP---5028 A1	Bolt tensioning device	HYDRA TIGHT
EP2289663 A1	Hydraulic stud bolt tensioning device and method for pulling large screws using hydraulic stud bolt tensioning device	JORG HOERMANN GERMANY 5 9 8 7 2 MESHEDE WOELANDSTRASSE 6 A
EP2057450 A2	Process and device for setting up and controlling a hydraulic chucking of one or a plurality of bolts	SKF
US4175453 A	Device for tensioning several screw bolts	KRAFTWERK UNION
US20140060255 A1	Tension device for prestressing an assembly by means of a	SKF

Publication numbers	Title	Current assignees
	threaded rod, and method for assembling the tension device	
EP-922527 A1	Tensioning device	HYDRA TIGHT
EP2689887 A1	Tension device for prestressing an assembly by means of a threaded rod, and method for assembling the tension device	SKF
FR2210515 A	Organe de fixation pour roue de véhicule.	AMIL
CN108015530 A	Bolt pretightening force automatic loading and control device	HARBIN LINGSHENG TECHNOLOGY
US4844418 A	Short stud tensioning apparatus	WESTINGHOUSE ELECTRIC
US5597279 A	Wheel nut	INTEGRATED LOGISTICS HOLDING, ...
US20160069372 A1	Hydraulic rod tensioning system	RIVERHAWK
US6068344 A	Wheel mount	G & S RACING SERVICES & PROMOTIONS
US1928068 A	Wheel for motor vehicles and the like	MICHELIN
EP-129717 A1	Device for turning and axially moving bolts	WIRTH MASCHINEN & BOHRGERATE FABRIK
US3583511 A	Rolling bearing	SKF INDUSTRIAL TRADING & DEVELOPMENT
EP-215879 A1	Improvements in multi-stud tensioners	PILGRIM ENGINEERING DEVELOPMENTS
EP1960678 A1	A fastener assembly	AIRBUS OPERATIONS
EP-748671 A1	Hydraulic bolt tensioner	HYTORC DIVISION UNEX
CN201102227U Y	Integral hydraulic drawing device	SHANGHAI DIANJI UNIVERSITY
EP1163086 A1	Tensioning hydraulic nuts	CURTISS WRIGHT FLOW CONTROL
EP3161272 A1	Screw bolt, casing for a turbine, turbine and method for assembling a casing of a turbine	SIEMENS
EP1866123 A2	Hydraulic threaded bolt clamping device and method for tightening large screws by means of said hydraulic threaded bolt clamping device	HOHMANN JOERG
US4535656 A	Integral tensioner assembly for tensioning, inserting and removing a stud	BIACH INDUSTRIES
EP1694975 A1	Outer ring of a wheel bearing mounted in a wheel carrier	SCHAEFFLER TECHNOLOGIES
WO2014172088 A1	Bolt tightener device for tightening a through-bolt in a generator core	SIEMENS ENERGY

Images



CA1332339	C	1994-10-11	CA1332339
IN173146	B	1994-02-19	IN-173146
NO168752	C	1992-04-01	NO-168752
NO168752	B	1991-12-23	NO-168752
AU609643	B2	1991-05-02	AU-609643
NZ230904	A	1991-03-26	NZ-230904
US4998453	A	1991-03-12	US4998453
ZA8907399	B	1990-10-31	ZA8907399
CN1041720	A	1990-05-02	CN1041720



EP0365157	A1	1990-04-25	EP-365157
AU4247289	A	1990-04-12	AU8942472
NO893967	L	1990-04-09	NO-893967
NO893967	D0	1989-10-05	NO8903967
GB8823474	D0	1988-11-16	GB8823474

**Abstract**

(EP0365157)

A hydraulic bolt tensioner for tensioning a threaded bolt (2) extending from a fixed component (4) comprises a cylinder (10) adapted to react against the component (4), a piston (12) slidably mounted in the cylinder (10) and having an axial bore (14) therein through which the bolt (2) extends, the piston (12) reacting against a reaction member (52) threaded on the bolt (2), and a source of hydraulic fluid (46). Defined within the cylinder (10) are a first chamber (36) the supply of fluid under pressure to which effects powered extension of the piston (12) within the cylinder (10), and a second chamber (34) the supply of fluid under pressure to which effects powered retraction of the piston (12) within the cylinder (10).

Inventors

WALTON JOHN NIGEL

CAMPBELL

Latest standardized assignees - inventors removed

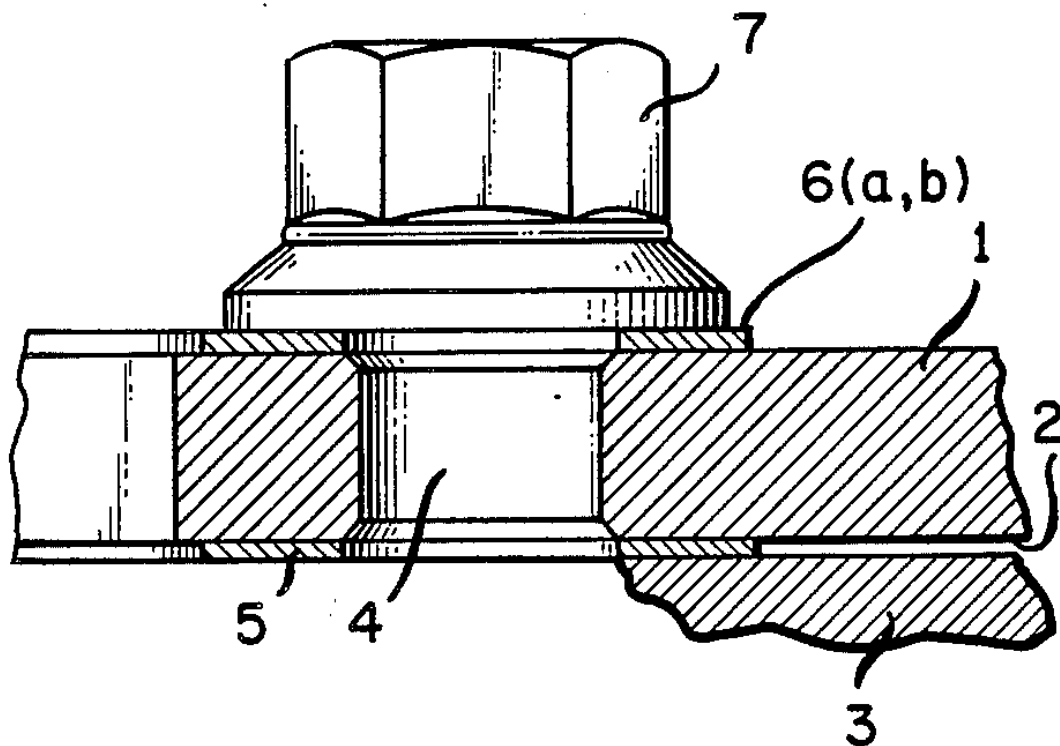
HEDLEY PURVIS

Family 2/100 - FAMPAT - ©Questel

Title

(EP--81181)

Disc wheel body of a utility vehicle

Images**Publication numbers with kind code & date**

US5026122	A	1991-06-25	US5026122
US4842338	A	1989-06-27	US4842338
AT33365	T	1988-04-15	ATE033365
EP0081181	B1	1988-04-06	EP--81181



EP0081181

A3 1984-09-05 EP--81181

DE3147820

C1 1983-08-25 DE3147820

EP0081181

A2 1983-06-15 EP--81181

**Abstract**

(EP0081181)

A wheel is provided for a commercial vehicle which comprises a wheel disc having bolt holes in the region of the wheel mounting face for attaching the wheel disc to a wheel hub flange or to a brake drum by way of wheel bolts and intermediate disks surrounding the bolt holes directly and concentrically and which by themselves provide a support surface between wheel mounting face, wheel hub flange or, respectively, brake drum or dual wheel. The intermediate disks allow to avoid fretting corrosion in the support region of the wheel disc, stiffening of the wheel disc central region, avoiding of surface damage, and improvement of the bolting. The intermediate disks can be solidly attached to the wheel disc by way of adhesive disposed in between, by friction setting, or by casting.

(From US4842338 A)

Inventors

GRUBISIC, VATROSLAV, DR.-ING.

FISCHER, GERHARD, DIPL.-ING.

Latest standardized assignees - inventors removed

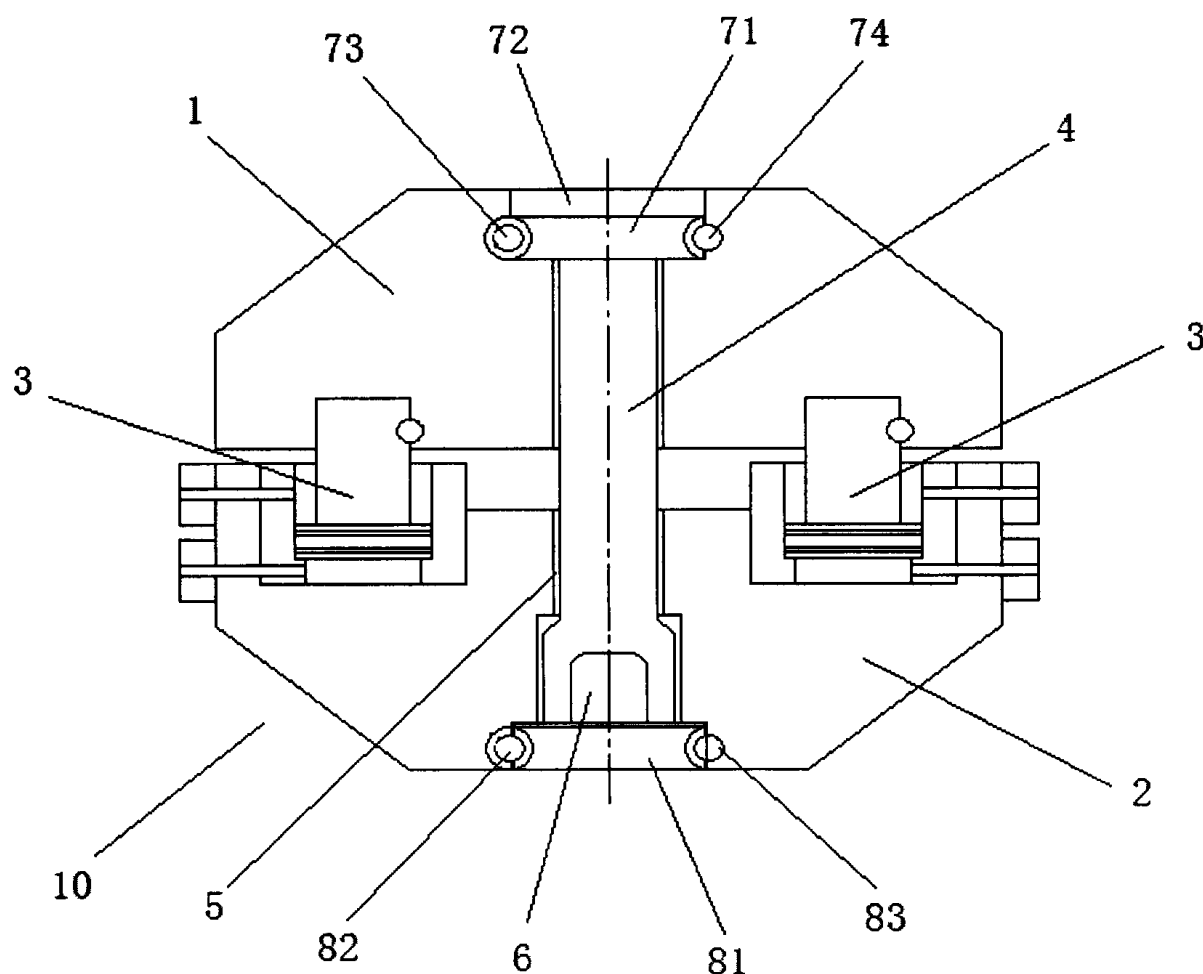
FRAUNHOFER

Family 3/100 - FAMPAT - ©Questel

Title

(CN105414948)

Bolt-tensioning-pretightened device and assembly formed by bolt-tensioning-pretightened device

Images

[CN105414948](#)

A 2016-03-23 CN105414948

Abstract

(CN105414948)

The invention discloses a bolt-tensioning-pretightened device and an assembly formed by the bolt-tensioning-pretightened device. The bolt-tensioning-pretightened device comprises a supporting seat and a top plate, wherein hydraulic cylinders are arranged between the supporting seat and the top plate, the bottoms of the hydraulic cylinders are fixedly arranged on the supporting seat, the end parts of ejection ends of the hydraulic cylinders are fixedly arranged on the top plate, and the hydraulic cylinders drive the top plate to be far away from or close to the supporting seat; a tension rod which is vertical to the surface of the supporting seat is arranged on the supporting seat, a through hole is formed in the top plate so as to enable the tension rod to pass through, a groove is formed in one end, far away from the supporting seat, of the tension rod, the groove and the tension rod are coaxial, and internal threads which are matched with external threads of a bolt to be tensioned are formed in the sidewall of the groove; a first rotation driving device which is used for driving the tension rod to rotate forwardly or reversely is arranged on the supporting seat, and a second rotation driving device which is used for driving a nut to rotate is arranged at a groove opening of the groove. According to the bolt-tensioning-pretightened device and the assembly formed by the bolt-tensioning-pretightened device, disclosed by the invention, the work efficiency is high, and the condition that the nut is damaged due to excessive wear during nut tightening can be prevented; the pretightening force for a ring flange is relatively balanced, so that the condition that a local pretightening force is too excessive or too inadequate can be avoided.

Inventors

YU MING

CHENG JIE

WU WEIHAO

LEI ZHENG

LI MIAOTING

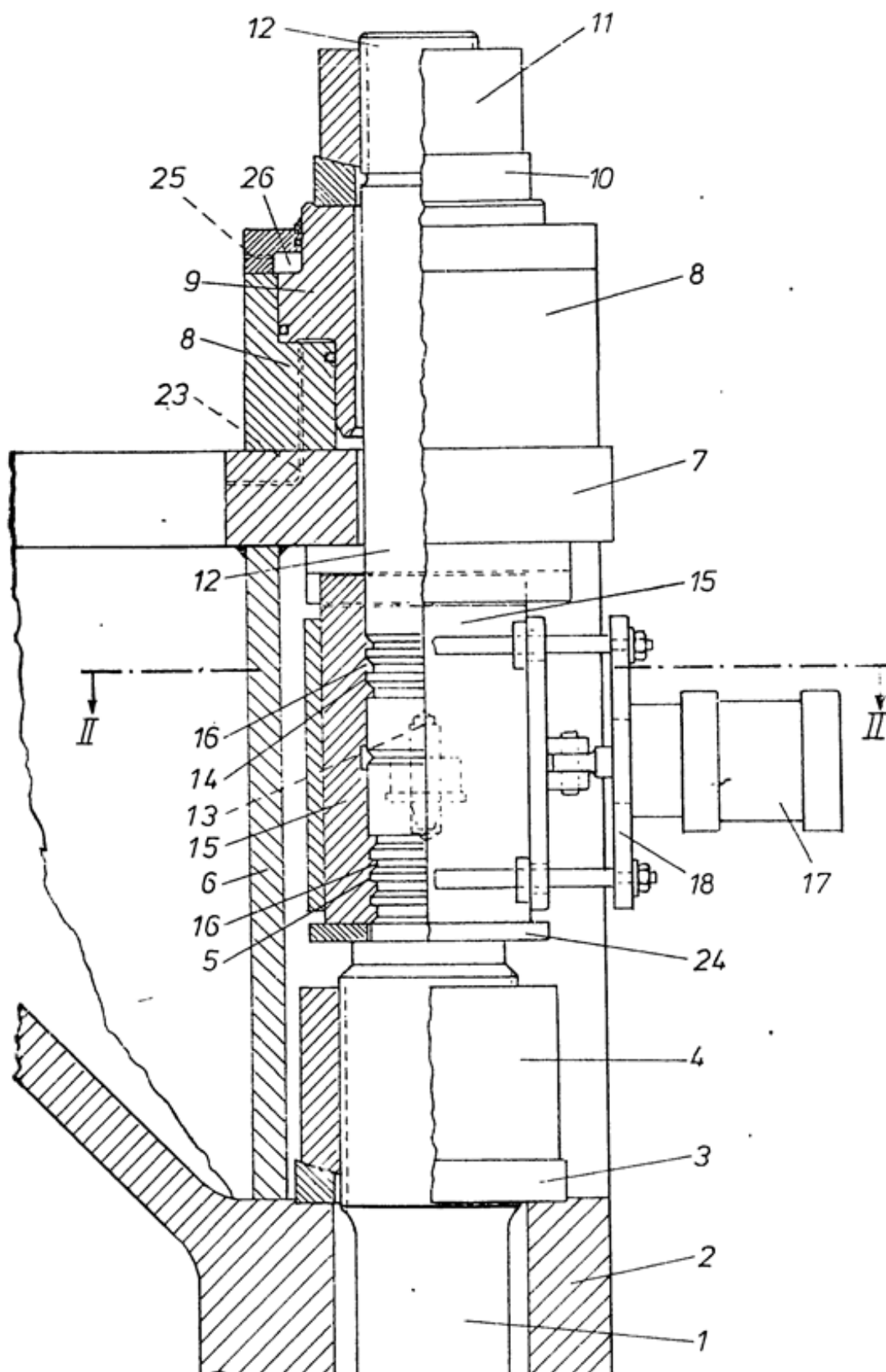
Family 4/100 - FAMPAT - ©Questel

Title

(DE2146608)

Reactor pressure vessel bolts pretensioned by temporary connection - of split sleeve with internal grooves clamped on bolt end

Images



Publication numbers with kind code & date

DE2146608	B2	1976-03-25	DE2146608
DE2214162	A1	1973-09-27	DE2214162
DE2146608	A1	1973-03-22	DE2146608



Abstract

(DE2146608)

An appts. for prestressing a number of threaded bolts mounted upon a pitch circle comprises a hydraulic cylinder which can bear against a supporting ring on the top flange of a nuclear reactor pressure vessel and tension each of the vessel head bolts in turn; the force is transmitted to each bolt by means of an auxiliary bolt which is temporarily coupled to it. The auxiliary bolt rests coaxially upon the bolt which is to be tightened, and each of them possess, at their adjacent ends, a series of annular ribs and grooves around them; these are connected together by means of a split sleeve, itself possessing internal grooves and ribs of complementary pattern so that when the split sleeve is tightened on it firmly connects the auxiliary bolt and main bolt together. The drive mechanism for closing the split sleeve onto the bolts may be pneumatic or hydraulic. The piston of the hydraulic cylinder for tensioning the bolt may have a spherical bearing transmitting its thrust onto the nut which transfers the force to the auxiliary bolt. The appts. is space saving. The quantity of heat-resistant matls. required to remain in place during reactor operation is minimised. Connection and disconnection of the appts. is extremely rapid, so that the working time necessary in a field of high radioactivity is minimised.

Inventors

SCHUENGEL PETER

Latest standardized assignees - inventors removed

KLOCKNER WERKE

Family 5/100 - FAMPAT - ©Questel

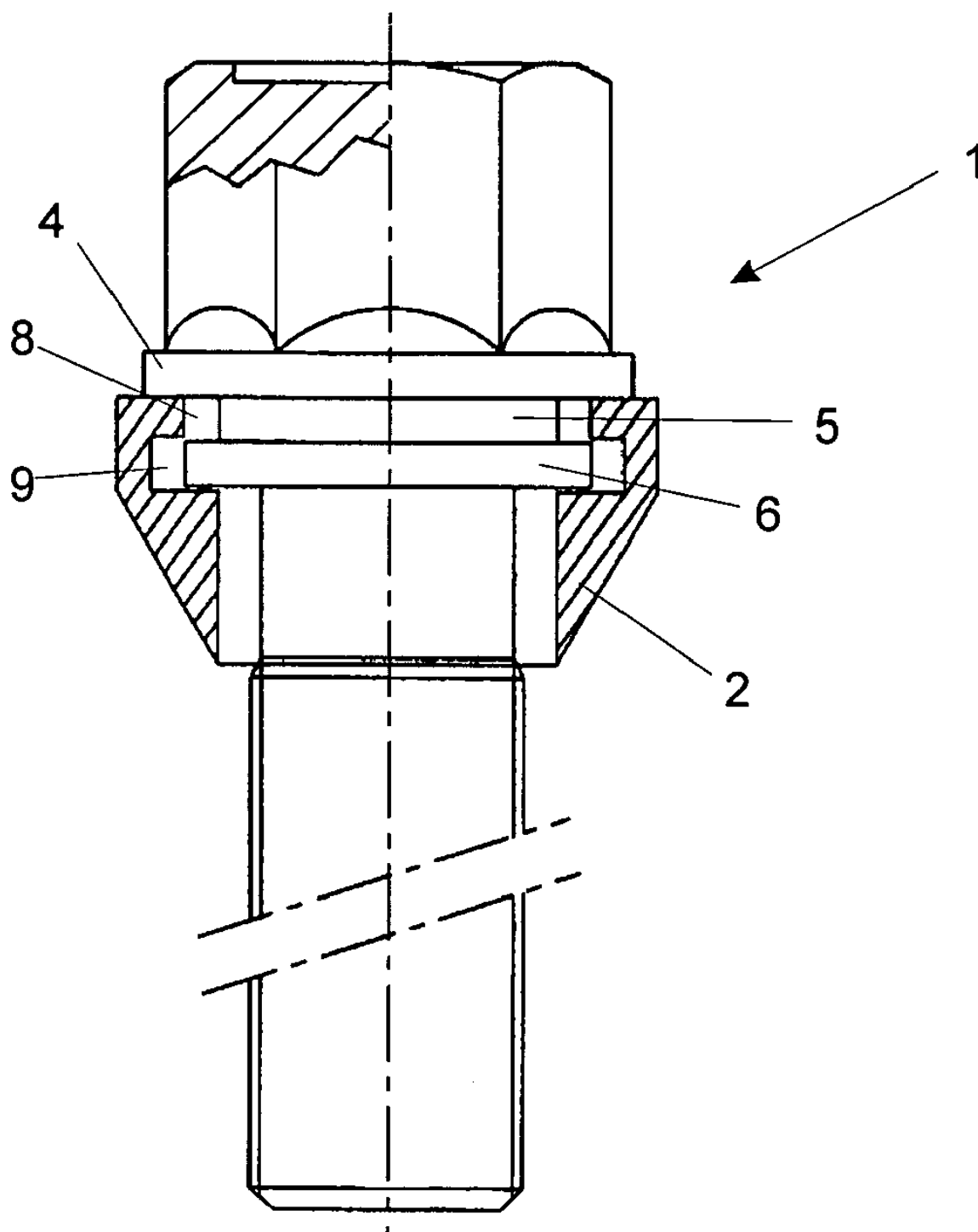
Title

(EP1849624)

Pitch circle packing screw or nut and method for their manufacture

Images

Fig. 1



Publication numbers with kind code & date

[DE102006020489](#)

A1 2007-11-08

DE102006020489

[EP1849624](#)

A1 2007-10-31

EP1849624



Abstract

(EP1849624)

The staggered bolt or nut is in two parts, consisting of a bolt (1) or nut and a separate axially movable collar part (2) and these two parts are irreversibly joined together. The bolt or nut has a head termination, an axial slot on at least one side and a bridge with a smaller diameter than the head termination. Independent claims are also included for the following: (A) a collar part (B) and a method of manufacturing an inventive device.

Inventors

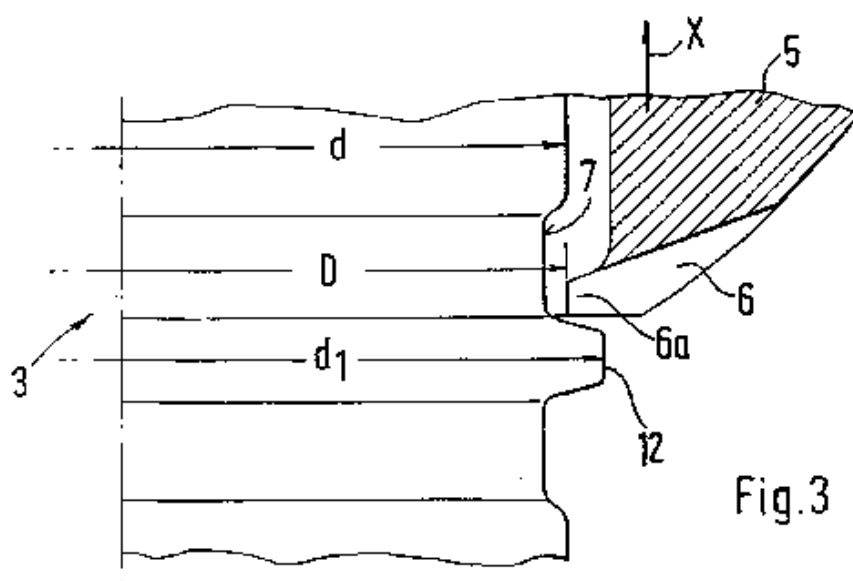
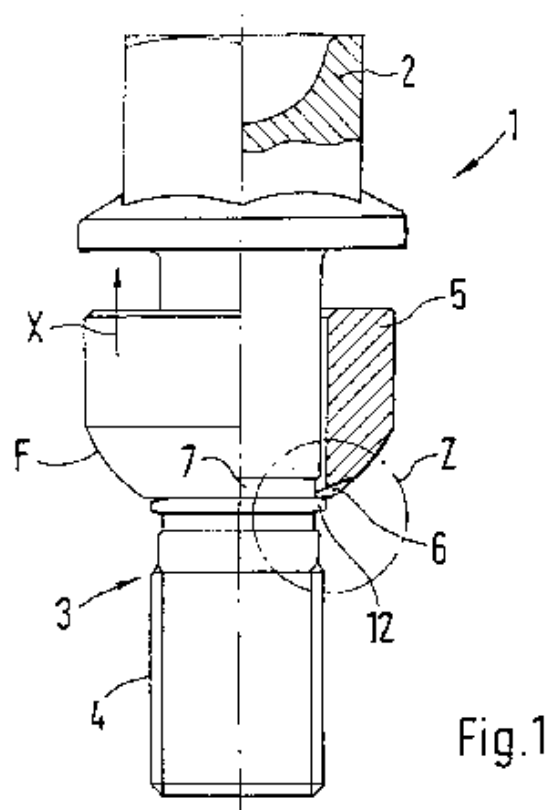
GUNDEL GEORG

Family 6/100 - FAMPAT - ©Questel

Title

(EP-836016)

Screw for wheel

Images**Publication numbers with kind code & date**[DE59702660](#)

D1 2000-12-28 DE59702660

[EP0836016](#)

B1 2000-11-22 EP-836016



US6106077	A	2000-08-22	US6106077
EP0836016	A3	1998-04-29	EP-836016
EP0836016	A2	1998-04-15	EP-836016
JP10082410	A	1998-03-31	JP10082410
DE29614320	U1	1996-11-21	DE29614320

**Abstract**

(EP0836016)

The support ring (5) located between the bolt head and the threaded portion is in spherical form in the installation area of the vehicle wheel, and is retained so as to turn on the bolt shank (3) in an annular groove (7) by at least one caulked abutment (6). The support ring consist of an aluminium alloy and is located on a wheel bolt made of steel. The caulked abutments consist of four lobes which have an ID (d) which conforms to the OD of the bolt shank.

Inventors

KLUGE ANDREAS

MUELLER MARTIN

Latest standardized assignees - inventors removed

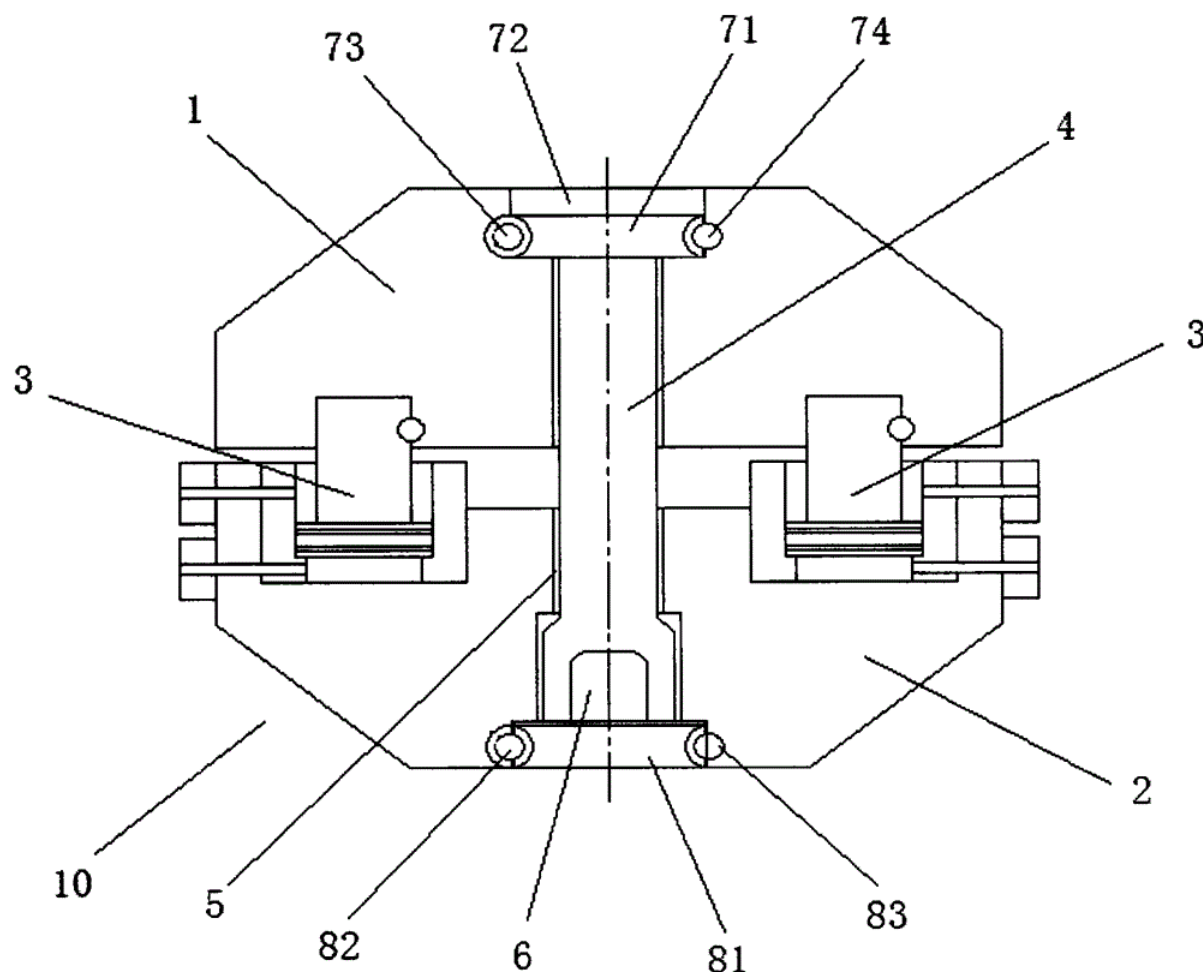
PORSCHE

Family 7/100 - FAMPAT - ©Questel

Title

(CN205309743U)

Tensile preloading device of bolt and subassembly of constituteing by device

Images**Publication numbers with kind code & date**[CN205309743](#) U 2016-06-15 CN205309743U**Abstract**

(CN205309743)

The utility model discloses a tensile preloading device of bolt and subassembly of constituting by device, the tensile preloading device of bolt include and support and roof be provided with the hydro -cylinder between support and the roof, and the bottom of hydro -cylinder is fixed on the support, and the end fixing of the ejecting end of hydro -cylinder is on the roof, and the oil cylinder drive roof is kept away from or is close to the support, being provided with the pull rod of perpendicular to seating face on the support, being provided with the through hole on the roof and passing for the pull rod, the one end of keeping away from the support of pull rod is provided with the recess, and the recess is coaxial with the pull rod, the matching the external screw's of bolt that is provided with and waits on the lateral wall of recess to draw internal thread, be provided with the first commentaries on classics device that drives of tie rod drive forward or antiport on the support, the notch department of recess is provided with drive nut pivoted second and drives the commentaries on classics device. The utility model discloses an excessive wear damaged when the tensile preloading device of bolt can prevent the nut fastening, and comparatively balanced to the pretension dynamics of farad dish, can avoid the too big or undersize of local pretightning force.

Inventors

YU MING

CHENG JIE

WU WEIHAO

LEI ZHENG

LI MIAOTING

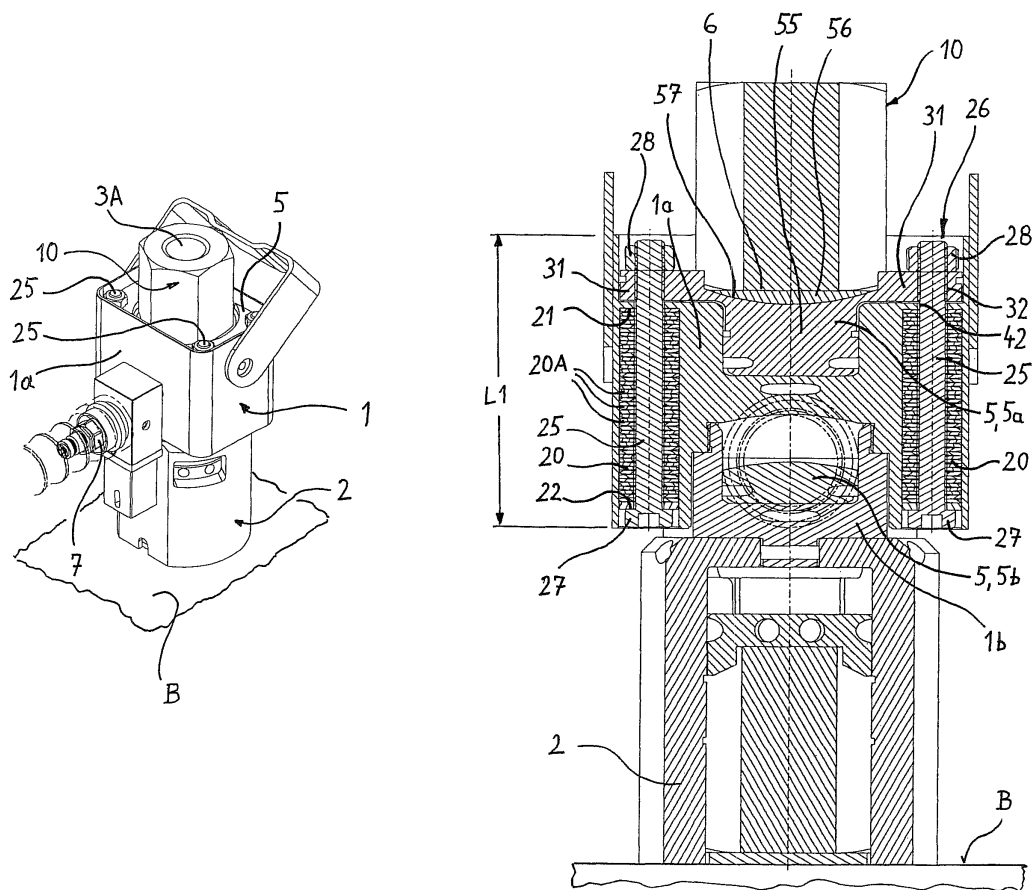
Family 8/100 - FAMPAT - ©Questel

Title

(EP2719504)

Tension device for straining a threaded bolt

Images



Publication numbers with kind code & date

US9415493	B2	2016-08-16	US9415493
DK2719504	T3	2015-11-23	DK2719504T
ES2546841	T3	2015-09-29	ES2546841
EP2719504	B1	2015-08-12	EP2719504
US20140174262	A1	2014-06-26	US20140174262
JP2014076535	A	2014-05-01	JP2014076535
DE102012109681	A1	2014-04-17	DE102012109681
EP2719504	A1	2014-04-16	EP2719504



Abstract

(EP2719504)

The clamping apparatus has a hydraulic supply connectable piston (5) that is arranged in extension of the housing (1). An exhausting support tube (2) is arranged in the housing of working clamping forces on an underlay (B). A train nut (10) is fastened by threaded engagement on a screw thread end section (A) of threaded bolt that is supported in longitudinal direction with a pressure surface (9) against a pressure transmission surface (6). The piston is acted toward a housing-side spring support and a piston-side spring support upon a return spring.

Inventors

HOHMANN JÖRG

HOHMANN FRANK

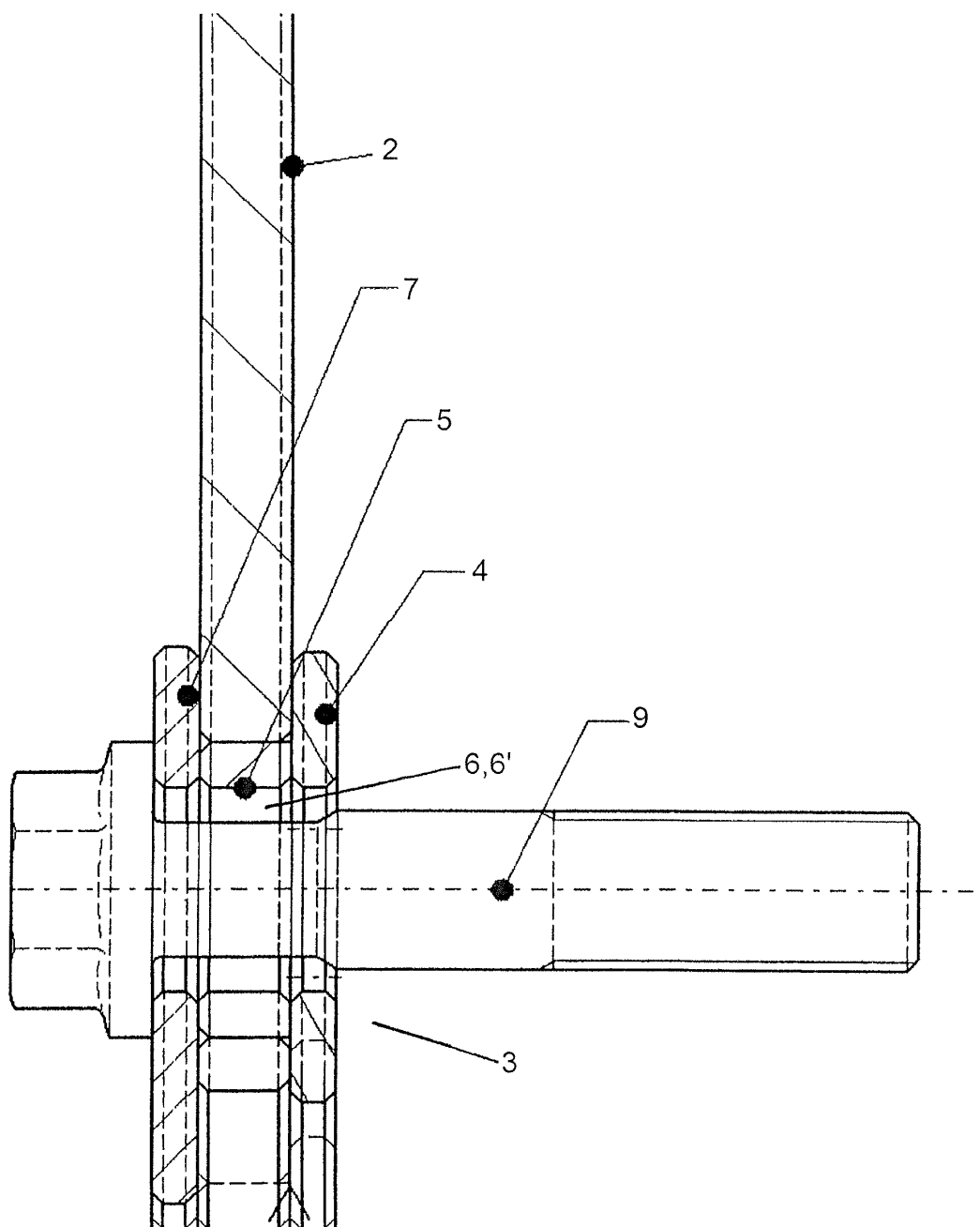
Family 9/100 - FAMPAT - ©Questel

Title

(WO2014161697)

Arrangement for fastening a wheel disc made of fibre composite material to a wheel hub.

Images



Publication numbers with kind code & date

US10183525	B2	2019-01-22	US10183525
US20160016427	A1	2016-01-21	US20160016427
WO2014/161697	A1	2014-10-09	WO2014161697
DE102013205797	A1	2014-10-02	DE102013205797



Abstract

(WO2014/161697)

The invention relates to a wheel for a motor vehicle, having a rim intended to receive a tyre and a wheel disc made of fibre composite material joined to said rim and an arrangement comprising screws or nuts for fastening the wheel disc to a wheel hub, for which purpose the wheel disc has axially directed openings for the passage of the screws or threaded bolts for screwing onto the nuts, characterised in that the arrangement comprises for each opening of the wheel disc an insulating body, a bush and a washer, each having a central opening, which surround the opening of the wheel disc in a U-

shape, wherein the bush rests as frame at the inner circumference of the opening, and the insulating body and the washer, resting against the frame and against the wheel disc in each case on one side of the wheel, at least partially cover the wheel disc in the radial direction, wherein the insulating body is directed towards the wheel inside and the washer is directed towards the wheel outside. The insulating body can consist at least partially of ceramic material.

Inventors

KELLER DAVID

JÄGERMEYR PETER

Latest standardized assignees - inventors removed

BMW - BAYERISCHE MOTOREN WERKE

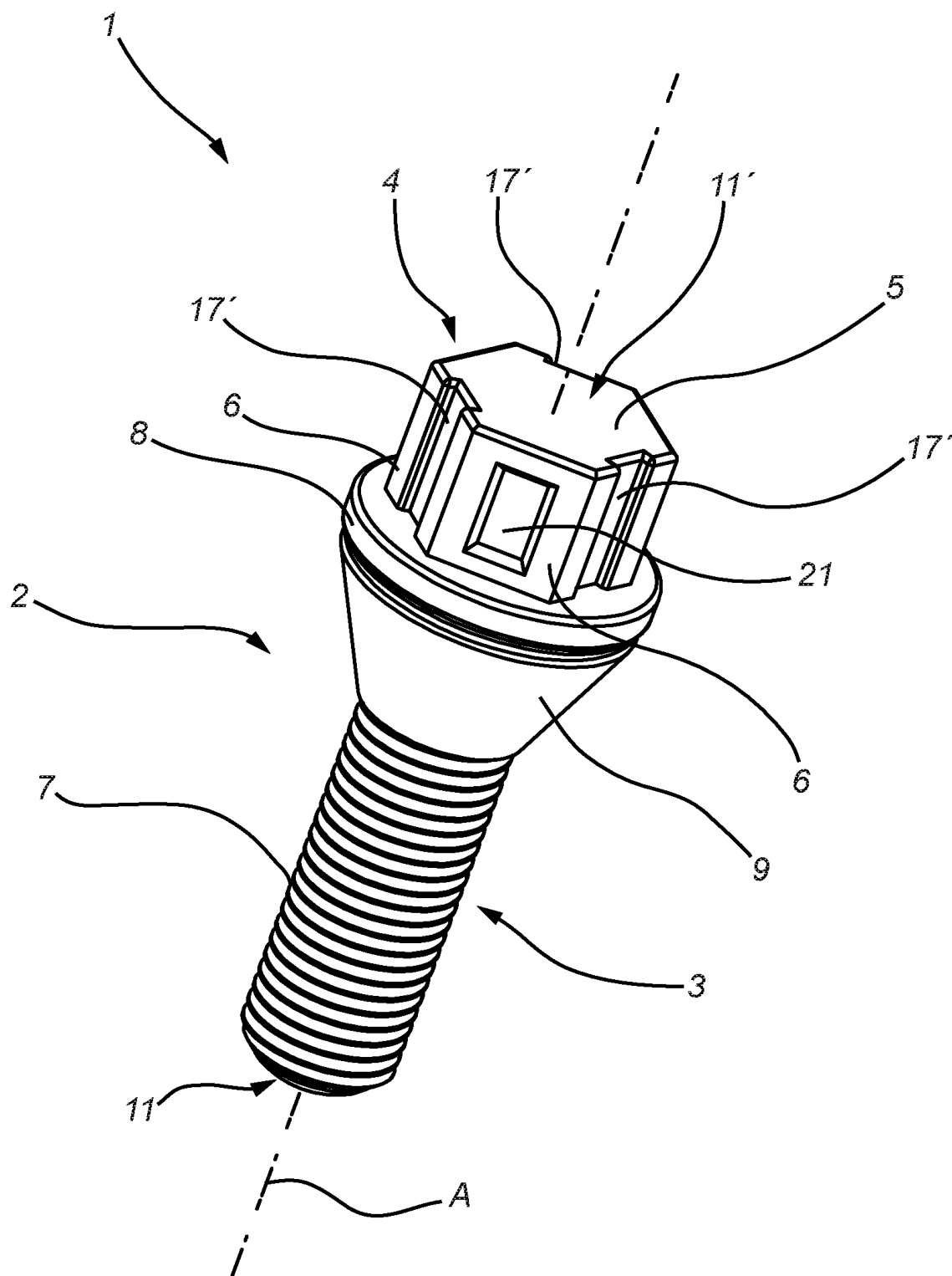
Family 10/100 - FAMPAT - ©Questel

Title

(EP3106683)

A fastener

Images



Publication numbers with kind code & date

EP3106683	B1	2019-04-10	EP3106683
US20180156262	A1	2018-06-07	US20180156262
WO2016/202943	A1	2016-12-22	WO2016202943
EP3106683	A1	2016-12-21	EP3106683



Abstract

(EP3106683)

The present invention relates to a fastener, such as a bolt or a nut, for fastening a wheel to a vehicle, comprising: a body (2) comprising: a cap receiving portion, a threaded portion (3) and a central axis (A); and a cap (5), arranged to be received by and cover said cap receiving portion characterized in that said cap receiving portion comprises a recess or a protrusion against which said cap can be deformed, or has been deformed, such that said cap forms a mutual matching protrusion

(21) or recess, wherein said recess or protrusion of said cap receiving portion has a longitudinal extension essentially parallel to said central axis. The present invention also relates to a method for assembling a fastener.

Inventors

OSCARSON HENRIK

NORMAN ANDERS

ANDERSSON ANDERS

Latest standardized assignees - inventors removed

BULTEN

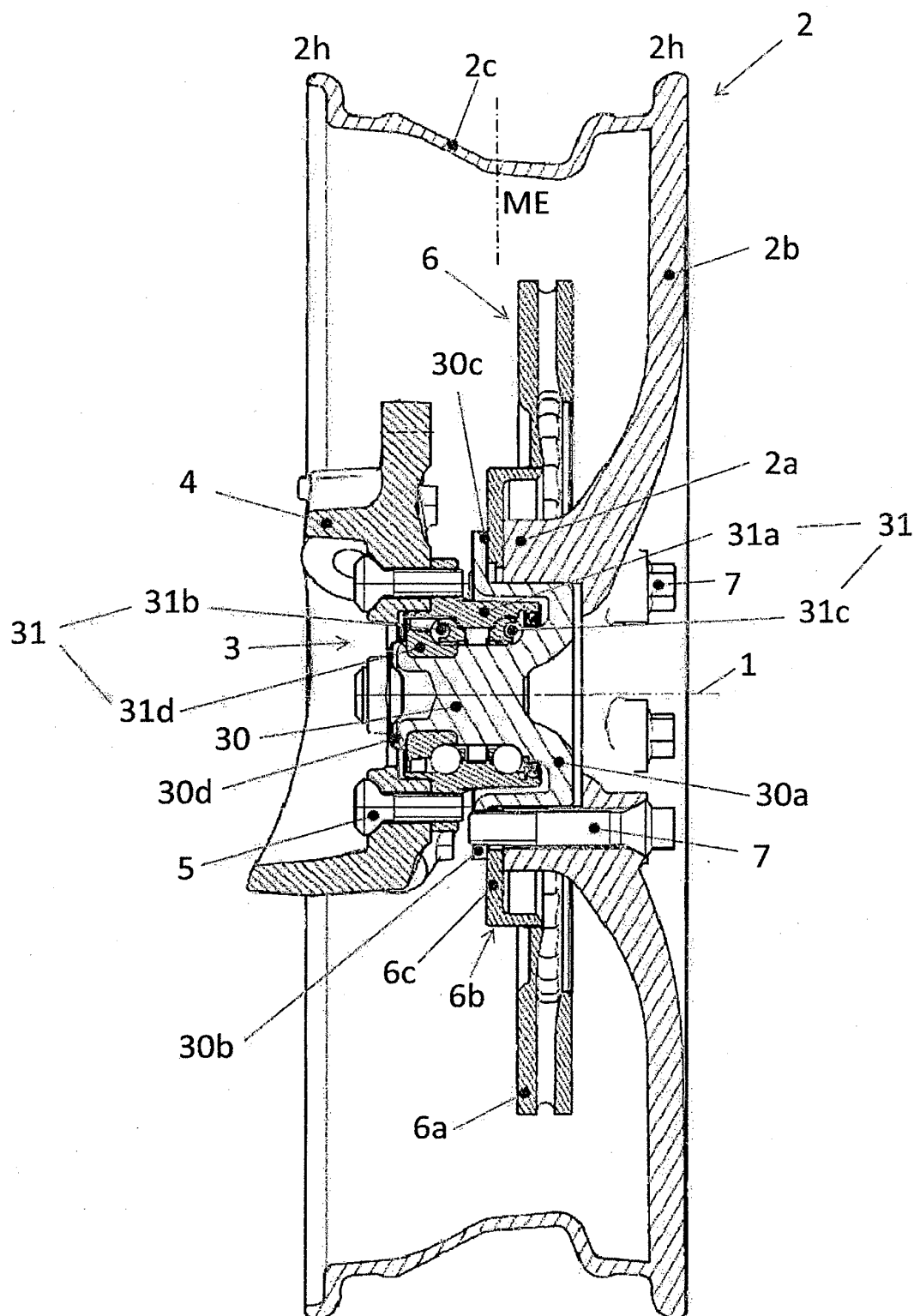
Family 11/100 - FAMPAT - ©Questel

Title

(EP2697077)

Wheel bearing assembly of a vehicle

Images



Publication numbers with kind code & date

EP2697077	A1	2014-02-19	EP2697077
US20140035351	A1	2014-02-06	US20140035351
CN103476600	A	2013-12-25	CN103476600
WO2012/139856	A1	2012-10-18	WO2012139856
DE102011007110	A1	2012-10-11	DE102011007110



Abstract

(EP2697077)

The invention relates to a wheel bearing assembly of a vehicle whose hub is mounted in a wheel carrier via a roller bearing arrangement and has a driver flange having a bearing face which is perpendicular to the rotational axis of the wheel, for a wheel, if appropriate with intermediate positioning of a brake disc, wherein the bearing face of the driver flange describes a plane which intersects the roller bearing arrangement. In this context, the hub forms or supports an inner ring of the roller bearing arrangement, while an outer ring is held in the wheel carrier, and a supporting structure for the driver flange on the outside of the wheel bearing assembly, facing away from the vehicle body, is made to extend around the roller bearing arrangement. As a result, a pressing-in depth of the order of magnitude of zero or several millimetres can be achieved with a customary wheel rim.

Inventors

SCHMIDT ROLAND

DUDKOWIAK JOHANN

Latest standardized assignees - inventors removed

BMW - BAYERISCHE MOTOREN WERKE

Family 12/100 - FAMPAT - ©Questel

Title

(EP-807025)

Vehicle wheel and method of producing the same

Images

MX9705802	A	1998-07-31	MX9705802				
HU9800224	A2	1998-05-28	HU9800224				
KR19980701366	A	1998-05-15	KR19987001366				
CZ243597	A3	1998-02-18	CZ9702435				
PL321790	A1	1997-12-22	PL96321790				
EP0807025	A1	1997-11-19	EP-807025				
BR9607113	A	1997-11-04	BR9607113				
WO96/24497	A1	1996-08-15	WO9624497				
DE19603968	A1	1996-08-14	DE19603968				

Abstract

(EP0807025)

The invention concerns a vehicle wheel comprising a rim and a wheel disc which is connected thereto and is secured to a hub or brake drum with a plurality of connecting bosses for the tyre bolt screw holes disposed over the periphery of the bolt-pitched circle. The connecting bosses have spherical or conical sunk holes, and the region surrounding the sunk holes is cambered outwards. The wheel disc comprises abutment surfaces for the hub or brake drum which are distributed over the periphery. According to the invention the region (6) of the connecting boss (1, 1', 1''), which region surrounds the sunk holes (2, 23), is significantly thicker in all the cross-sectional planes than the more remote region which forms the wheel disc (5), the region (6) surrounding the sunk holes (2, 23) forming an integral unit with the more remote region (5). The region directly adjacent the sunk holes (2, 23) has the greatest thickness (9) which continuously decreases radially outwards, viewed from the axis (7) of the sunk hole (2), and then merges in a rounded or tangential manner into the region which has an almost constant thickness (10) which corresponds substantially to the initial thickness of the circular blank on which the wheel disc (5) is integrally formed.

Inventors

DUNING RALF

GOHRBANDT UWE

DAEFLER HANS-JOACHIM

Latest standardized assignees - inventors removed

MANNESMANN KRONPRINZ

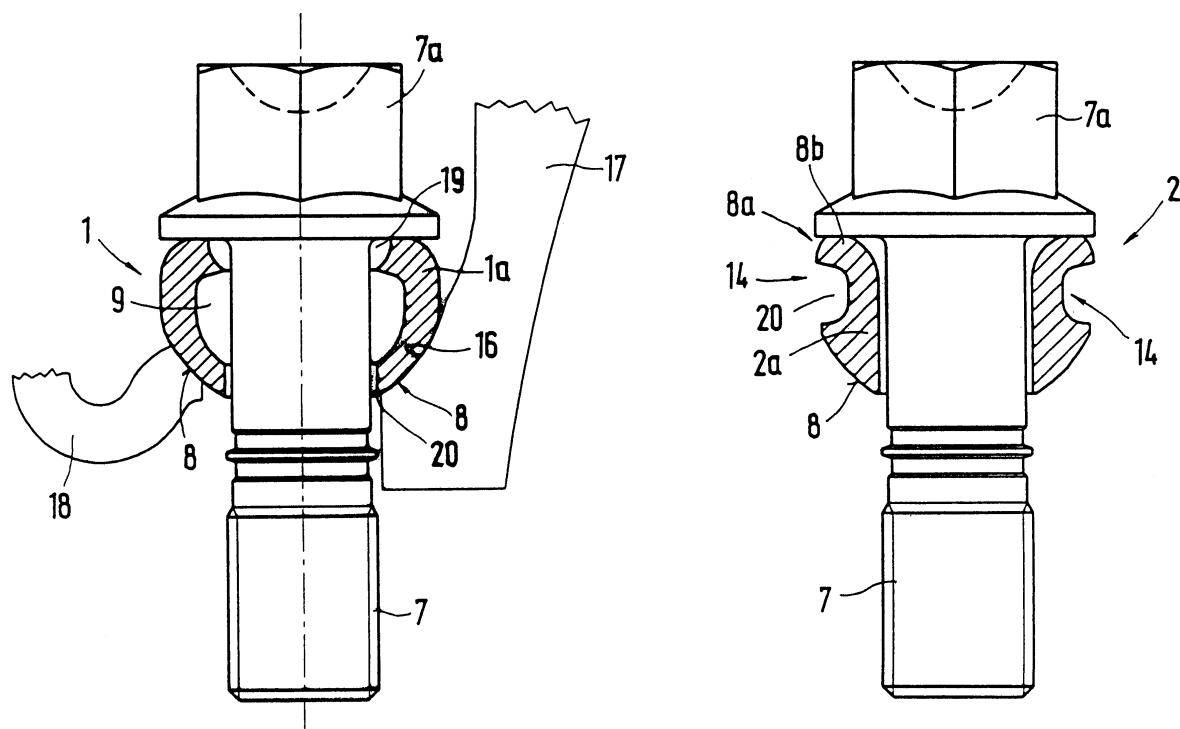
Family 13/100 - FAMPAT - ©Questel

Title

(EP1083343)

Sheet-like material element for a screw for a wheel

Images



Publication numbers with kind code & date

ES2226672	T3	2005-04-01	ES2226672
DE50008488	D1	2004-12-09	DE50008488
AT281314	T	2004-11-15	ATE281314
EP1083343	B1	2004-11-03	EP1083343
DE19942836	C2	2003-04-17	DE19942836
US6478521	B1	2002-11-12	US6478521
EP1083343	A3	2002-06-05	EP1083343
DE19942836	A1	2001-03-22	DE19942836
EP1083343	A2	2001-03-14	EP1083343



Abstract

(EP1083343)

The washer (1) for a car wheel bolt or nut consists of a tubular sleeve (1a) with rounded end sections (8). The inner surface of the sleeve has a wider section (9) and/or the outer surface has a groove.

Inventors

TSCHUNKO JAN

SOEFFGE FRIEDHELM

Latest standardized assignees - inventors removed

PORSCHE

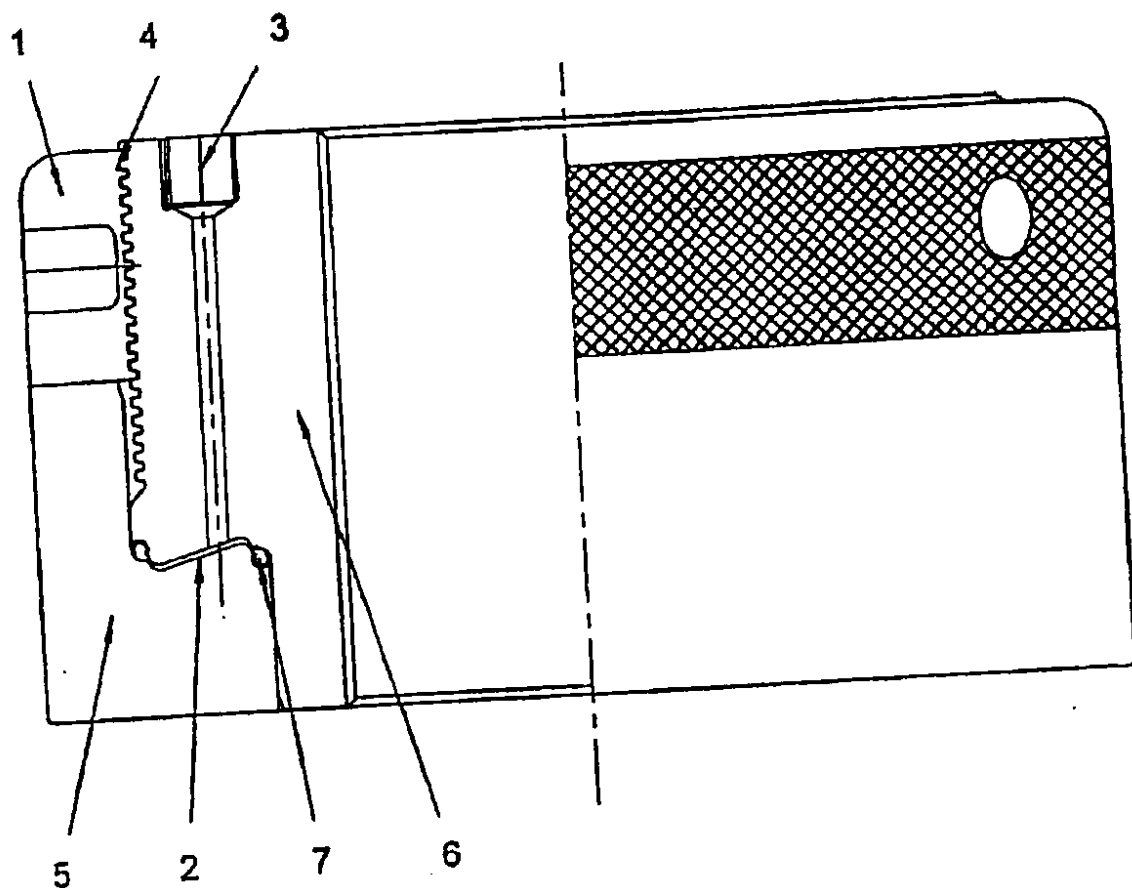
Family 14/100 - FAMPAT - ©Questel

Title

(US20050186050)

Hydraulic nut assembly

Images

**Publication numbers with kind code & date**

CA2496933	C	2014-04-29	CA2496933
US20050186050	A1	2005-08-25	US20050186050
CA2457968	A1	2005-08-19	CA2457968
CA2496933	A1	2005-08-19	CA2496933

**Abstract**

(US20050186050)

A hydraulic nut for tensioning an assembly includes a mechanical threaded locking collar to minimize load loss during transfer of hydraulic load to the locking collar, a Z shaped annular piston to minimize height of the hydraulic nut, an annular pressure area to generate an axial load under hydraulic pressure, a hydraulic pressure port and metallic seals to maintain the hydraulic pressure within the annular pressure area that operates in an elastic region and continues to actuate hydraulic pressure after repeated operating temperature cycles.

Inventors

BRITTON GORDON

HUGHES DAVID

JOHNSON MARK

Latest standardized assignees - inventors removed

INTEGRA TECHNOLOGIES

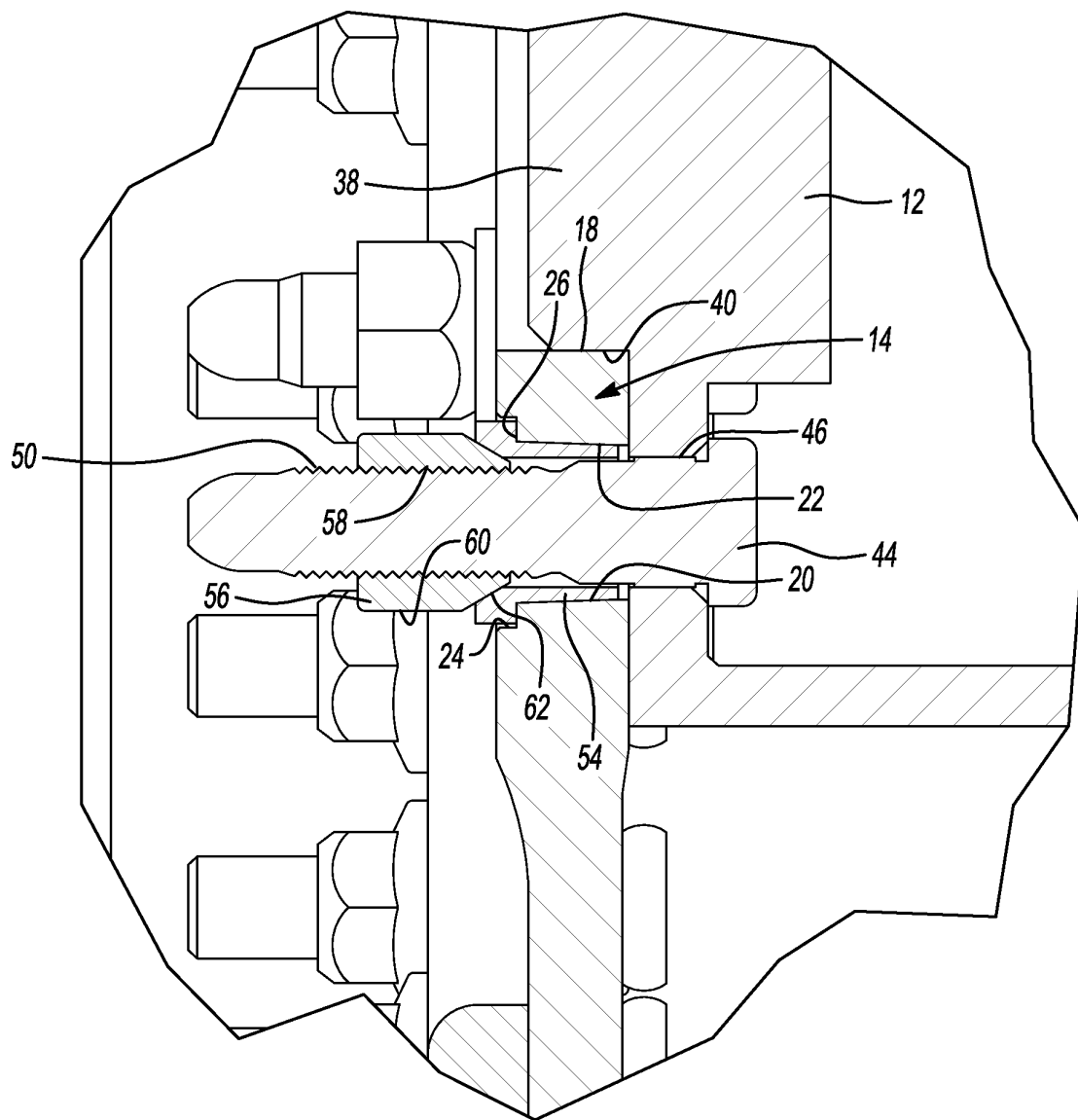
Family 15/100 - FAMPAT - ©Questel

Title

(US8308247)

Wheel mounting sleeve

Images



Publication numbers with kind code & date

US8308247 B2 2012-11-13 US8308247

US20120007416 A1 2012-01-12 US20120007416



Abstract

(US20120007416)

A sleeve for a fastener aperture in a vehicle wheel includes a tubular body having a first end and a plurality of external conically shaped barbs. The barbs include successively increasing outer diameters as a distance from the first end increases. A head radially outwardly extends from a second end of the body and is adapted to engage a land on the wheel that encompasses the fastener aperture. A bore extends through the body and the head and is adapted to receive a wheel fastener.

Inventors

KAZMIERZAK RICHARD R

Latest standardized assignees - inventors removed

ACCURIDE

ROYAL BANK OF CANADA

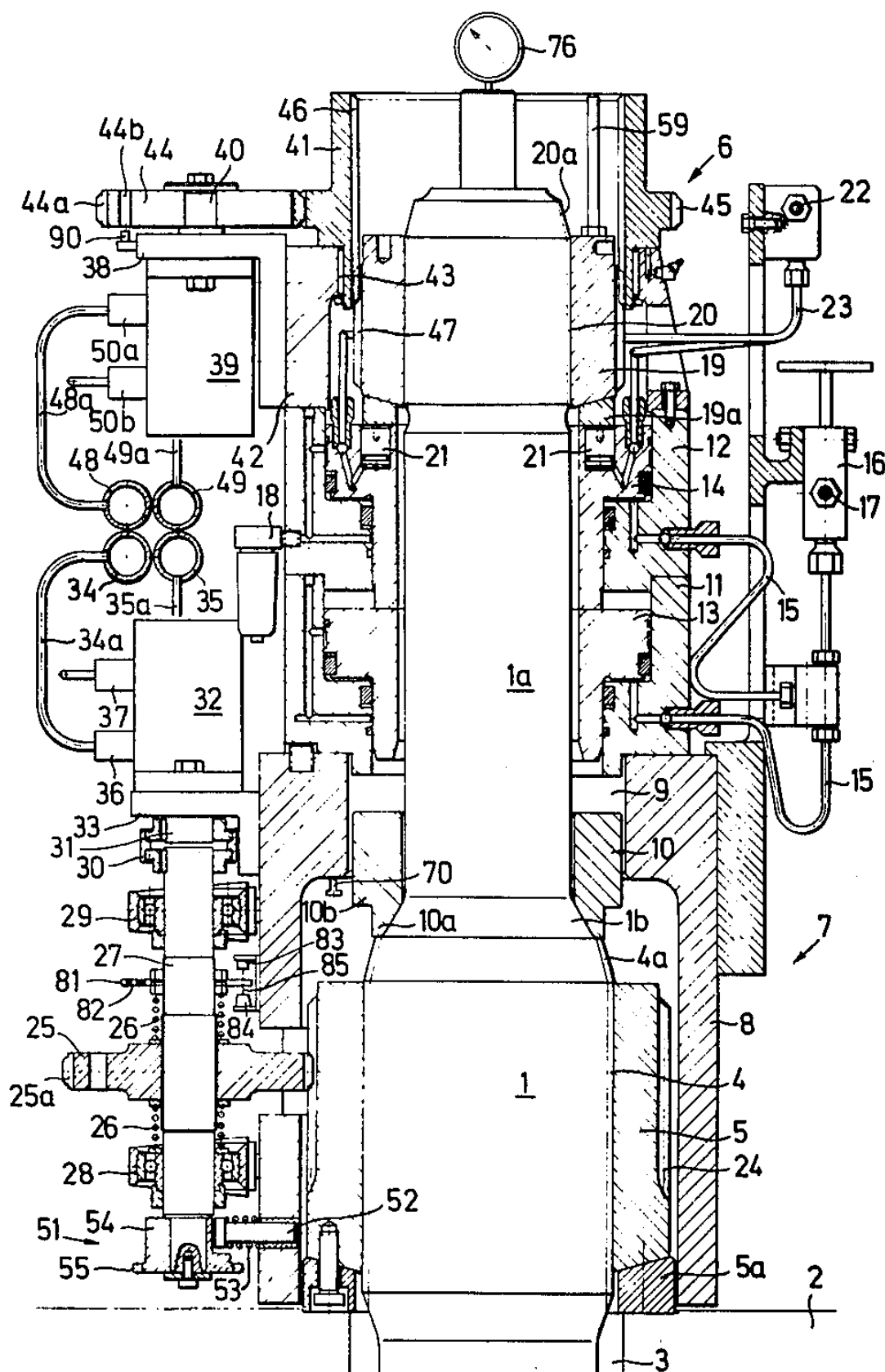
Family 16/100 - FAMPAT - ©Questel

Title

(US3877326)

Tensioning apparatus

Images



DE2258859	C2	1989-07-13	DE2258859
AT353719	B	1979-11-26	AT-353719
ATA560076	A	1979-04-15	AT7605600
SE405426	B	1978-12-04	SE-405426
AT344623	B	1978-08-10	AT-344623
ATA1007773	A	1977-11-15	AT7310077
FR2208756	B3	1976-10-15	FR2208756
GB1418508	A	1975-12-24	GB1418508
US3877326	A	1975-04-15	US3877326
FR2208756	A1	1974-06-28	FR2208756
DE2258859	A1	1974-06-12	DE2258859



Abstract

(US3877326)

This invention relates to an apparatus for tensioning fastening members, such as screw bolts provided with fixing nuts, and include a supporting frame for tensioning assemblies which can be set down on the screw bolts and each assembly has at least one cylinder with a piston sliding within the latter, which piston acts on a force transmitting element, such as a nut, which can be screwed down onto a screw bolt to be tensioned and means are provided on the supporting frame which serve to turn the fixing nuts on the screw bolts and the apparatus also comprises motor driven parts for rotating the force transmitting elements.

Inventors

KOCK GERHARD

WALLRAFEN GUNTER

HOFFMANN ERHARD

BUSCHFELD HUBERT

Latest standardized assignees - inventors removed

WIRTH MASCHINEN & BOHRGERATE FABRIK

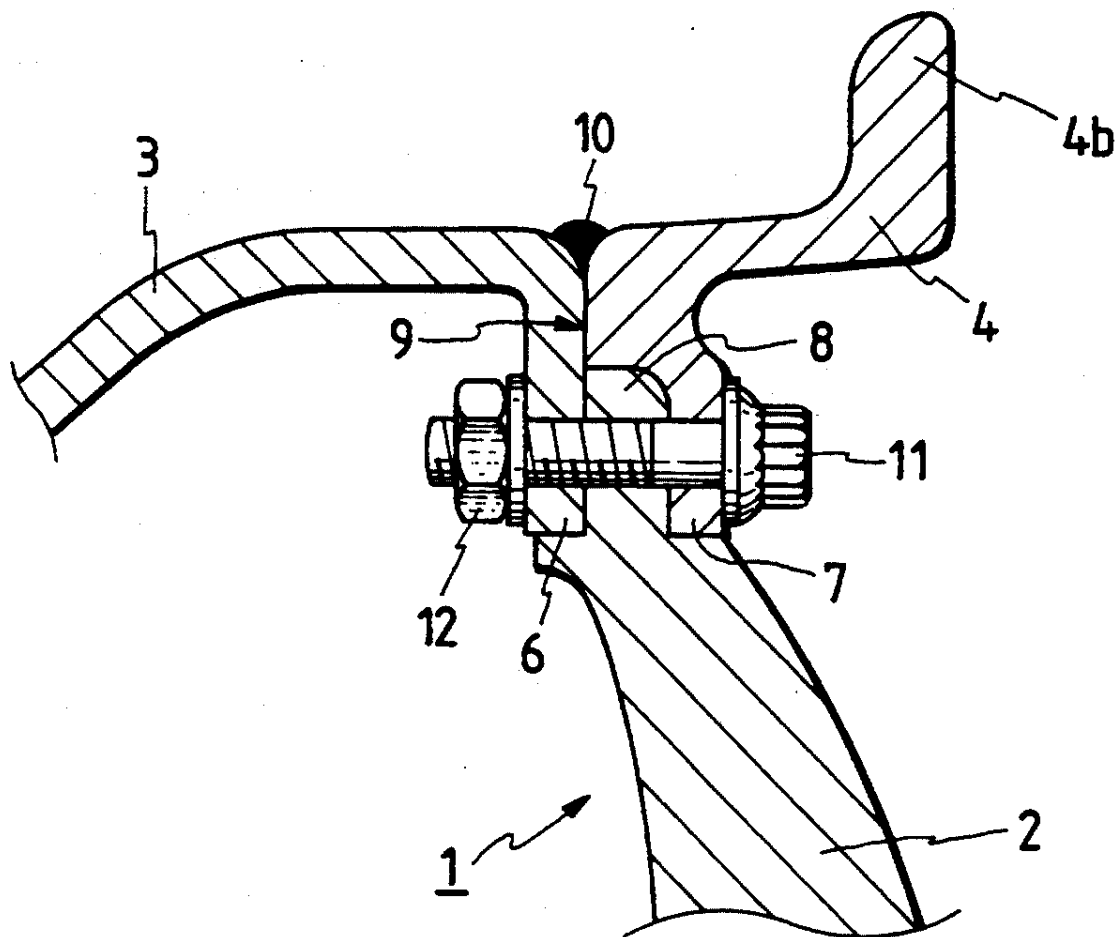
Family 17/100 - FAMPAT - ©Questel

Title

(US5435629)

Wheel for vehicle

Images



Publication numbers with kind code & date

DE4141868	B4	2004-04-29	DE4141868
US5435629	A	1995-07-25	US5435629
JP5005501	U	1993-01-26	JP05005501U
DE4141868	A1	1993-01-14	DE4141868



Abstract

(US5435629)

A vehicle wheel is of a three-piece sandwich type and high in accuracy and rigidity and can be manufactured less expensively and more efficiently. The radially outer portions of the flanges of an inner rim part and an outer rim part, which constitute a rim assembly for supporting a tire, are located in contact with each other outside the peripheral edge of a disk in the radial direction thereof so that the portions constitute a butted part. The rim parts are clamped to each other by bolts and nuts in such a manner that the radially inner portions of the flanges pinch the flange of the disk on both the sides of the latter flange. The butted part is provided with a welding seal on the peripheral surfaces of the flanges of the rim parts.

Inventors

SUZUKI JUNICHI

Latest standardized assignees - inventors removed

ENBISHI ALUMINUM WHEELS

Family 18/100 - FAMPAT - ©Questel

Title

(US4659065)

Bolt tensioning apparatus

Images

Inventors

SIMMS GRAHAM A

Latest standardized assignees - inventors removed

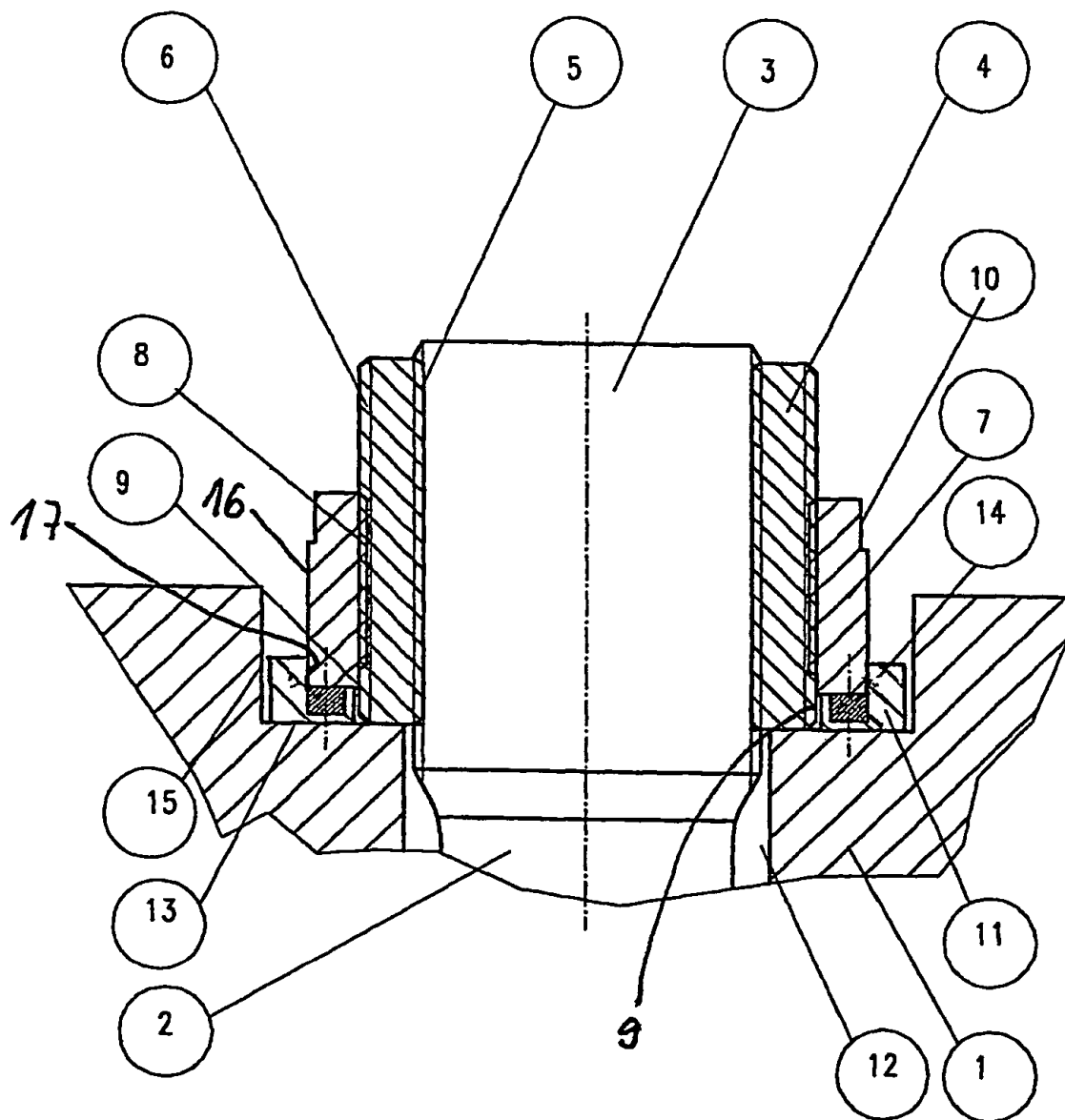
HYDRA TIGHT

Family 19/100 - FAMPAT - ©Questel

Title

(EP1656240)

Double nut for the controlled tightening of a part by means of a screw connection

Images**Publication numbers with kind code & date**

JP4712705	B2	2011-04-01	JP4712705
ES2313049	T3	2009-03-01	ES2313049
DK1656240	T3	2009-02-02	DK1656240T
DE502004008165	D1	2008-11-13	DE502004008165
CN100425408	C	2008-10-15	CN100425408C
EP1656240	B1	2008-10-01	EP1656240



US7338240	B2	2008-03-04	US7338240				
JP2007503557	A	2007-02-22	JP2007503557				
US20070020061	A1	2007-01-25	US20070020061				
CN1839016	A	2006-09-27	CN1839016				
EP1656240	A1	2006-05-17	EP1656240				
DE10339201	B4	2005-07-21	DE10339201				
DE10339201	A1	2005-03-31	DE10339201				
WO2005/021216	A1	2005-03-10	WO200521216				

Abstract

(EP1656240)

The invention relates to a double nut for the controlled tightening of a part by means of screw connections, consisting of a pulling bush (4) with an internal thread (5), which can be screwed onto the end of the thread (3) of the screw, with an external thread (6), and with a pressing bush (7), which can be screwed onto the external thread and which is supported on the part (1) that is to be tightened by means of the screw connection. The internal thread (8) of said pressing bush engages inside the external thread of the pulling bush while being situated at a distance of a number of turns of the thread from the end of the pulling bush facing the part to be tightened. The external thread also serves to screw on a pulling bush (24) of a hydraulic screw tightening cylinder (18). This hydraulic screw tightening cylinder has a supporting bush (20), which encircles the pressing sleeve, is also supported on the part that is to be tightened by means of the screw connection, and which overlaps the pulling bush and pressing bush.

Inventors

HOHMANN JOERG

HOHMANN FRANK

Latest standardized assignees - inventors removed

CLARIANT

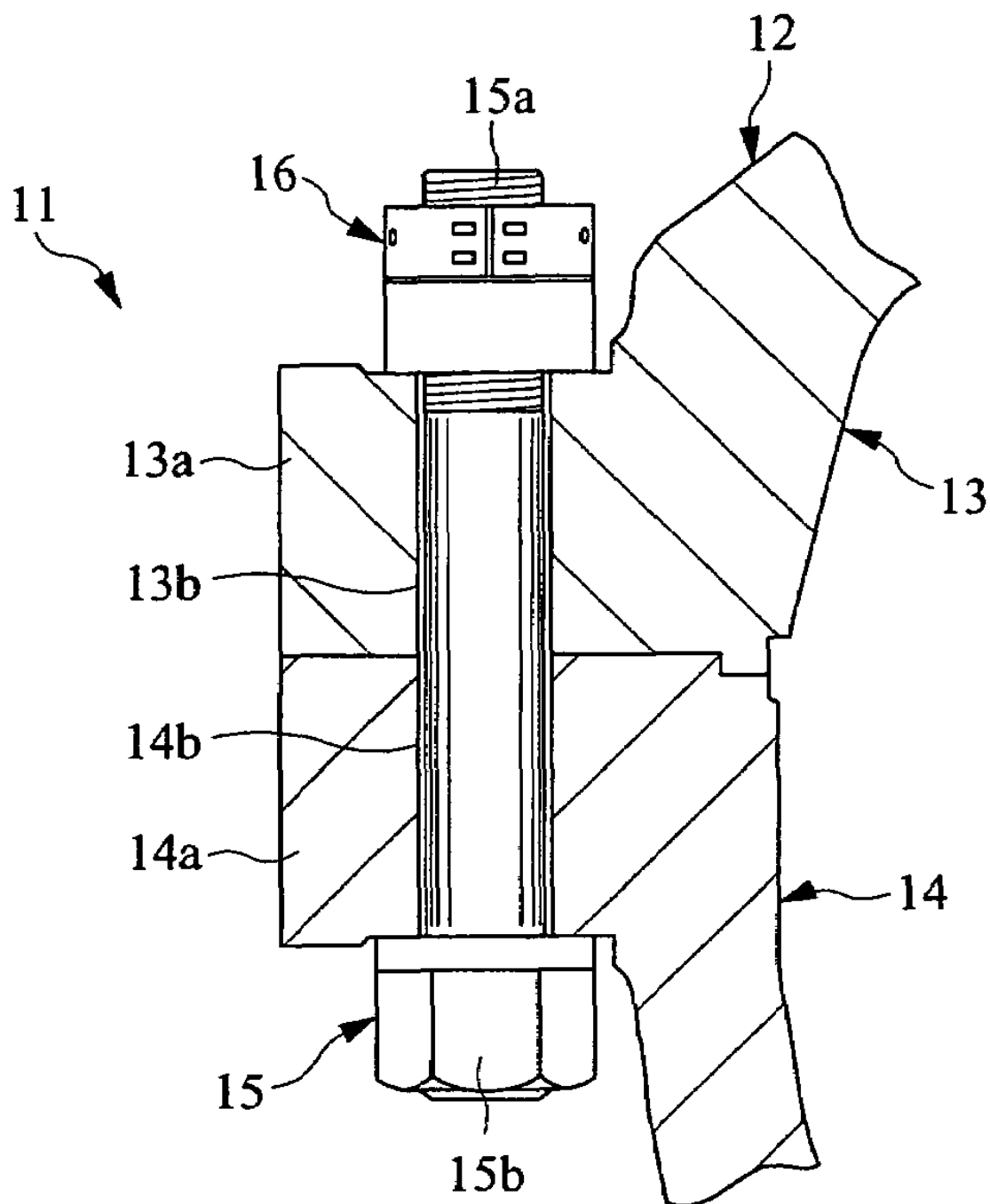
Family 20/100 - FAMPAT - ©Questel

Title

(EP1783383)

Fluid pressure device

Images



Publication numbers with kind code & date

JP4856142	B2	2011-11-04	JP4856142
DE60334411	D1	2010-11-11	DE60334411
AT483112	T	2010-10-15	ATE483112
EP1593863	B1	2010-09-29	EP1593863
JP4358115	B2	2009-08-14	JP4358115
US7552912	B2	2009-06-30	US7552912
JP2009024880	A	2009-02-05	JP2009024880
EP1783383	A3	2008-12-10	EP1783383
KR100807706	B1	2008-02-28	KR100807706
AU2003231379	B2	2007-11-08	AU2003231379
EP1783383	A2	2007-05-09	EP1783383
US20070051101	A1	2007-03-08	US20070051101
EP1593863	A4	2006-04-26	EP1593863
KR20050118165	A	2005-12-15	KR20050118165



EP1593863	A1	2005-11-09	EP1593863				
AU2003231379	A1	2004-08-30	AU2003231379				
AU2003231379	A8	2004-08-30	AU2003231379				
JPWO2004070216	A1	2004-08-19	JP2004070216W				
WO2004/070216	A1	2004-08-19	WO200470216				

Abstract

(EP1783383)

The present invention relates to a fluid pressure device (16) which converts energy of a working medium supplied to an interior of a pressure chamber into mechanical energy, and in particular, it relates to a fluid pressure device which is screw-fastened on a bolt inserted into an insertion hole of a fastened member in a state applied with a tensile force in advance. The fluid pressure device (16) comprises a first load supporting member (17); a second load supporting member (18) relatively movably incorporated into said first load supporting member (17) and partitioning and forming said pressure chamber (27) together with said first load supporting member (17), and a lock ring (21) including a female screw portion (36) screw-connected to a male screw portion (25c) provided with an outer circumferential surface of one of said first and second load supporting members (17;18), and a load supporting surface (21a) contacting with an end surface (23a) of the other of said first and second load supporting members (17;18). The lock ring (21a) supports a load of said second load supporting member (18) and is radially divisible.

Inventors

IMAI ATSUSHI

IMAI YUTAKA

GODA TATSUO

IMAI AKIRA

Latest standardized assignees - inventors removed

IMAI AKIRA

IMAI ATSUSHI

IMAI YUTAKA

IMAI SATOSHI

IMAI TOORU

Family 21/100 - FAMPAT - ©Questel

Title

(EP-655025)

Mechanical tensioner

Images

A mechanical tensioner for a nut-bolt assembly has two input elements (2, 3) engaging with one another and engageable by an actuating tool so that the input elements (2, 3) are turnable relative to one another in opposite directions, one of the input elements (2) being engageable with a bolt (1) so that when the input elements (2, 3) are turned relative to one another the one engaging element (2) pulls the bolt (1) in an axial direction, an output element (5) engageable with a nut (0) so as to turn the nut (0), and a transmission (6, 8, 9) connecting the other input element (3) with the output element (5) so that when the other input element (3) is turned the output element (5) turns through the transmission (6, 8, 9) and thereby turns the nut (0). The transmission (6, 8, 9) is formed so that the output element (5) is turnable with a speed which is substantially greater than a speed of turning of said other input element (3).

Inventors

JUNKERS JOHN K

KOPPENHOEFER PETER

Latest standardized assignees - inventors removed

UNEX

Family 22/100 - FAMPAT - ©Questel

Title

(GB2457138)

Bolt tensioners

Images

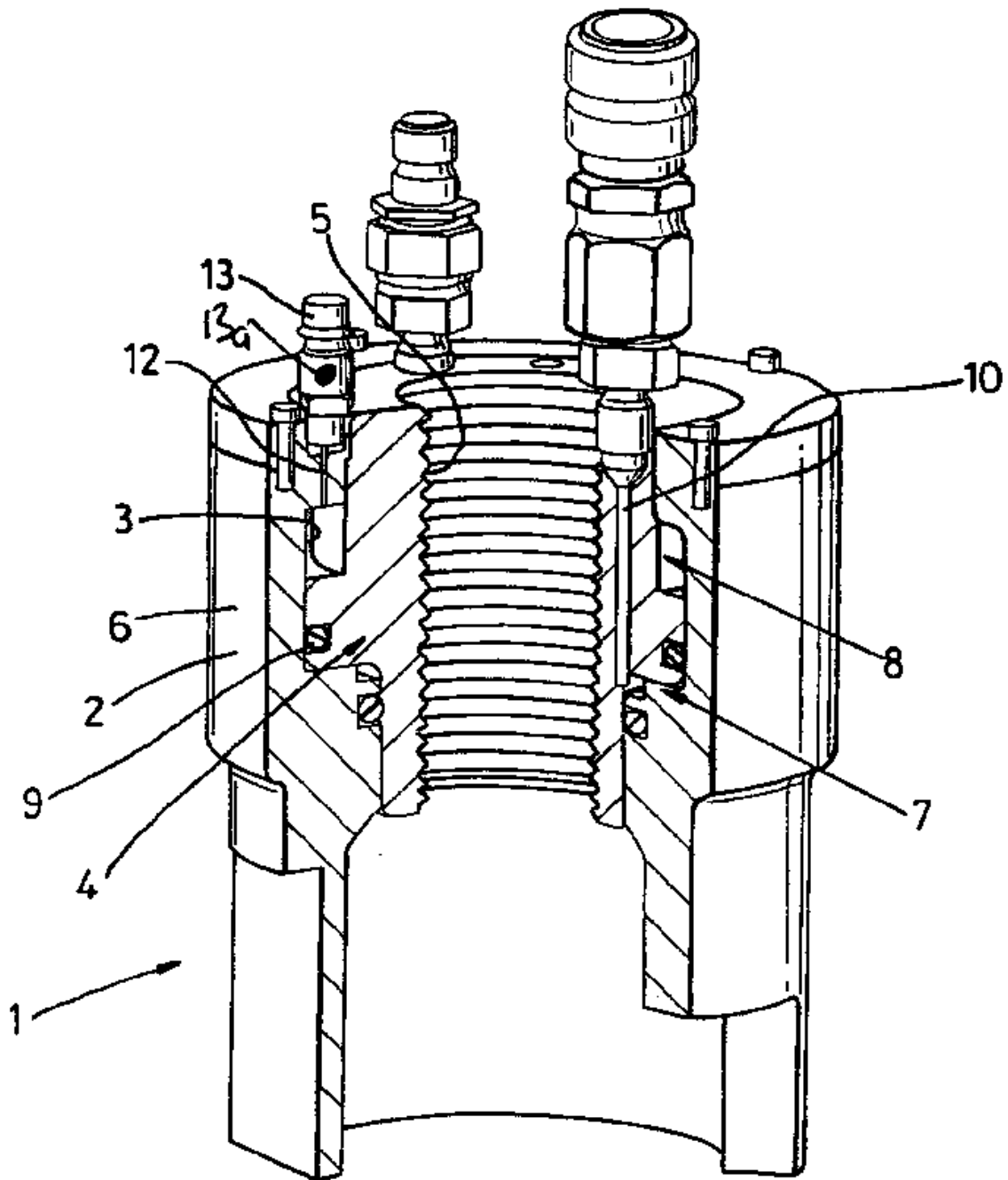


Fig. 2

Publication numbers with kind code & date

GB2457138	B	2012-06-20	GB2457138
GB2457138	A	2009-08-12	GB2457138
GB0802282	D0	2008-03-12	GB200802282



Abstract

(GB0802282)

A bolt tensioner 1 has a body 2 with a central bore 3 receiving a cylindrical piston 4 having an annular protrusion 6 around the outer face, the protrusion abutting the sides of the bore 3 to define two chambers 7, 8, each having an inlet port 10, 12 for the introduction of fluid, the upper chamber 8 being sealable such that when the piston 4 moves upwards, reducing the volume of chamber 8, the pressure in the chamber is significantly increased, there further being a central threaded bore 5. Hydraulic fluid may be introduced and removed from chamber 7 to move the piston, and air or another compressible fluid may be used in chamber 8. A seal 9 may be provided between the chambers. Chamber 8 may have a channel or groove (20, figure 4a) such that the volume of the chamber never reaches zero. A one-way or selective release valve may be provided in fluid inlet 12 such that air can be introduced to chamber 8, but cannot escape. Thus a reliable return force may be provided without the use of a spring.

Inventors

EVANS DAVID MICHAEL

Latest standardized assignees - inventors removed

TENTEC

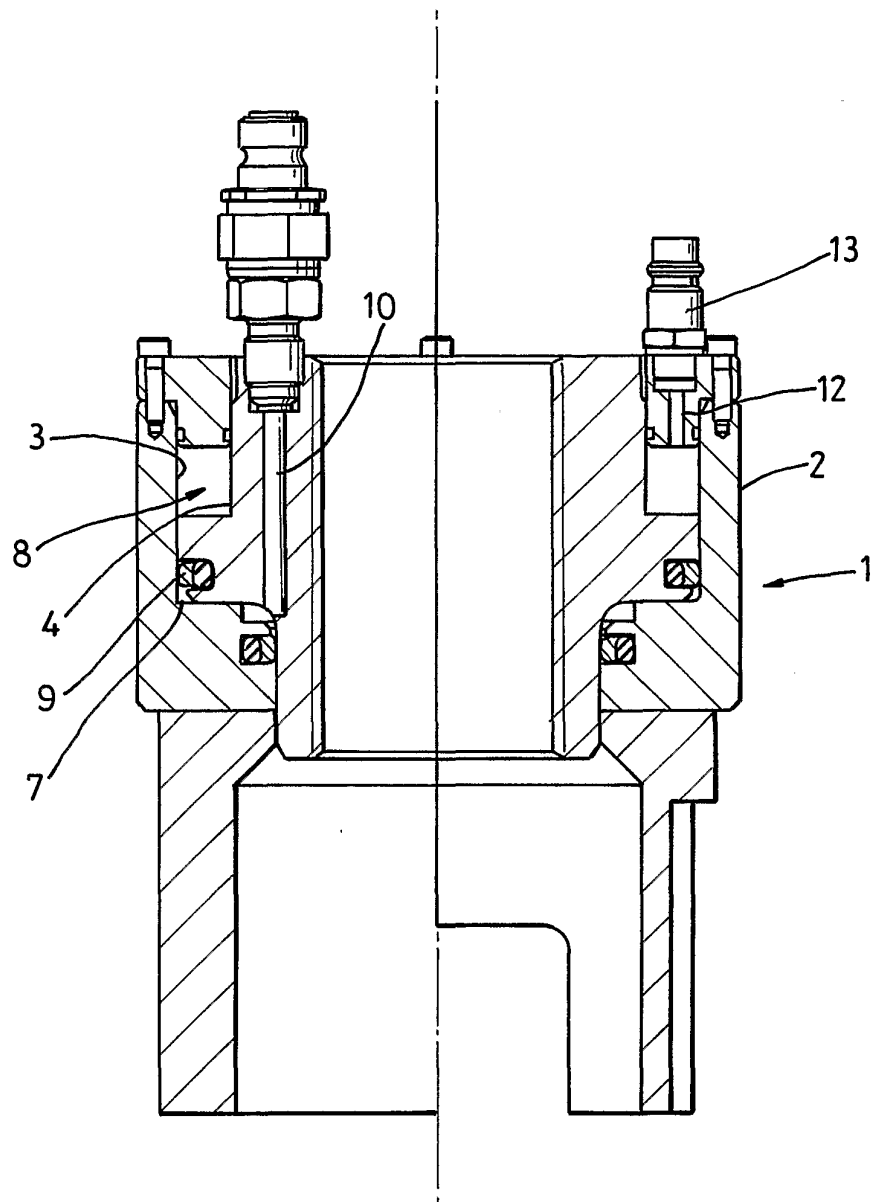
Family 23/100 - FAMPAT - ©Questel

Title

(WO200616162)

A bolt tensioner

Images



Publication numbers with kind code & date

WO2006/016162 A1 2006-02-16 WO200616162



Abstract

(WO2006/016162)

A bolt tensioner (1) comprising a body (2) having a central screw-threaded bore (5) for threaded engagement with a bolt projecting from a load bearing surface, and including at least one piston (4) in the body which is located within a cylinder for displacement in a direction parallel to the longitudinal axis of the central bore (5) and operate a to exert a thrust force on the load bearing surface; further comprising: a tensioner body (2) having an upper end and a lower end and a central bore defining an outer wall of a cylinder (3); a piston (4) located within the bore (3) defined by the body (2) and having a central co-axial bore (5) suitable for receiving a threaded stud and further in which the outer face of the piston is stepped such that the piston and the wall of the cylinder define a first chamber (7) and a second chamber (8); a first passage (10) extending from a first inlet port (11) to the first chamber (7) for introducing fluid to the first chamber (7); a second passage (12) extending from a second inlet port (13) to the second chamber (8) for introducing fluid to the second chamber (8); and in which the first (7) and second (8) chambers are so arranged that pressurising the first chamber (7) acts to move the piston (4) towards the upper end of the body (2) as the volume of the first chamber expand (7) and pressurising the second

chamber (8) acts to move the piston towards the lower end of the body (2) as the volume of the second chamber (8) increases. Accordingly, the piston can be extended by means of hydraulic fluid to define a hydraulic bolt tensioner but use a pneumatic fluid supply to retract the piston.

Inventors

SCRIVENS ANTHONY

Latest standardized assignees - inventors removed

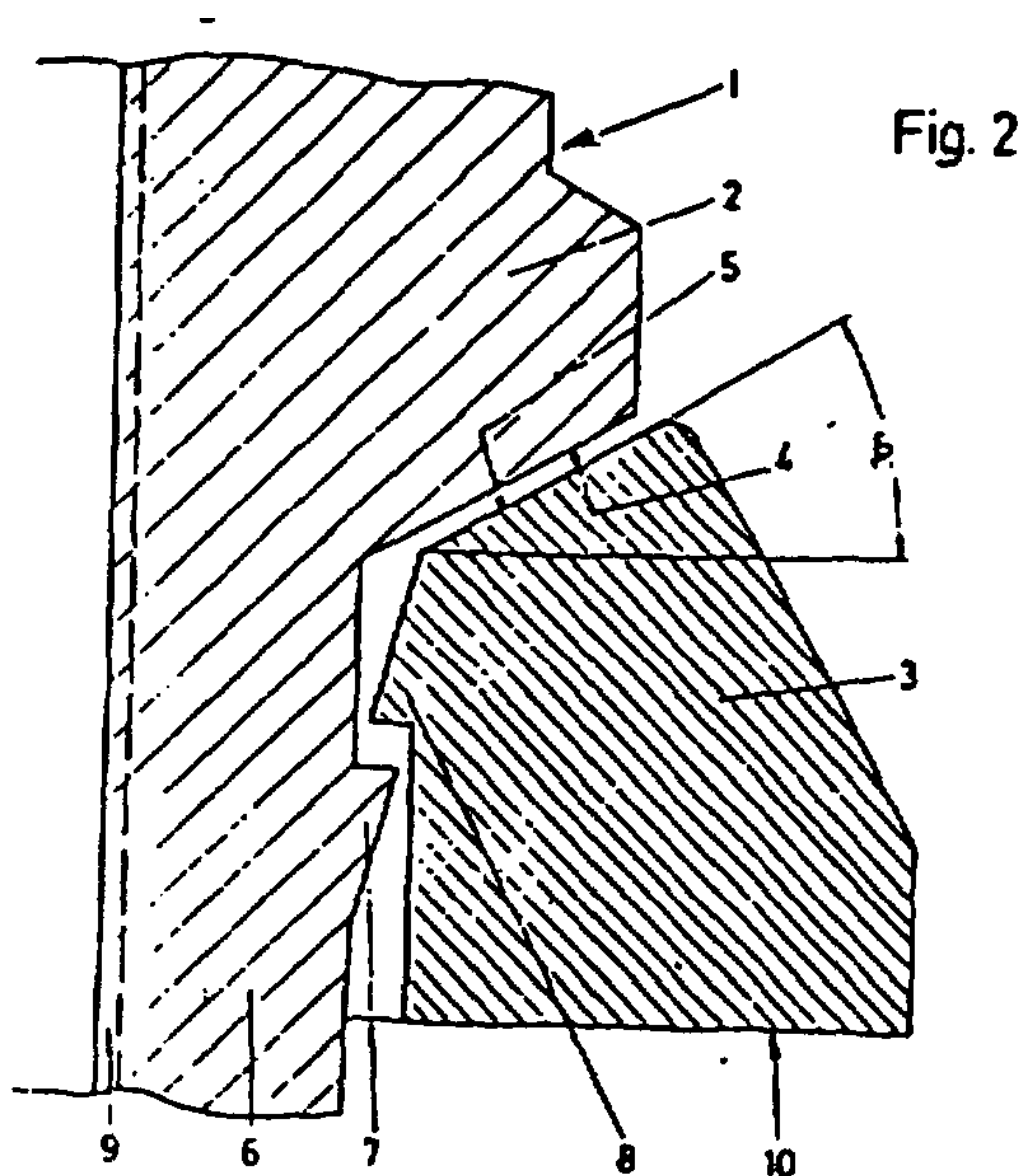
TENTEC

Family 24/100 - FAMPAT - ©Questel

Title

(EP-131739)

Wheel nut for the wheels of commercial vehicles

Images**Publication numbers with kind code & date**

DE3325255	C2	2000-01-13	DE3325255
EP0131739	B1	1987-12-23	EP-131739
DE3325255	A1	1985-01-24	DE3325255
EP0131739	A1	1985-01-23	EP-131739

**Abstract**

(EP0131739)

1. A wheel nut for light alloy wheels of commercial vehicles, comprising a nut body (1) having a widened collar (2) on its end facing the wheel nave, a pressure disc (3) contiguous with the collar (2) and captivated for easy rotation on the nut body (1), the upper side (5) of said pressure disc constituting a friction surface with the underside (4) of the collar (2), a neck portion (6) which extends the nut body (1) at the end presented to the wheel nave and having an outer diameter which is smaller than the inner diameter of the pressure disc (3), the outer side of said neck portion including first locking means (7) configured as an outer ring or partial ring for cooperation with second locking means (8) configured as an inner ring or partial ring on the inner side of the pressure disc, characterised by a) such a matching of the second locking means with the first locking means that due to elastic properties of the material it is possible only to irreversibly push the pressure disc (3) over and beyond the first locking means (7) so as to achieve a non-releasable, easily rotatable connection between nut body (1) and pressure disc (3), b) an extension of the female thread (9) of the nut body (1) into the region of the first locking means (7) and of the neck portion disposed therebeneath, c) an extension of the neck portion (6) and of the female thread (9) beyond the seating surface (10) of the pressure disc (3) for centring the wheel and obtaining a form-fit with the stud hole of the wheel nave.

Inventors

GOINY, LOTHAR

Latest standardized assignees - inventors removed

ERICH NEUMAYER

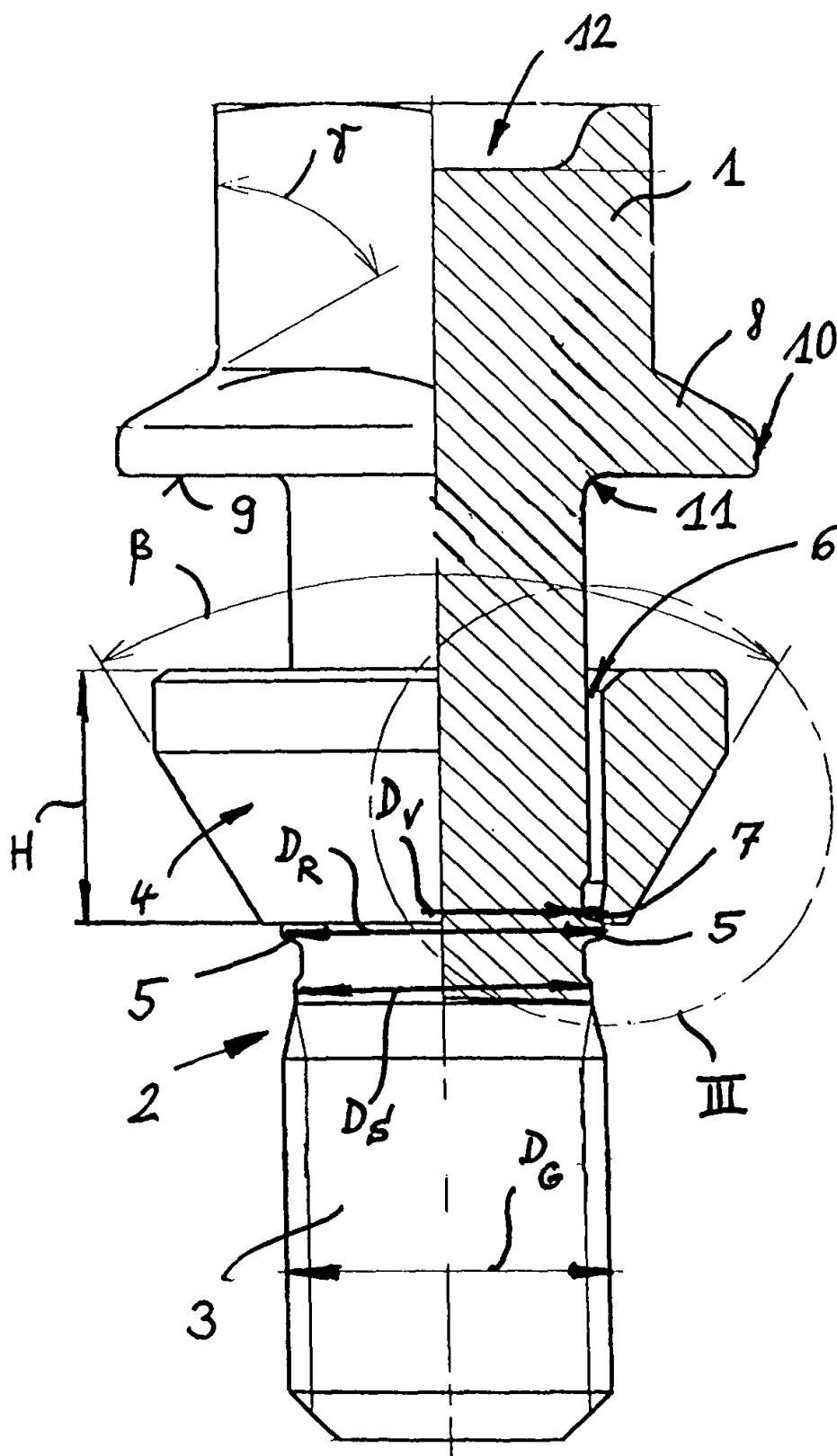
Family 25/100 - FAMPAT - ©Questel

Title

(EP1126982)

Combined fixing device

Images



Publication numbers with kind code & date

ES2198165	T3	2004-01-16	ES2198165
DE59905579	D1	2003-06-18	DE59905579
AT240217	T	2003-05-15	ATE240217
EP1126982	B1	2003-05-14	EP1126982
EP1126982	A1	2001-08-29	EP1126982



AU1377500	A	2000-05-29	AU200013775
WO00/27653	A1	2000-05-18	WO200027653
DE29819782	U1	2000-03-09	DE29819782

**Abstract**

(EP1126982)

The invention relates to a combined fixing element comprising a head (1) for applying a torque and a shaft (2) which has a thread section (3) at its free end, whereby a disc (4) is pivotally mounted on an edge (5) of a shaft (2) between the head (1) and the thread section (3) via at least one contraction (7) which is located inside the annular gap (6) of said disc. According to the invention, the diameter (DV) of the contraction (7) is smaller than the outer diameter (DR) of the edge (5). The aim of the invention is to reduce the production costs while still producing a disc (4) which has the advantage of being firmly fixed. To this end, the diameter (DV) of the contraction (7) is greater than the diameter (DS) of the shaft (2) as well as the outer diameter (DG) of the thread section (3). The disc (4) can be elastically opened in the area of the diameter (DV) of the contraction (7) and the edge (5) and the disc (4) are configured in such a way that they are geometrically adapted to each other in such a way that the disc (4) including the contraction (7) can be moved over the edge (5) starting at the free end of the shaft (2) but cannot be removed in the opposite direction.

Inventors

HOFSCHNEIDER MANFRED

Latest standardized assignees - inventors removed

ALTENLOH BRINCK

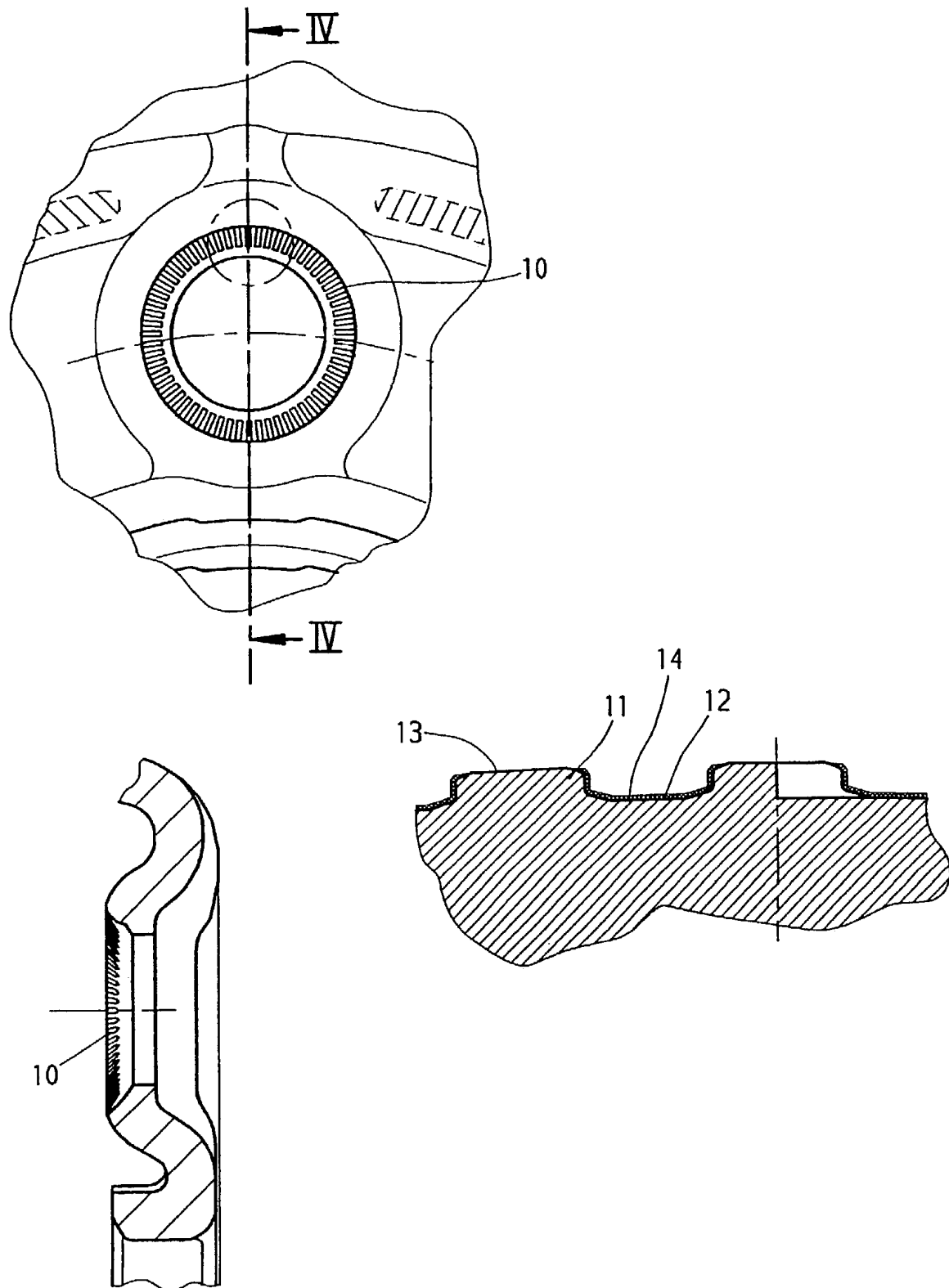
Family 26/100 - FAMPAT - ©Questel

Title

(EP1356954)

Painted disk wheel of sheet metal for motor vehicle and process for producing such a wheel

Images



Publication numbers with kind code & date

US6997519	B2	2006-02-14	US6997519
ES2236638	T3	2005-07-16	ES2236638
DE10218339	B4	2005-04-21	DE10218339
DE50300356	D1	2005-04-21	DE50300356
AT290960	T	2005-04-15	ATE290960
EP1356954	B1	2005-03-16	EP1356954
EP1356954	A3	2004-06-09	EP1356954
US20030234570	A1	2003-12-25	US20030234570
DE10218339	A1	2003-11-13	DE10218339
EP1356954	A2	2003-10-29	EP1356954



Abstract

(EP1356954)

Arrangement fixing an enameled disk wheel made of sheet metal on the wheel hub of a motor vehicle comprises a disk wheel having a wheel disk with connecting flanges consisting of a through hole surrounded by a countersink

Arrangement comprises a disk wheel having a wheel disk with several connecting flanges distributed along a hole circle. Each connecting flange has a through hole (4) surrounded by a countersink (7). When the disk wheel is assembled the head (9) of a wheel screw (6) protruding through the through hole and fixed on the wheel hub lies on the countersink. At least one part of the surface of each countersink is structured by projections (11) and recesses (12) lying adjacent to each other. In the assembled state the wheel screw head has contact only with the projections on those surfaces which are free of the enamel used to coat the remaining surface of the disk wheel. Independent claims are also included for the following: (1) Alternative arrangement; (2) Processes for producing the arrangements; and (3) Enameled disk wheels.

Inventors

FISCHBACHER ALFRED

MANSDOERFER ROLF-DIETER

DEHM SIEGBERT

Latest standardized assignees - inventors removed

SUDRAD RADTECHNIK

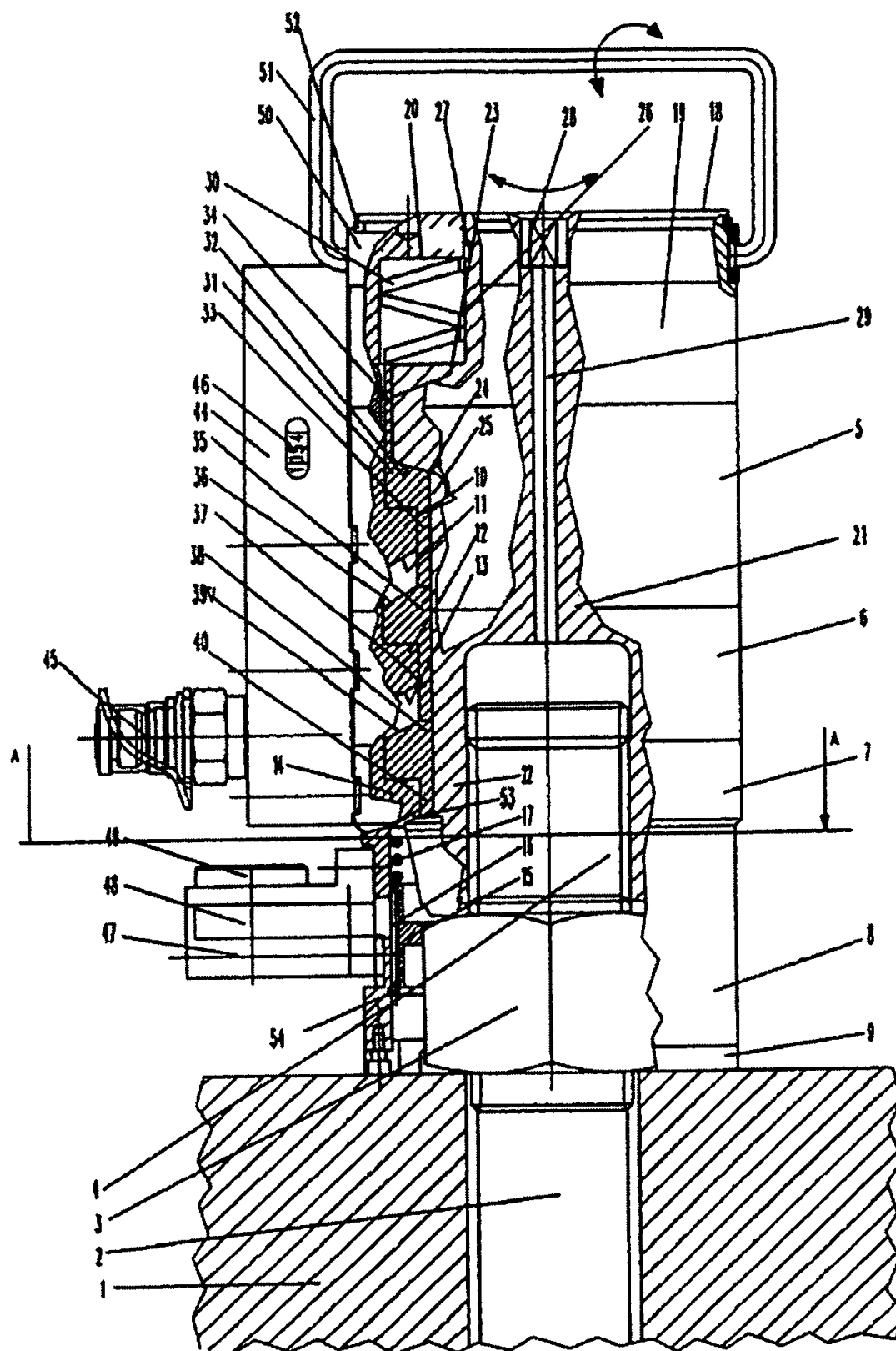
Family 27/100 - FAMPAT - ©Questel

Title

(EP1786599)

Hydraulic screw clamping device

Images



Publication numbers with kind code & date

US7661336	B2	2010-02-16	US7661336
EP1786599	B1	2008-04-23	EP1786599
US20080034925	A1	2008-02-14	US20080034925
EP1786599	A1	2007-05-23	EP1786599
DE102004043145	B3	2006-05-18	DE102004043145
WO2006/027060	A1	2006-03-16	WO200627060



Abstract

(EP1786599)

The invention relates to a hydraulic screw clamping device which is used to tighten and release highly stressed screws, comprising a cylinder which is supported on a machine part which is to be clamped by means of a threaded bolt and a nut, an exchange bushing which can be screwed onto a threaded end of the threaded bolt and at least one first supporting annular piston which is sealingly guided in a cylinder element of the cylinder, is pushed on the exchange bushing and which passes over an inclined surface of a single-pieced collar which is produced by the exchange bushing, said inclined surface passing over a rounded groove in the outer surface of the exchange bushing.

Inventors

HOHMANN JOERG

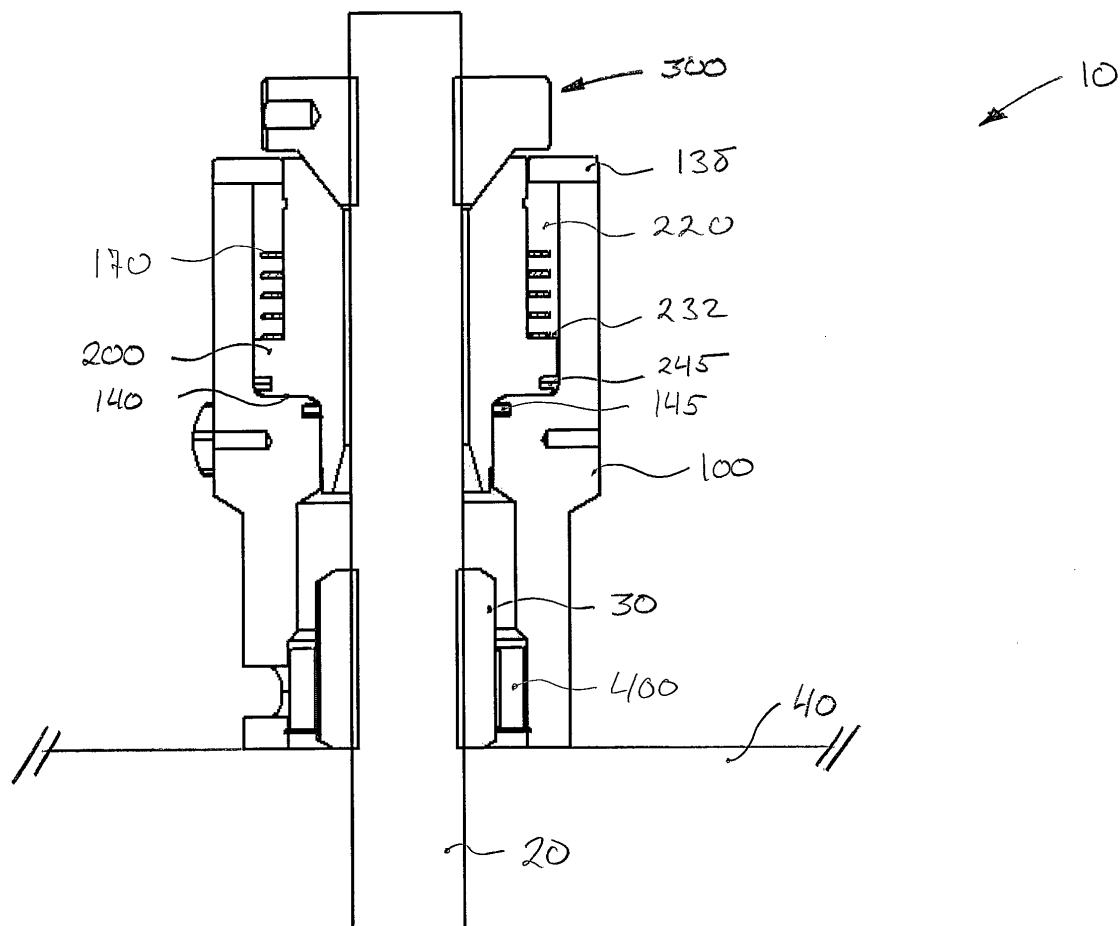
HOHMANN FRANK

Family 28/100 - FAMPAT - ©Questel

Title

(US8328482)

Hydraulic foundation bolt tensioner

Images**Publication numbers with kind code & date**

CA2632965	C	2015-11-17	CA2632965
US8328482	B2	2012-12-11	US8328482
US20090293418	A1	2009-12-03	US20090293418
CA2632965	A1	2009-11-30	CA2632965

**Abstract**

(US20090293418)

A tensioner for tensioning foundation bolts generally used in securing large utility towers is provided. The tensioner generally comprises a hollow outer body through which the foundation bolt can extend. The lower end of the body, which is adapted to abut onto the foundation surface from which the bolt extends, is provided with an opening allowing access to a foundation nut threaded onto the foundation bolt. The upper end of the outer body slidably receives therein an inner body with which it defines an annular hydraulic piston, the inner body being configured with a seat portion for receiving and engaging a split nut mounted to the foundation bolt. Upon providing hydraulic fluid to the tensioner, the hydraulic piston urges the split nut, engaged to the foundation bolt, upwardly, thereby tensioning the foundation bolt. The load in the bolt is then maintained by threading down the foundation nut until it abuts onto the foundation surface.

Inventors

BRITTON GORDON

HUGHES DAVID

Latest standardized assignees - inventors removed

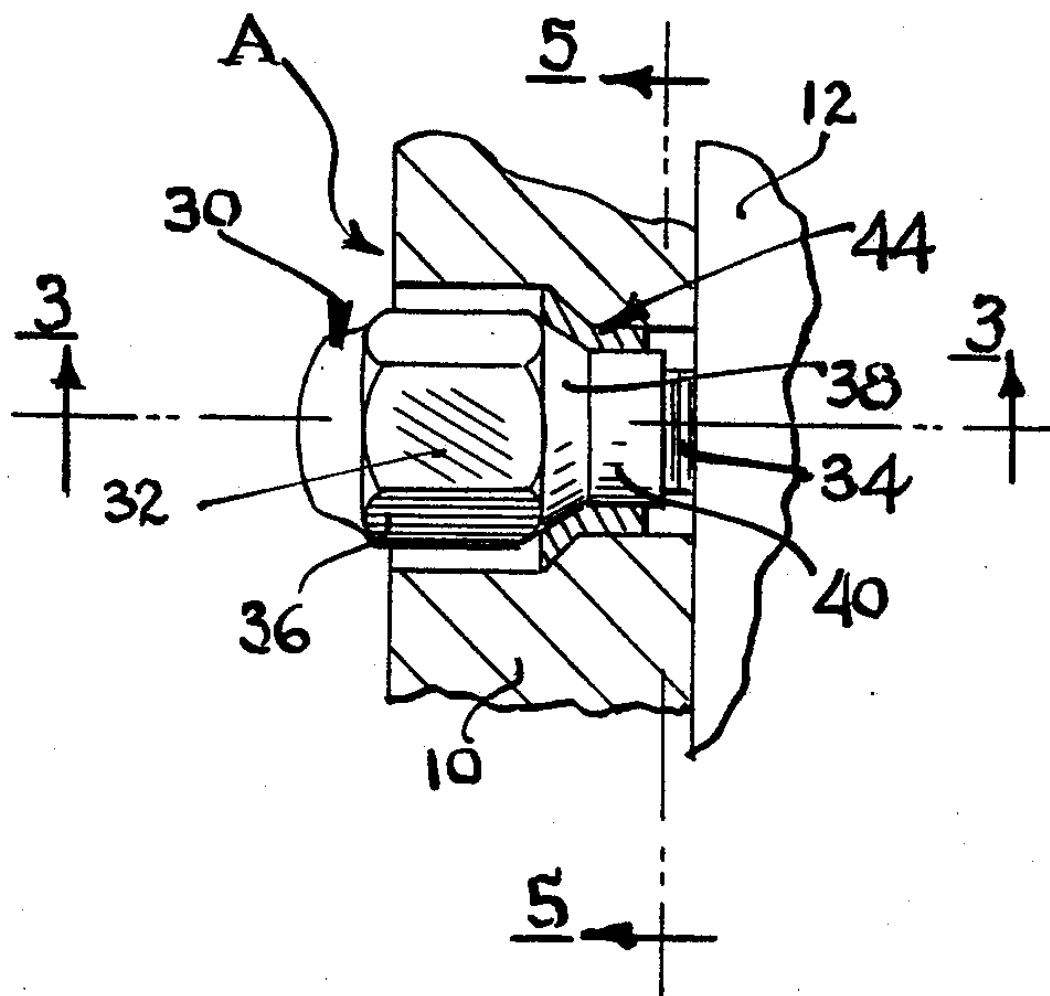
INTEGRA TECHNOLOGIES

Family 29/100 - FAMPAT - ©Questel

Title

(US4898429)

Wheel nut assembly

Images**Publication numbers with kind code & date**[US5056870](#) A 1991-10-15 US5056870[US4898429](#) A 1990-02-06 US4898429**Abstract**

(US4898429)

A wheel nut assembly for mounting a non-ferrous wheel, such as a magnesium or aluminum wheel to a wheel hub. The wheel typically has a plurality of openings to receive nut assemblies and each opening has a first section with a first diameter distal to the hub and a second section with a reduced diameter proximate to the hub along with tapered section extending therebetween. The nut assembly comprises a body section having a plurality of peripherally extending tool engaging walls and with a bore extending through the body section. A skirt is located on the nut body and extends axially with the bore outwardly from the tool engaging walls. An insert formed of a ferrous material is used with the nut and is adapted to extend around the skirt and a portion of the body. The insert has a central opening sized to receive the skirt and an outer wall of the insert is adapted to engage an opening in the wheel. In accordance with this construction, the wheel nut can be tightened about a mounting bore extending from the hub without the risk of crushing or bending the non-ferrous wheel.

Inventors

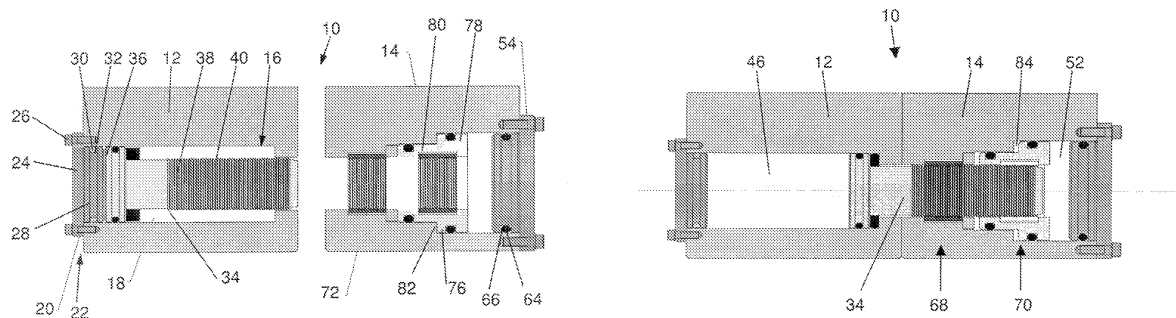
PLUMER MARK J

Family 30/100 - FAMPAT - ©Questel

Title

(EP2316619)

Device and method for pre-tensioning a coupling

Images**Publication numbers with kind code & date**

US8857032	B2	2014-10-14	US8857032
EP2316619	B1	2014-07-30	EP2316619
GB2474887	B	2013-12-04	GB2474887
US20110099794	A1	2011-05-05	US20110099794
EP2316619	A1	2011-05-04	EP2316619
GB2474887	A	2011-05-04	GB2474887
GB0919051	D0	2009-12-16	GB200919051

**Abstract**

(EP2316619)

A coupling device (10) provides a pre-tensioned coupling between a first member (12) and a second member (14). The members (12, 14) are arranged to define a sealed compartment. A piston (34) is housed within the compartment and is translated between the first member (12) and the second member (14). A first ratchet lock (68) is mounted within the second member (14) and on translation of the piston (34) the first ratchet lock (68) engages with the piston (34). A second ratchet (70) is mounted within the second member (14) and, on translation of the piston (34) into the second member (14), the piston (34) engages with the ratchet (70). The second ratchet (70) is mounted on a piston (74) and translation of the second ratchet (70) on the piston (74) applies a tensile force to the first piston (34) to tension or pre-tension the piston (34). As the ratchets (68, 70) substantially prevent reverse movement of the piston (34), the tensile force is retained.

Inventors

BOWIE ANGUS GEORGE

DUGUID PETER ALEXANDER

Latest standardized assignees - inventors removed

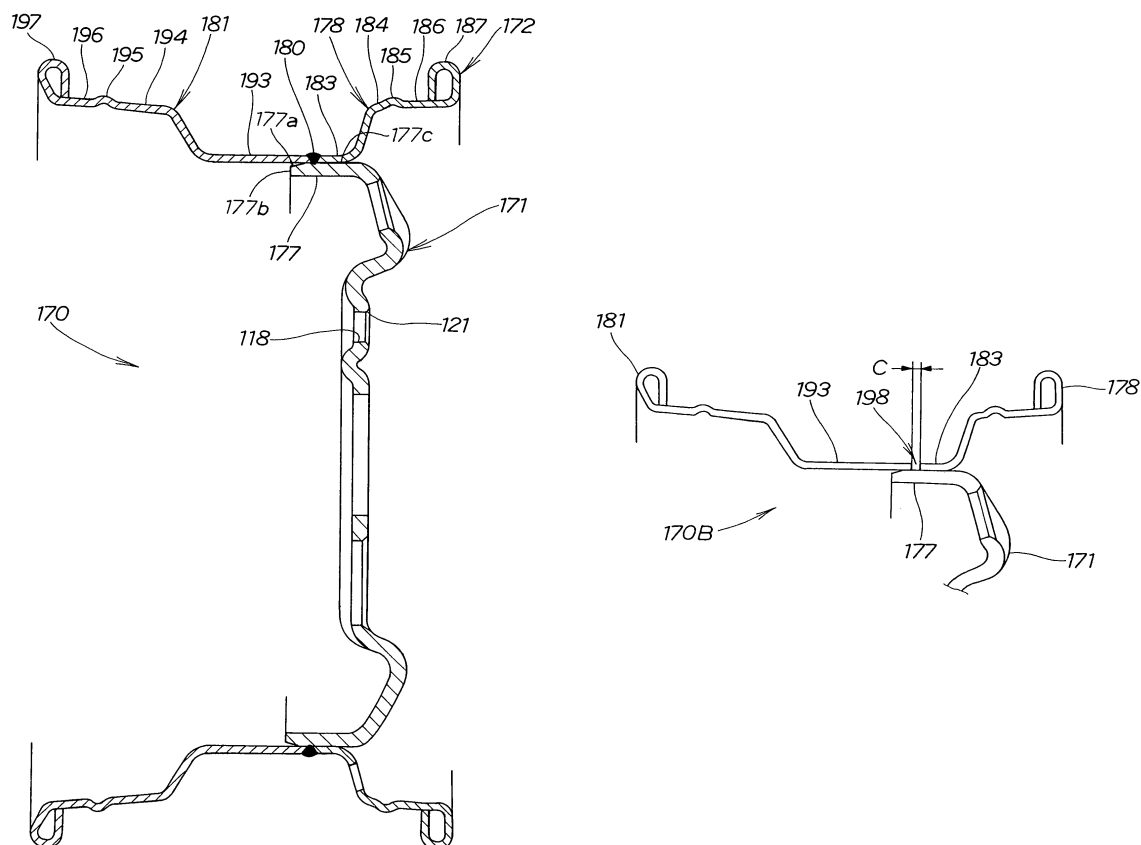
STATS

Family 31/100 - FAMPAT - ©Questel

Title

(WO200380368)

Vehicle wheel

Images**Publication numbers with kind code & date**

CA2478051	C	2011-06-14	CA2478051
US7290838	B2	2007-11-06	US7290838
JP4027200	B2	2007-10-19	JP4027200
US20050168054	A1	2005-08-04	US20050168054
JP2005014620	A	2005-01-20	JP2005014620
CA2478051	A1	2003-10-02	CA2478051
WO03/080368	A1	2003-10-02	WO200380368

**Abstract**

(WO03/080368)

A vehicle wheel comprises a rim (172) and a disk section (171) separate from the rim. Since the disk section is separate from the rim, the freedom of designing the disk section is improved. The rim comprises an outer rim (178) and an inner rim (181) separate from the outer rim. The outer and inner rims are attached to the outer periphery of the disk section at the same place by welding.

Inventors

HANDA AKIO

YAMAGUCHI ATSUKO

MAKI YUJI

SUZUKI SHOJI

AMAKI KIYOSHI

NISHIZAKA TAKASHI

NISHIMOTO TOSHIO

Latest standardized assignees - inventors removed

HONDA MOTOR

DAIDO KOGYO

ZENIYA ALUMINUM ENGINEERING

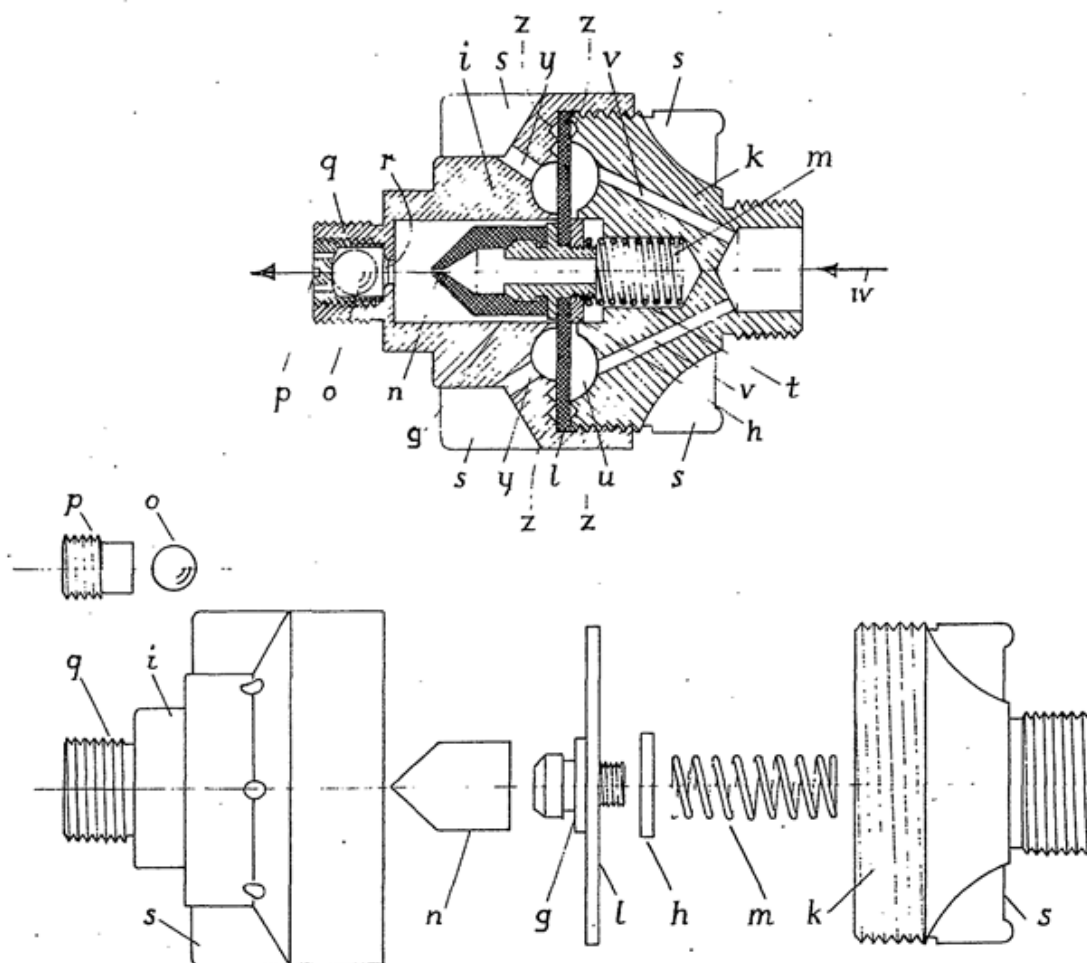
Family 32/100 - FAMPAT - ©Questel

Title

(US3386771)

Devices for mounting vehicle wheels

Images



**Kühlindustrie Gebr.
Weidenkaff**

Die Patentanwälte A. Weickmann,
Dipl. Ing. F. Weickmann, Dr. Ing. A. Weickmann

Publication numbers with kind code & date

DE1605548	A1	1971-10-14	DE1605548
SE316692	B	1969-10-27	SE-316692
GB1144484	A	1969-03-05	GB1144484
US3386771	A	1968-06-04	US3386771
ES326330	A1	1967-07-01	ES-326330
NL6605730	A	1966-11-07	NL6605730
LU51008	A1	1966-11-03	LU-51008
BE680055	A	1966-10-03	BE-680055
FR1452053			



A 1966-02-25 FR1452053

Abstract

(US3386771)

1,144,484. Securing wheels to hubs. MICHELIN & CIE (Compagnie Generale des Etablissements Michelin). 28 April, 1966 [4 May, 1965], No. 18797/66. Heading B7C. [Also in Division F2] A wheel 6 is fixed to a hub 7, e.g. on a motor car, by at least one stud 4, nut 1, and washer 2 placed between the nut and the wheel, the washer having on its side facing the wheel a convex bearing surface 5, e.g. conical or spherical, and on its opposite side a convex bearing surface 3 to engage a complementary surface on the nut. The washer can be split at (12), Fig. 2 (not shown), and can be attached to the nut by an external collar (16), Fig. 4 (not shown), or internal collar (18), Fig. 5 (not shown), which allows it to rotate relative to the nut. (From GB1144484 A)

Inventors

HENRI VERDIER

Latest standardized assignees - inventors removed

MICHELIN

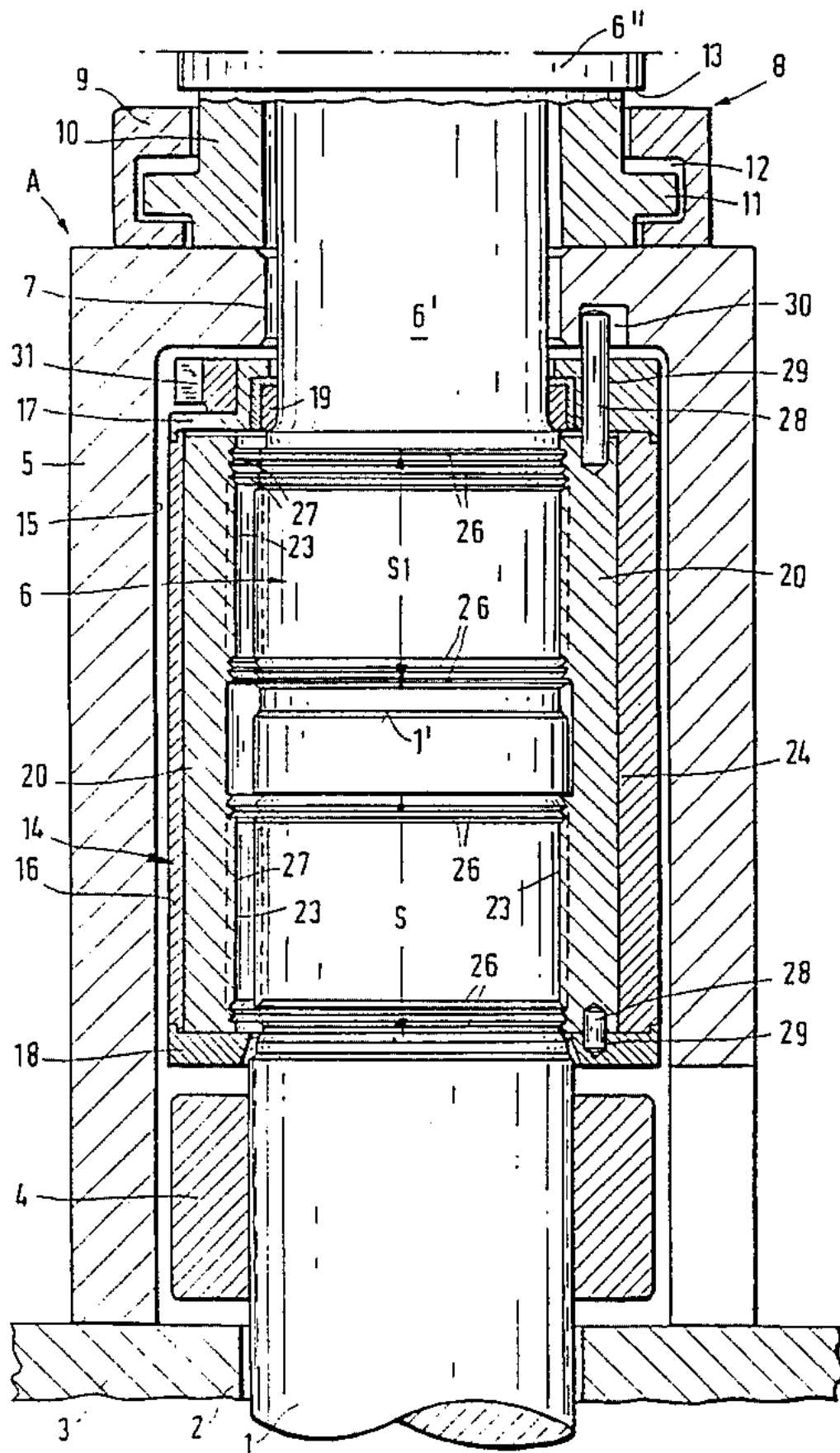
Family 33/100 - FAMPAT - ©Questel

Title

(US5570871)

Device for selectively tensioning and clamping studs mounted on a pressure vessel to permit nuts to be tightened or loosened

Images



Publication numbers with kind code & date

DE4408873	C2	1999-02-11	DE4408873
FR2717548	B1	1997-04-30	FR2717548
US5570871	A	1996-11-05	US5570871



JP08121425	A	1996-05-14	JP08121425
FR2717548	A1	1995-09-22	FR2717548
DE4408873	A1	1995-09-21	DE4408873

**Abstract**

(US5570871)

Apparatus for tightening and releasing nuts on screw-threaded studs to fit or release a cover on a pressure vessel employs several devices each for subjecting a respective one of the studs to tension to clamp the stud whilst the nut is rotated thereon. Each device employs a coupling mechanism for clamping a rod-like extension piece in end-to-end relationship to one of the studs to apply tension force thereto from a hydraulic piston and cylinder unit. The coupling mechanism takes the form of a sleeve containing several arcuate coupling segments guided for displacement radially of the stud and its extension piece. Cam surfaces on the coupling segments and the sleeve inter-engage as the sleeve is rotated to effect the displacement of the coupling segments between open and closed positions.

Inventors

WESTERFELD HORST

Latest standardized assignees - inventors removed

WESTFALIA BECORIT INDUSTRIETECHNIK

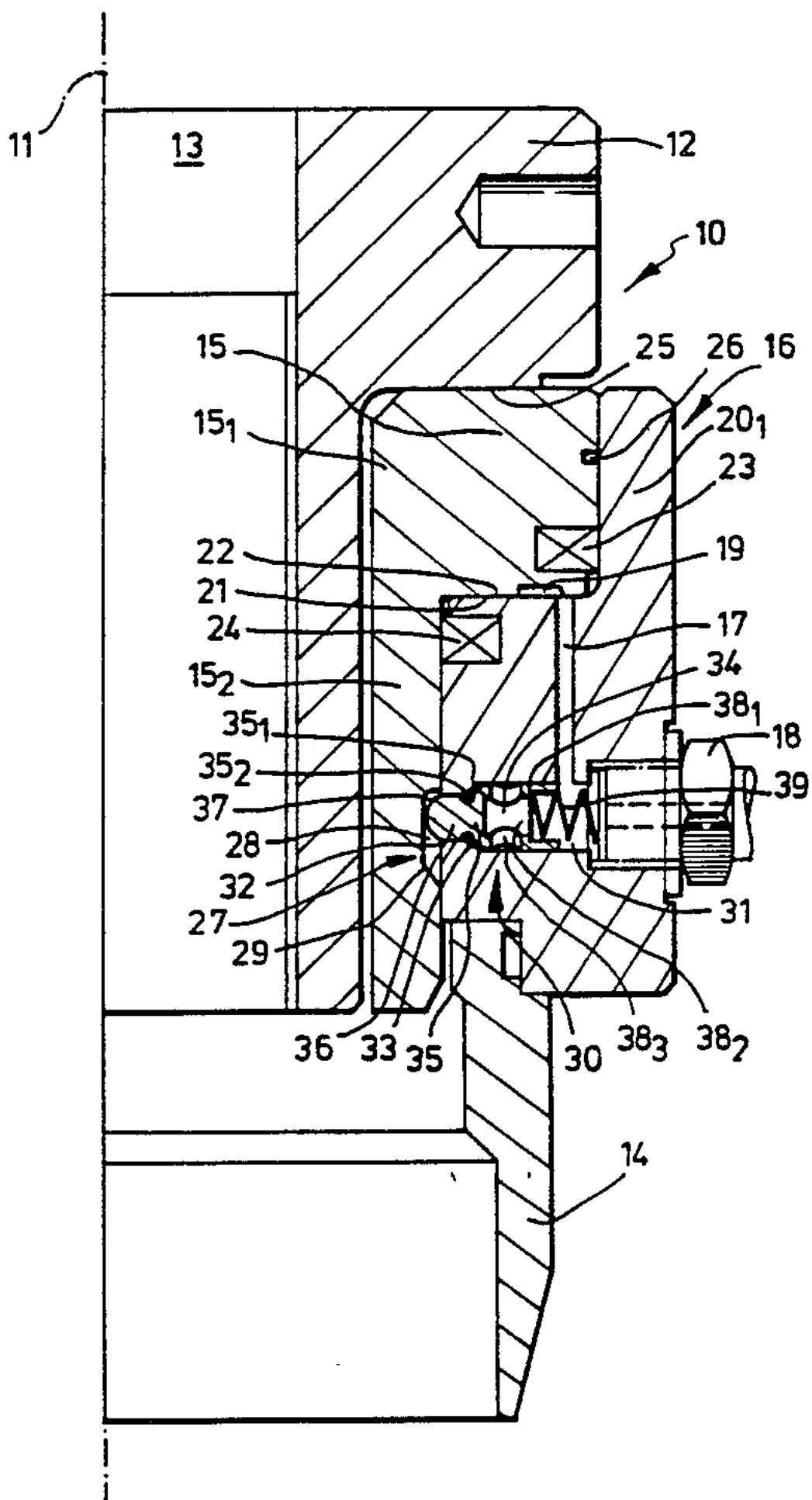
Family 34/100 - FAMPAT - ©Questel

Title

(WO9308953)

Fluid operated actuator overstroke prevention

Images



Publication numbers with kind code & date

GB2261029	B	1995-05-31	GB2261029
WO93/08953	A1	1993-05-13	WO9308953
GB2261029	A	1993-05-05	GB2261029
GB9123169	D0	1991-12-18	GB9123169

**Abstract**

(WO93/08953)

A hydraulic bolt tensioner (10) (Fig. 2) includes an annular piston (15) and cylinder (20) defining chamber (19). To prevent inadvertent piston overstroke a piston skirt (152?) is provided with a cam surface (27) opposite a relief passage (31) from the passage (17) that contains a relief valve (30). The valve body has a seating face (35), and a stem that extends through the valve seat and ends in a rounded cam follower (37), such that as the piston moves to overstroke, the cam surface displaces the valve body and relieves pressure in chamber (19) by permitting both supply fluid, and fluid ejected from chamber (19) by bolt tension reaction, to vent to the environment.

Inventors

BOLTON STEVEN THOMAS

HUGHES DAVID JOHN

Latest standardized assignees - inventors removed

HYDRA TIGHT

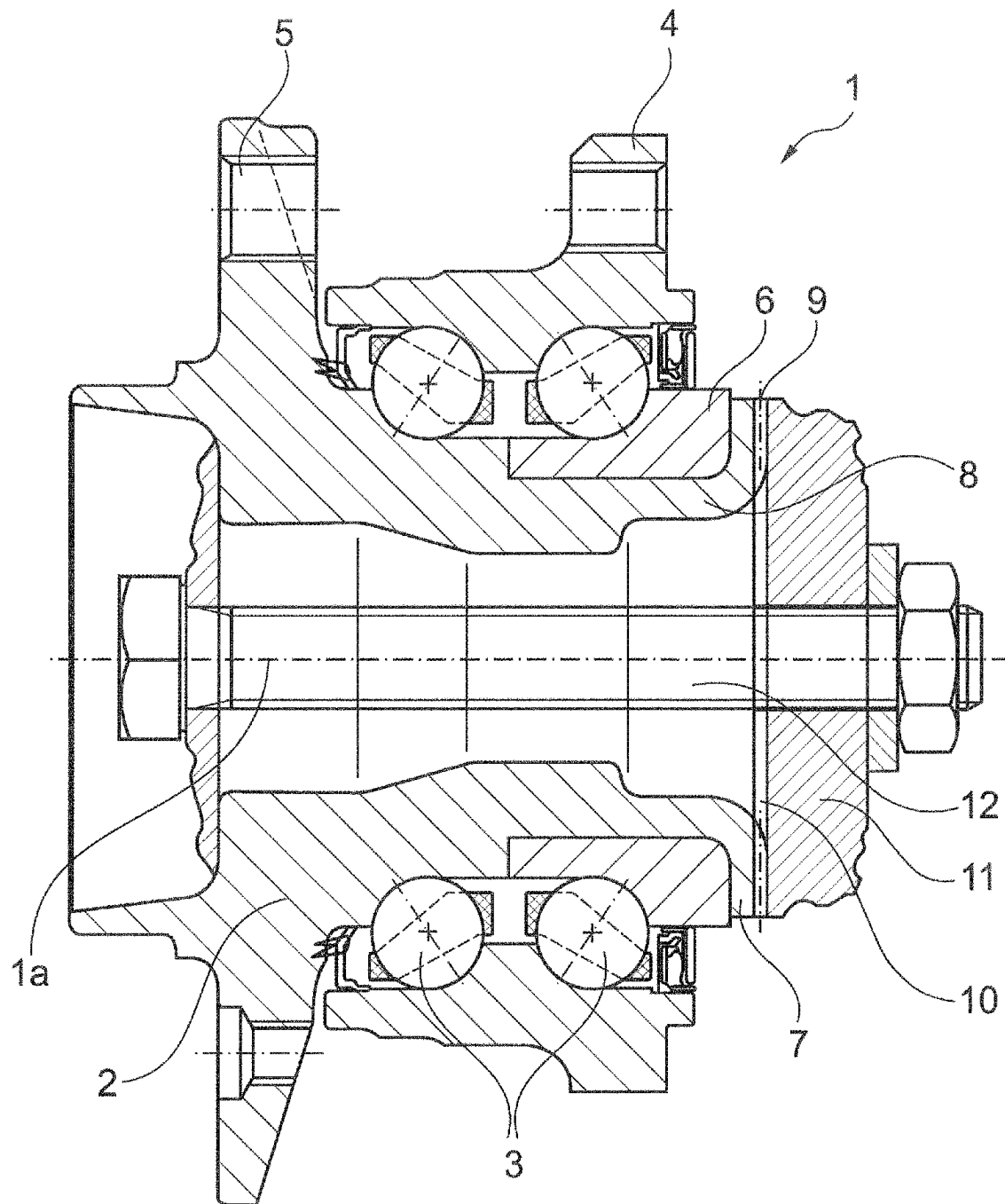
Family 35/100 - FAMPAT - ©Questel

Title

(EP1853436)

Face spline for a driven wheel hub

Images



Publication numbers with kind code & date

KR101332449	B1	2013-11-25	KR101332449
EP2363301	B1	2013-06-19	EP2363301
US8444322	B2	2013-05-21	US8444322
DE102005009938	B4	2012-07-12	DE102005009938
EP1853436	B1	2011-09-14	EP1853436
EP2363301	A1	2011-09-07	EP2363301
CN100558567	C	2009-11-11	CN100558567C
BRPI0608094	A2	2009-11-10	BR200608094
JP2008536737	A	2008-09-11	JP2008536737
US20080175526	A1	2008-07-24	US20080175526
CN101132934	A	2008-02-27	CN101132934
KR20070114799	A	2007-12-04	KR20070114799
EP1853436	A1	2007-11-14	EP1853436



[WO2006/092119](#)

A1 2006-09-08 WO200692119

[DE102005009938](#)

A1 2006-09-07 DE102005009938

**Abstract**

(EP1853436)

The invention relates to a face spline (9) of a toothed rim running in the circumferential direction around a rotation axis (1 a) on a wheel-bearing arrangement (1) for a driven wheel hub (2). The face spline (9) is provided for play-free engagement with the counter-spline (10), facing the face spline (9) and the teeth (13) of the face spline have a wedge-like embodiment (9) such that the geometrical lines (14, 15, 16) of the face spline (9) meet centrally at a common point on the rotation axis and the teeth (13) thus run in the radial direction on the rotation axis (1a).

Inventors

LANGER ROLAND

NIEBLING PETER

MASUR ERNST

HEISS RALF

FUELLER BENNO

Latest standardized assignees - inventors removed

SCHAEFFLER TECHNOLOGIES

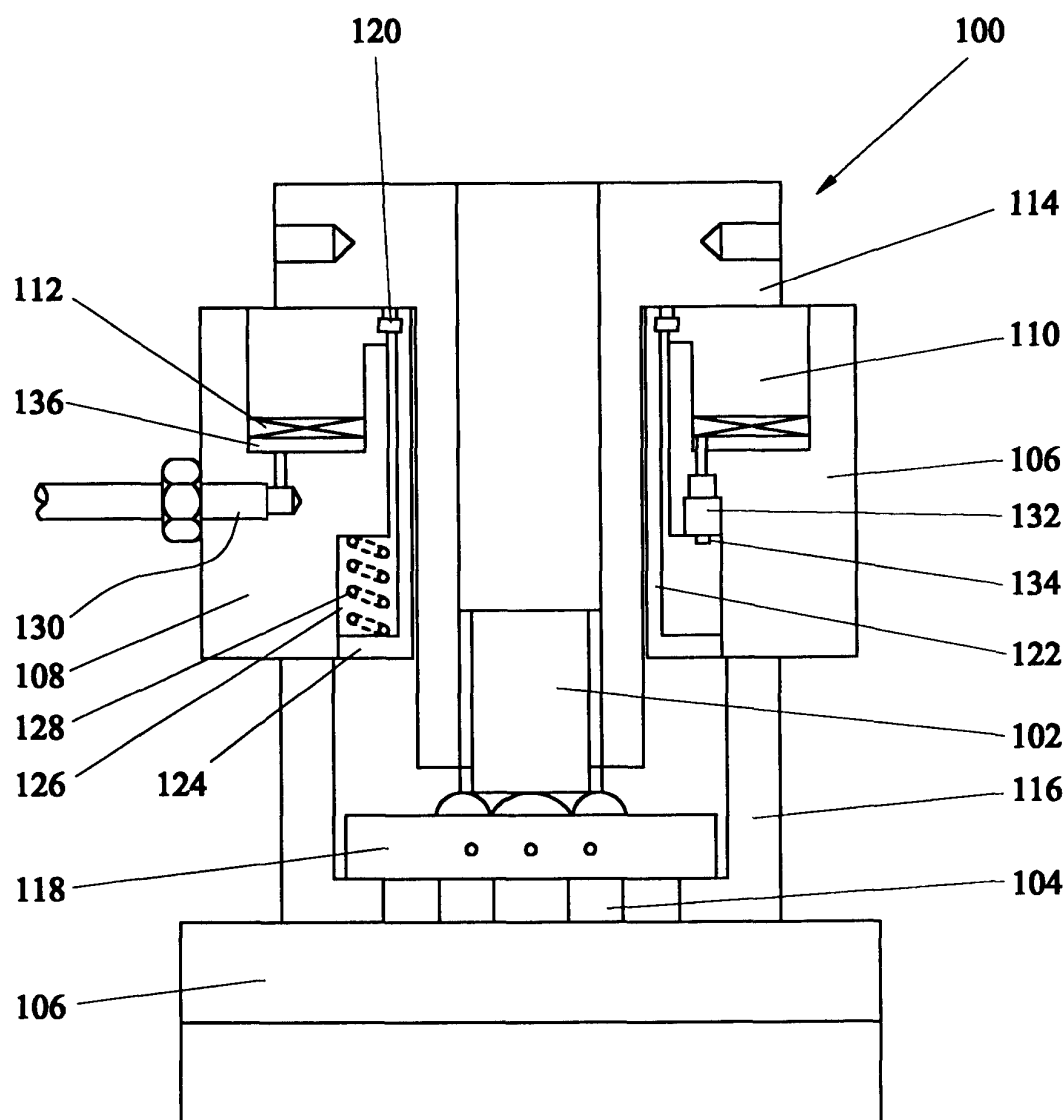
Family 36/100 - FAMPAT - ©Questel

Title

(WO200035637)

Hydraulic bolt tensioner

Images



Publication numbers with kind code & date

GB2344867	B	2002-06-26	GB2344867
AU1867200	A	2000-07-03	AU200018672
WO00/35637	A1	2000-06-22	WO200035637
GB2344867	A	2000-06-21	GB2344867
GB9929819	D0	2000-02-09	GB9929819
GB9827653	D0	1999-02-10	GB9827653



Abstract

(WO00/35637)

A hydraulic apparatus (100) for tensioning a bolt is described. The apparatus (100) includes a piston (110) for engaging a puller sleeve (114) and a cylinder block (106) slidably connected to the piston (110) such that the piston (110) and cylinder block (106) can be forced apart under hydraulic pressure to apply axial force to the puller sleeve (114) to tension a bolt (102). A sleeve (122) is connected to the piston (110) and a series of springs (128) are arranged between the sleeve (122) and cylinder block (106) such that the springs (128) are compressed by movement apart of the piston (110) and cylinder block (106). When the hydraulic pressure is released, the springs (128) urge the piston (110) and cylinder block (106) together to release the axial force applied to the puller sleeve (114).

Inventors

MORE NICHOLAS

Latest standardized assignees - inventors removed

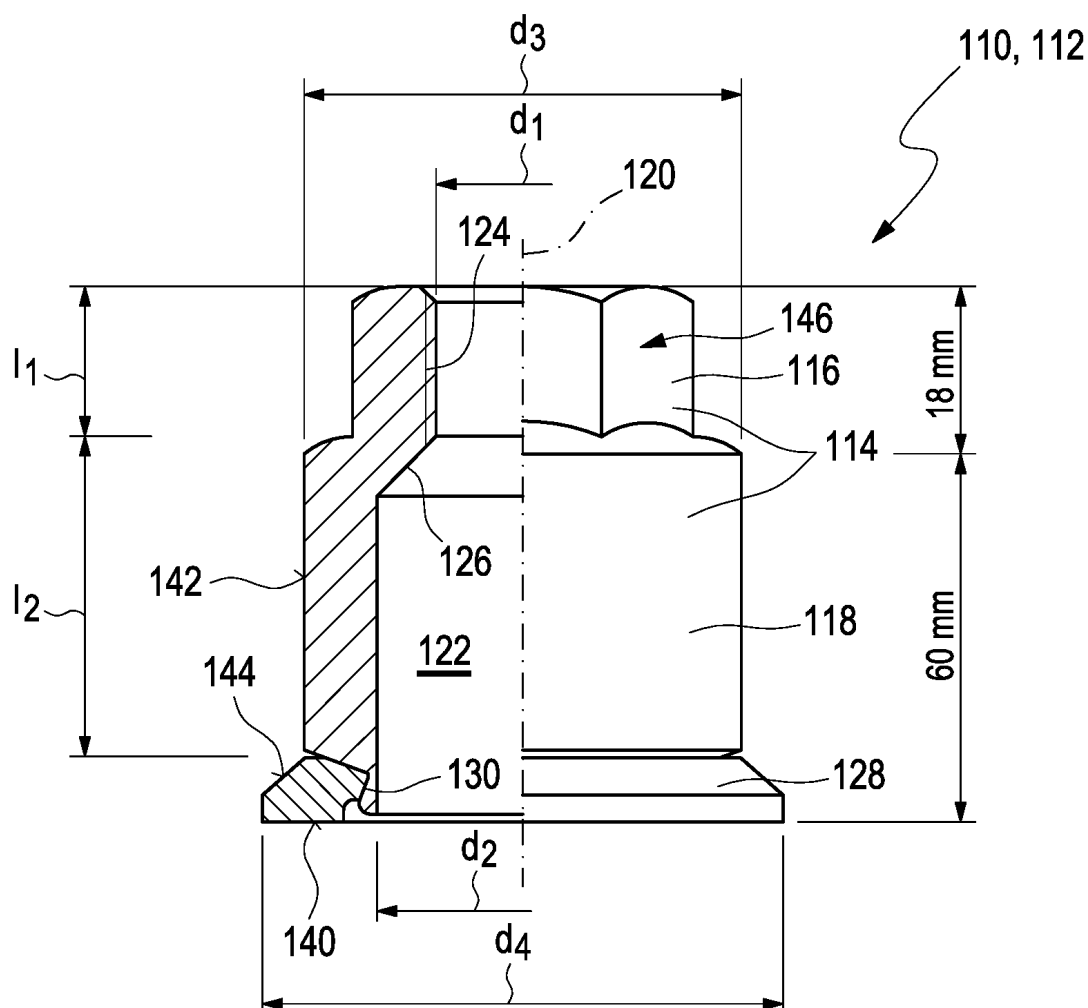
MORE NICHOLAS

Family 37/100 - FAMPAT - ©Questel

Title

(EP3113960)

Fastening element

Images**Publication numbers with kind code & date**

EP3113960	B1	2019-05-01	EP3113960
US9976590	B2	2018-05-22	US9976590
CN106414103	A	2017-02-15	CN106414103
EP3113960	A1	2017-01-11	EP3113960
US20160369832	A1	2016-12-22	US20160369832
BR112016020332	A1	2016-11-01	BR112016020332
WO2015/132184	A1	2015-09-11	WO2015132184
DE102014203802	A1	2015-09-03	DE102014203802

**Abstract**

(EP3113960)

Disclosed is a fastening element (110) for screwing onto a screw thread, which element can be designed, in particular, as a wheel nut (112). The fastening element (110) comprises a nut (116) with an internal screw thread (124). The fastening element (110) also comprises an expansion sleeve (118) that axially adjoins the nut (116). The expansion sleeve (118) is

devoid of an internal thread and is integral with the nut (116). The fastening element (110) also comprises a thrust plate (128). The thrust plate (128) is arranged on the side of the expansion sleeve (118) facing away from the nut (116) and is captively fastened to the expansion sleeve (118) in a rotatable manner.

Inventors

HERMES JOACHIM

Latest standardized assignees - inventors removed

BERRANG ENTW

Family 38/100 - FAMPAT - ©Questel

Title

(EP-732984)

Hydraulic threaded-bolt clamping device

Images

Disclosed is a hydraulic threaded-bolt clamping device with a cylinder (7) supported on a machine part (1) to be clamped using a threaded bolt (2) and a nut (3), with a piston (8) moved in a sealed travel within the cylinder (7) and braced against a threaded bushing (5) screwed onto one end of the threaded bolt, and with a safety catch element (12), in particular a projection on the cylinder or on the piston, engaging behind the end of the threaded bushing that faces the machine part to be clamped.

Inventors

HOHMANN FRANK

HOHMANN JOERG

Family 39/100 - FAMPAT - ©Questel

Title

(EP-529492)

A plastic wheel

Images

FIG. 1

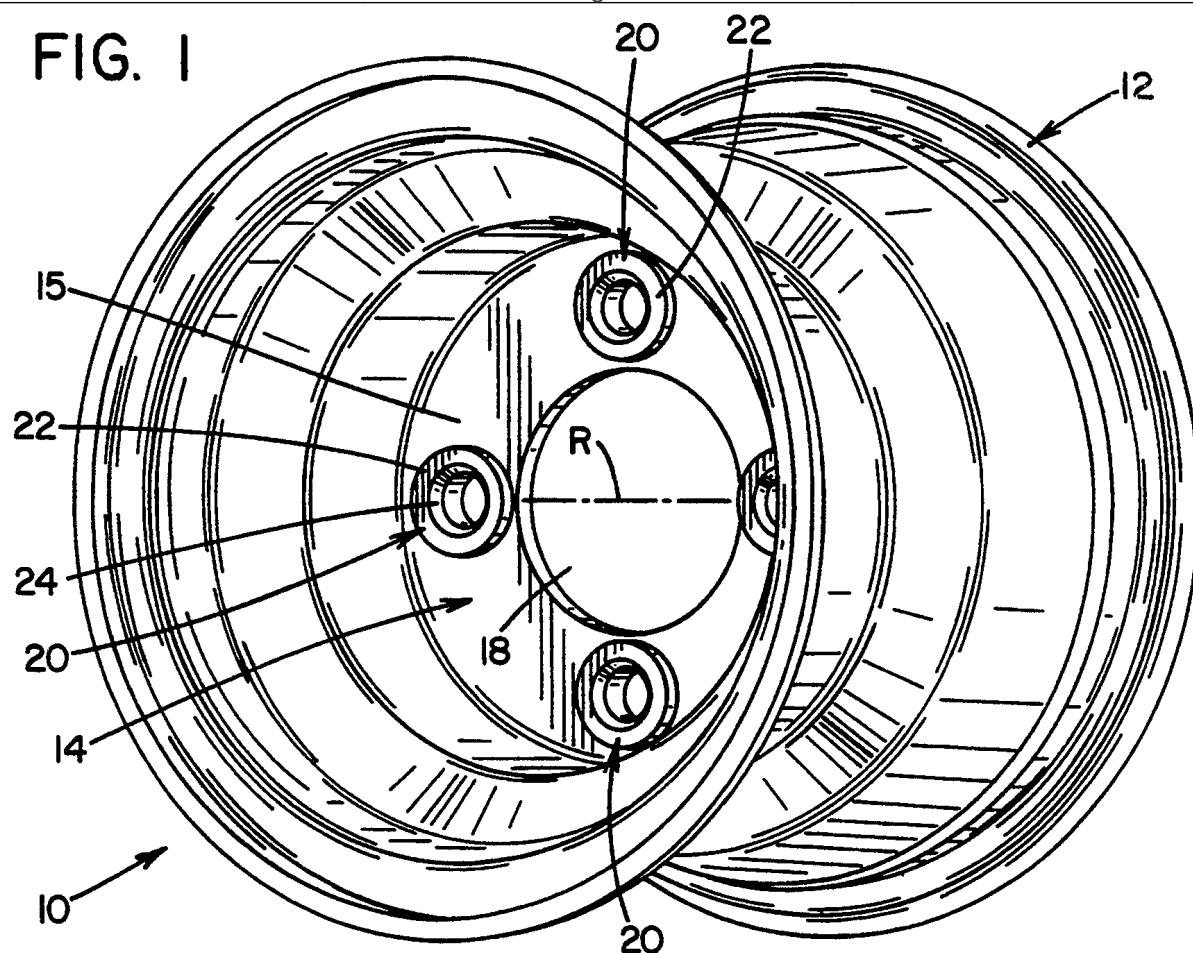
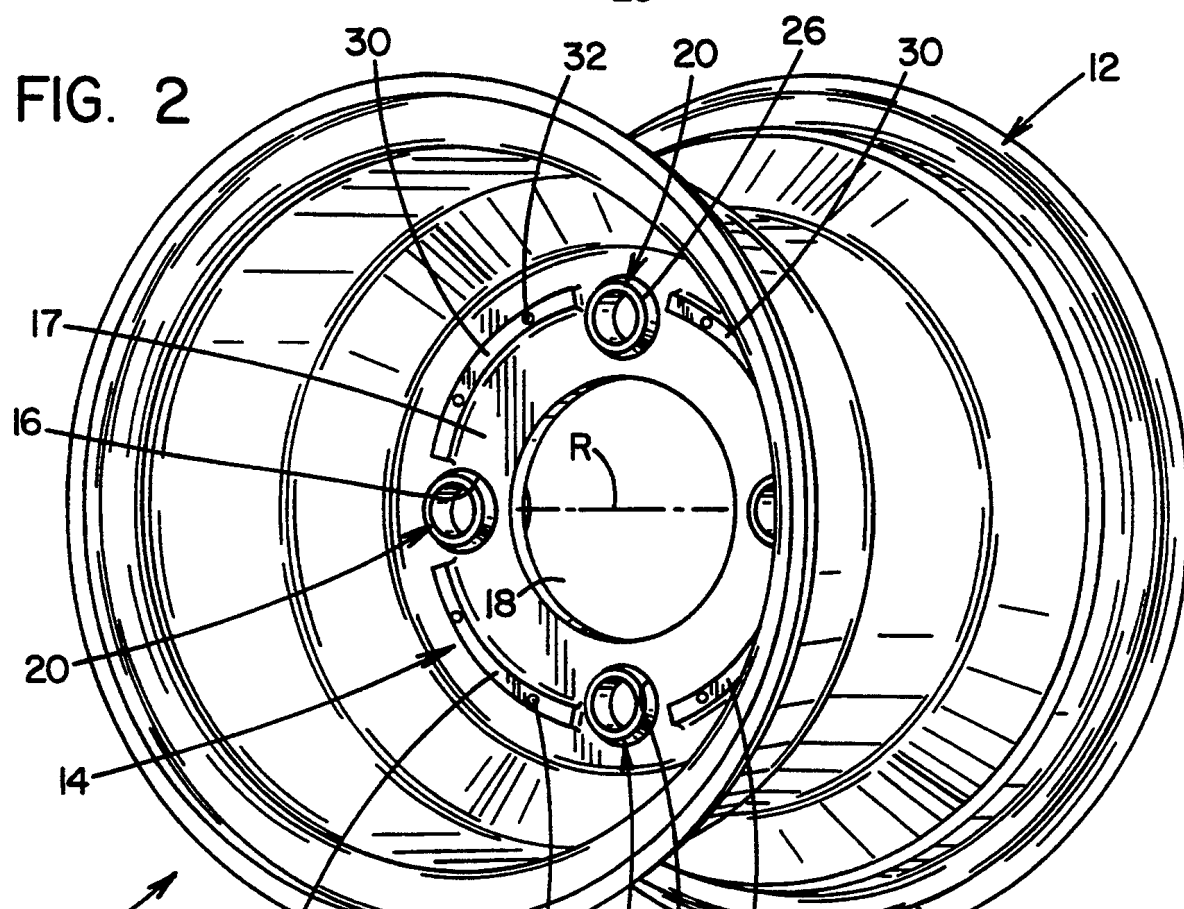


FIG. 2



Publication numbers with kind code & date

KR100245935	B1	2000-04-01	KR100245935
JP2516303	Y2	1996-11-06	JP2516303Y
DE69207117	T2	1996-07-11	DE69207117
DE69207117			



	D1	1996-02-08	DE69207117				
EP0529492	B1	1995-12-27	EP-529492				
US5401079	A	1995-03-28	US5401079				
AU646590	B2	1994-02-24	AU-646590				
JP5028702	U	1993-04-16	JP05028702U				
KR930004111	A	1993-03-22	KR19930004111				
AU2132792	A	1993-03-04	AU9221327				
EP0529492	A1	1993-03-03	EP-529492				
CA2058842	A1	1993-02-27	CA2058842				

Abstract

(EP0529492)

A plastic wheel assembly 10 is described. The wheel 10 comprises a rim 12 and a disk 14. The disk 14 has holes 16 with inserted sleeves 20. The sleeves 20 extend through the disk 14 a sufficient distance to avoid excessive heating of the plastic wheel 10 during normal use. <IMAGE>

Inventors

ROONEY TIMOTHY MICHAEL

Latest standardized assignees - inventors removed

GOODYEAR TIRE & RUBBER

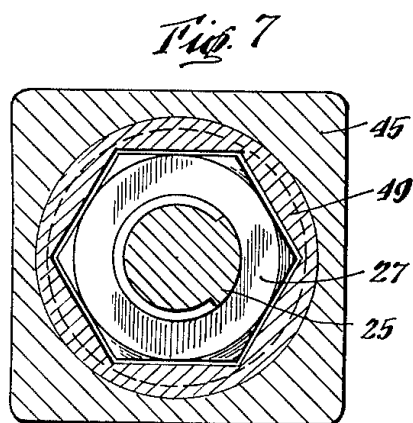
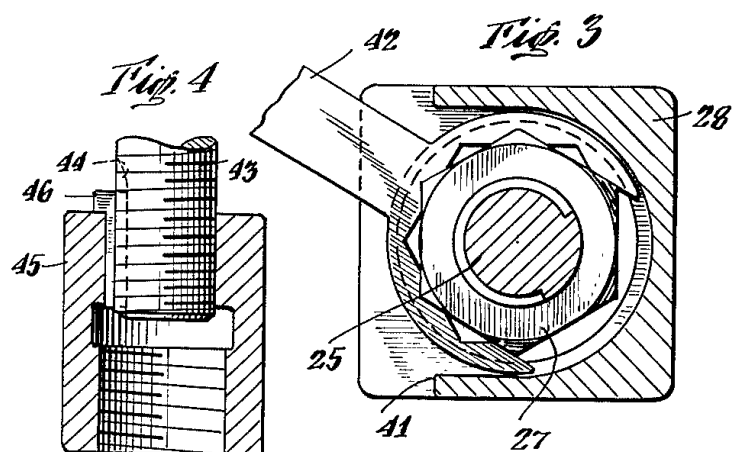
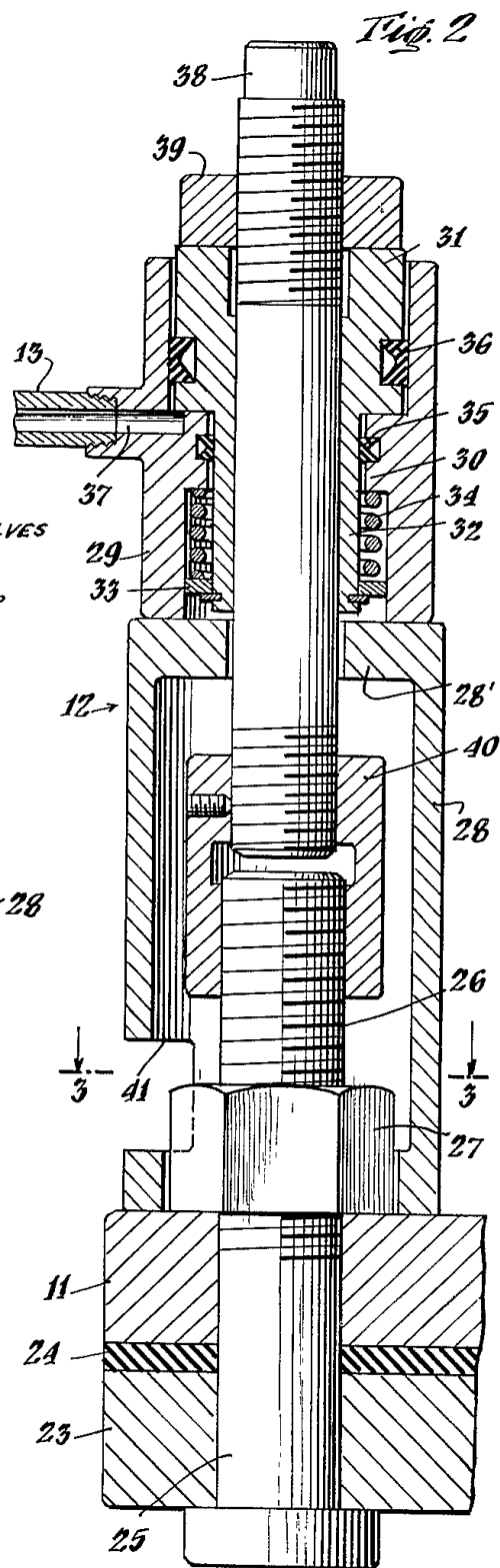
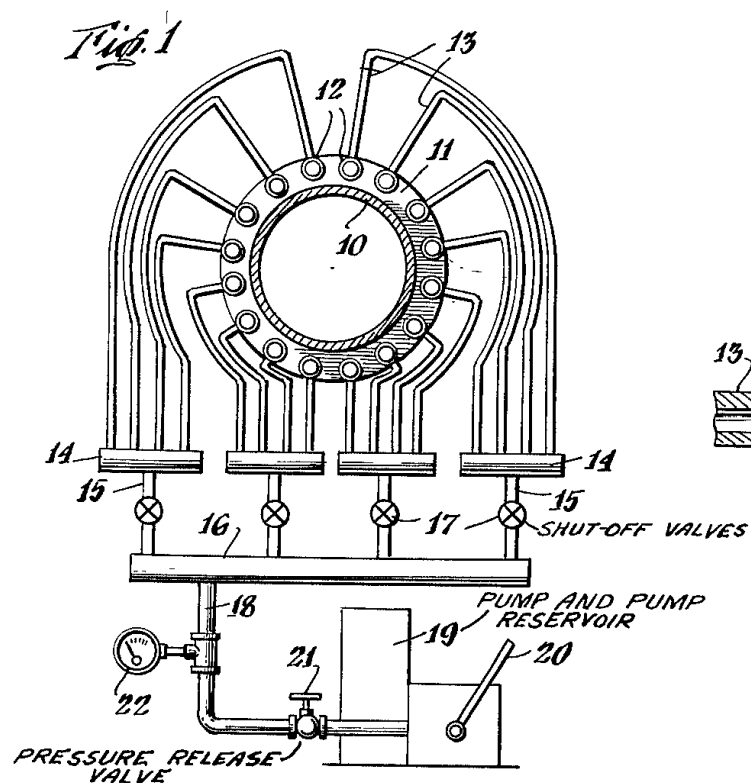
Family 40/100 - FAMPAT - ©Questel

Title

(US2866370)

Bolt-tensioning and nut-seating apparatus

Images



INVENTOR
John L. Biach
 BY
Kaw, Dalsimer & Kane
 ATTORNEYS

Publication numbers with kind code & date

US2866370

A 1958-12-30 US2866370

Inventors

BIACH JOHN L

Family 41/100 - FAMPAT - ©Questel

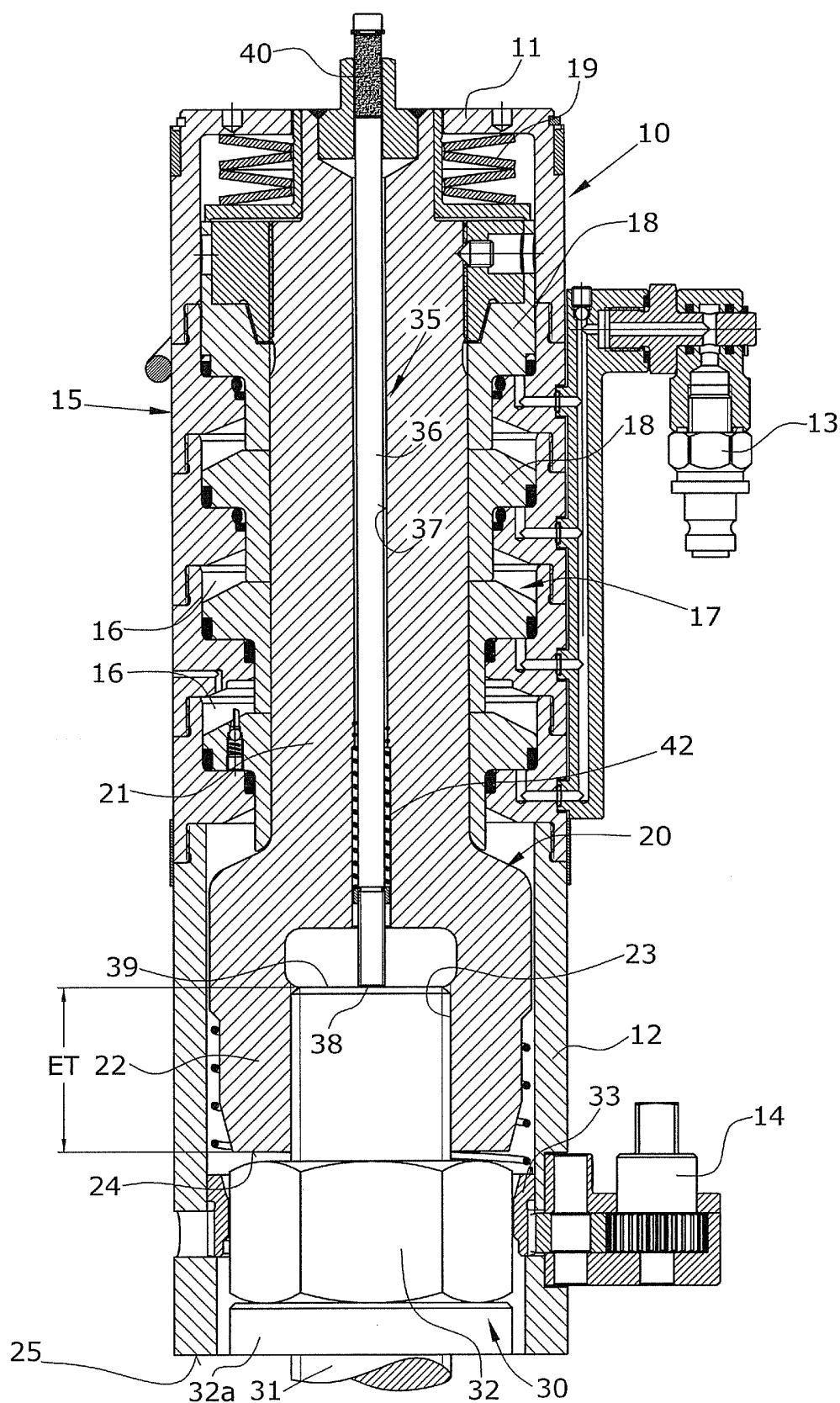
Title



(EP2346643)

Screw tensioning device

Images



Publication numbers with kind code & date

ES2633110

T3 2017-09-19 ES2633110

DK2346643

T3 2017-07-31 DK2346643T



EP2346643	B1	2017-04-19	EP2346643				
US20110271798	A1	2011-11-10	US20110271798				
EP2346643	A1	2011-07-27	EP2346643				
WO2010/054959	A1	2010-05-20	WO201054959				

Abstract

(EP2346643)

The screw tensioning device has a supporting tube (12), a cylinder part (15) and a piston part (17). The piston part serves for moving a tensioning bolt (20), which is screwed onto the thread of a threaded bolt (31). Provided according to the invention is a depth measuring device (35), which gives an externally visible indication of the screwed-in depth (ET) of the threaded bolt (31). This ensures that, when the threaded bolt (31) undergoes extension under strain, there is sufficiently long threaded engagement with the tensioning bolt (20). This avoids hazardous breaking off of the screw tensioning device from the threaded bolt.

Inventors

WAGNER P H

THELEN BERND

Latest standardized assignees - inventors removed

WAGNER VERMÖGENSVERWALTUNGS

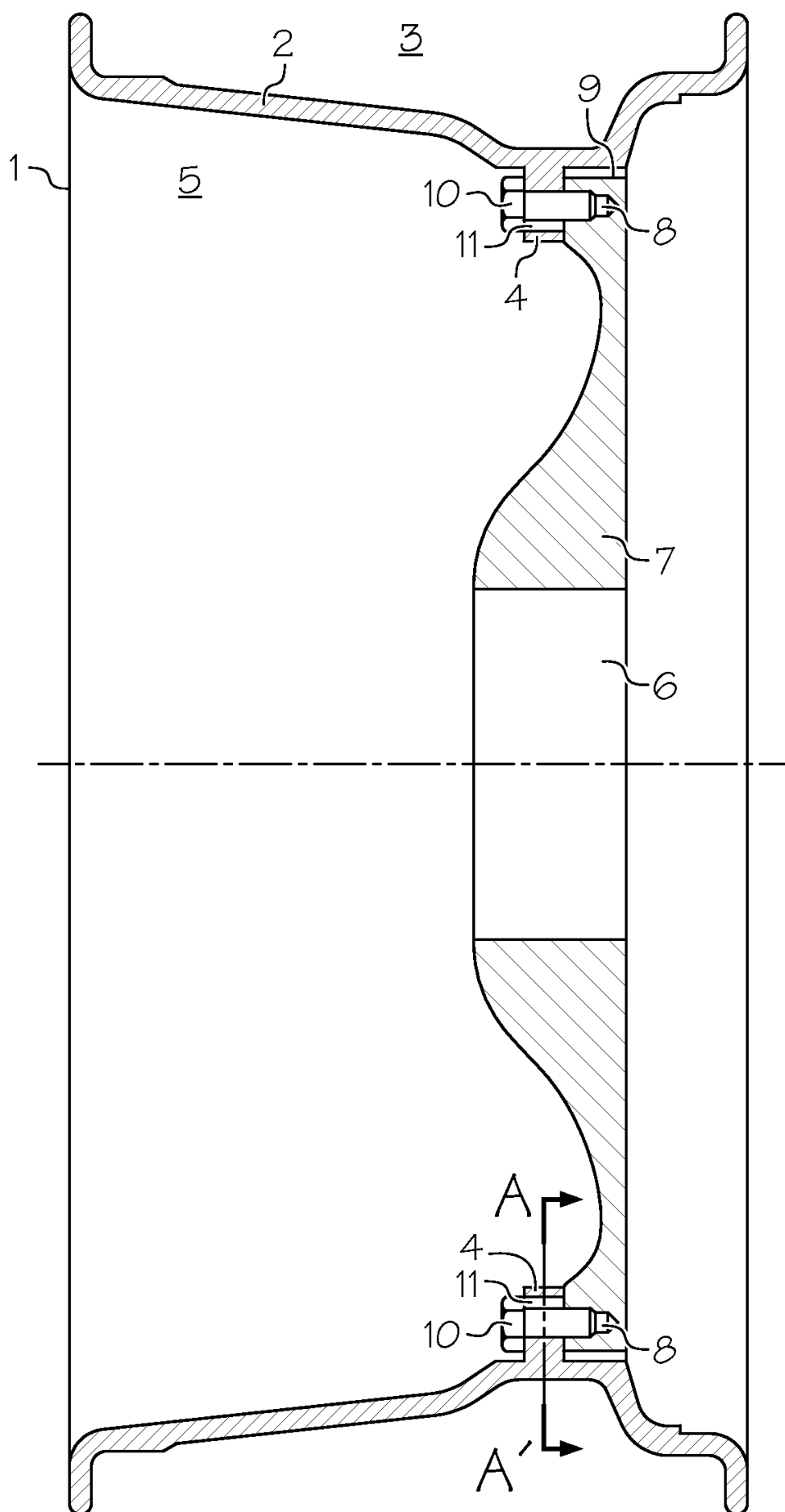
Family 42/100 - FAMPAT - ©Questel

Title

(EP2906433)

Vehicle wheel

Images



Publication numbers with kind code & date

JP6328645	B2	2018-05-23	JP6328645
CN104755275	B	2017-07-18	CN104755275B
US9573414	B2	2017-02-21	US9573414
JP2015531331	A	2015-11-02	JP2015531331
US20150273934	A1	2015-10-01	US20150273934
EP2906433	A1	2015-08-19	EP2906433
CN104755275	A	2015-07-01	CN104755275
CA2884207	A1	2014-04-17	CA2884207
WO2014/058313	A1	2014-04-17	WO201458313
NL2009595	C2	2014-04-14	NL2009595

**Abstract**

(EP2906433)

The invention is directed to a vehicle wheel (1) comprising a rim (2) for receiving a tire at its radially outer side (3) and provided with an edge along the circumferential of the rim at its radially inner side, a wheel hub connected to the rim via a support element, wherein the material of the rim and the support element are different, the support element provided with openings at its end facing the rim to receive a connecting element, the edge of the rim provided with openings in line with the openings of the support element and wherein the support element is connected to the rim via the connecting elements present in the openings in the edge and in the openings of the support element, wherein the opening in the edge is a radial elongated opening or is a indentation in the edge or the openings in the support element are radially elongated openings or indentations.

Inventors

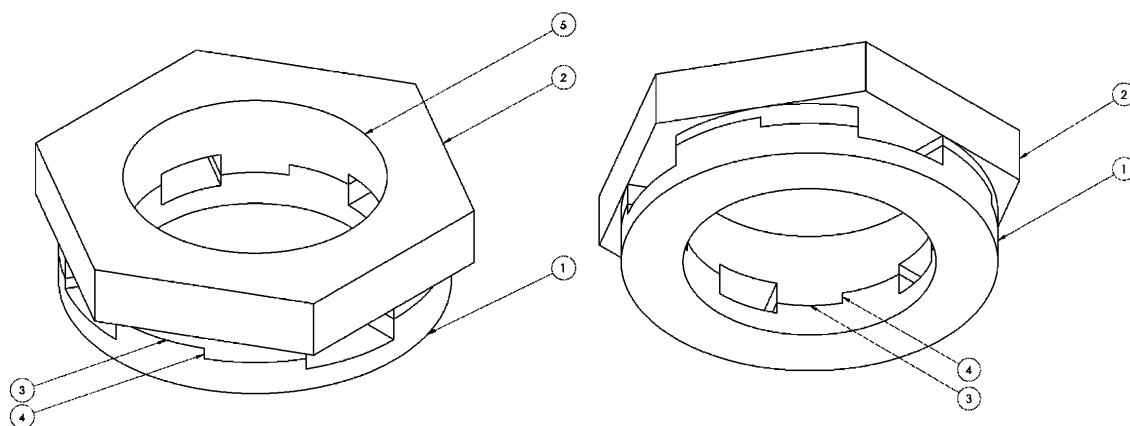
HUIDEKOPER LOUIS

Family 43/100 - FAMPAT - ©Questel

Title

(EP2875245)

Load-relief washer assembly for threaded fasteners

Images**Publication numbers with kind code & date**

JP6336445	B2	2018-06-06	JP6336445
MX351532	B	2017-10-18	MX-351532
CN104641126	B	2017-03-08	CN104641126B
EP2875245	B1	2016-11-23	EP2875245
MX2015001155	A	2016-08-03	MX2015001155
IN1013/CHENP/2015	A	2016-07-01	IN2015CN01013
JP2016502626	A	2016-01-28	JP2016502626



EP2875245	A1	2015-05-27	EP2875245				
CN104641126	A	2015-05-20	CN104641126				
WO2014/018443	A1	2014-01-30	WO201418443				
US8579572	B1	2013-11-12	US8579572				

Abstract

(EP2875245)

A load relief washer assembly for threaded fasteners includes a lower washer piece 1, an upper washer piece 2, a plurality of complementary stepped features 4 which further include the mating surfaces of said lower washer 1 and said upper washer 2, such that sufficient rotation of said upper body relative to said lower body aligns said complementary stepped features 4 allowing said upper body and said lower body to move toward each other, thereby reducing the overall height of the load relief washer assembly.

Inventors

PSIMAS MICHAEL JAMES

Latest standardized assignees - inventors removed

INTEGRA SERVICES TECHNOLOGIES

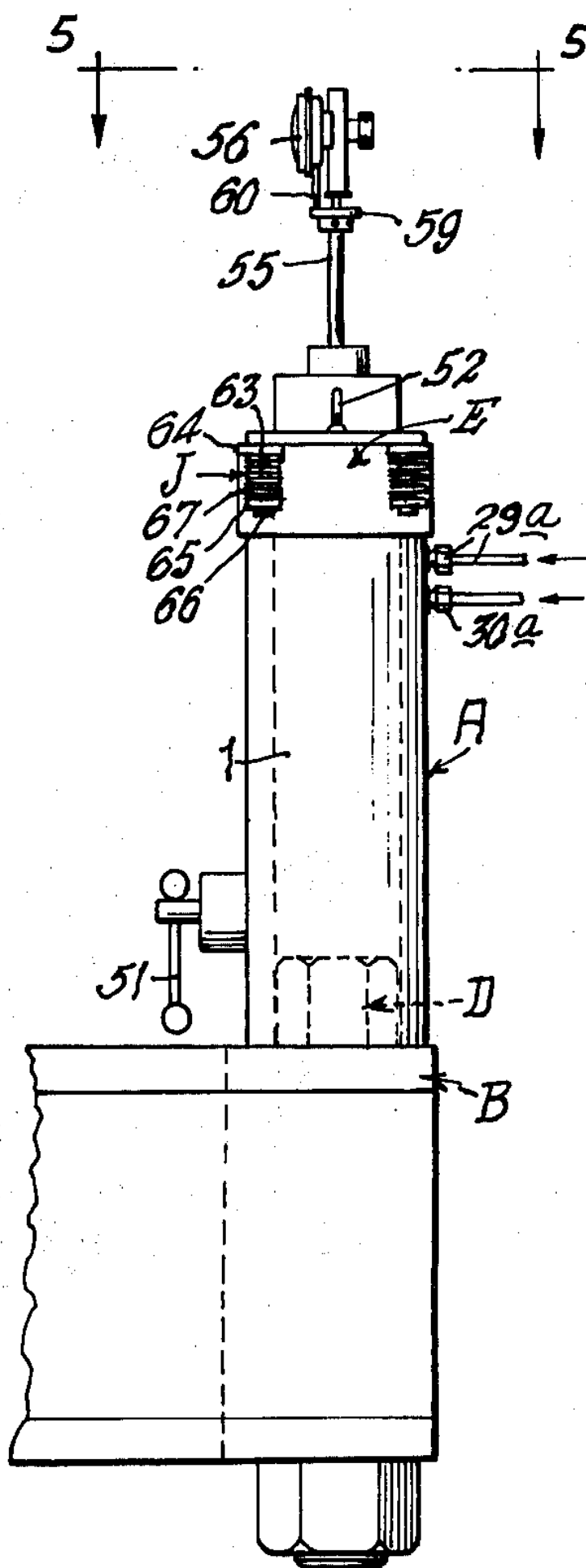
Family 44/100 - FAMPAT - ©Questel

Title

(US3995828)

Bolt tensioning apparatus

Images



Publication numbers with kind code & date

GB1543953	A	1979-04-11	GB1543953
CA1049760	A	1979-03-06	CA1049760
FR2324416	A1	1977-04-15	FR2324416
DE2641497	A1	1977-03-31	DE2641497
US3995828	A	1976-12-07	US3995828

**Abstract**

(US3995828)

A bolt tensioner has a cylinder and piston assembly whose piston is connected to a puller bar on which is mounted a socket formed with segments for connecting the puller bar to a bolt to be tensioned, and the inner surface of a sleeve reciprocable on said puller bar and the outer surfaces of said segments have coactive circumferential ridges and grooves with beveled sides to actuate and hold the segments into cooperative relation to the bolt and means to actuate the segments out of said cooperative relation upon movement of the sleeve into lower and upper positions, respectively. A reciprocable power operated apparatus connected to the upper end of the sleeve reciprocates the sleeve.

Inventors

ORBAN JOSEPH N

Latest standardized assignees - inventors removed

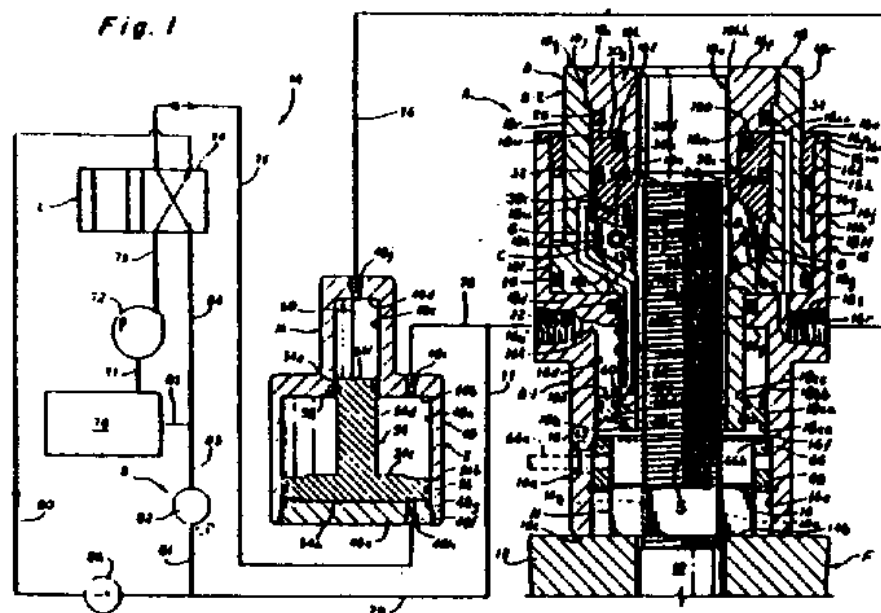
BIACH INDUSTRIES

Family 45/100 - FAMPAT - ©Questel

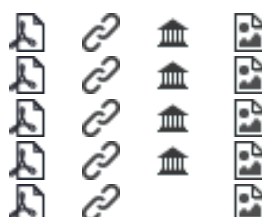
Title

(DE3412689)

METHOD AND APPARATUS FOR PREPARATION OF THE PIN TIGHTEN SCREW

Images**Publication numbers with kind code & date**

GB2143608	B	1987-05-07	GB2143608
CA1214767	A	1986-12-02	CA1214767
GB2143608	A	1985-02-13	GB2143608
DE3412689	A1	1985-01-31	DE3412689
GB8404242	D0	1984-03-21	GB8404242

**Abstract**

EP1412646	A2	2004-04-28	EP1412646
CZ20031296	A3	2004-03-17	CZ200301296
WO02/31367	A3	2004-02-26	WO200231367
US20030194294	A1	2003-10-16	US20030194294
US6592314	B1	2003-07-15	US6592314
AU1187202	A	2002-04-22	AU200211872
WO02/31367	A2	2002-04-18	WO200231367

**Abstract**

(EP1412646)

A wheel nut and washer assembly (10) for securing a wheel to a motor vehicle axle. The wheel nut (12) includes a body having a longitudinal axis, the nut body also having an axial threaded aperture (16) and a pair of ends (22) being in the form of a smooth steel external surface. The wheel nut also includes a steel washer having an end terminating in a smooth annular (surface23) in surface-to-surface engagement with the body end thereby maintaining axial alignment of the body and washer enabling relative movement of said body and washer about said axis. A decorative cap (30) on the assembly is configured so that it holds the washer on the nut, with a gap between the cap (30) and washer to enable the washer to freely rotate and move laterally relative to the nut.

Inventors

WILSON LARRY J

Latest standardized assignees - inventors removed

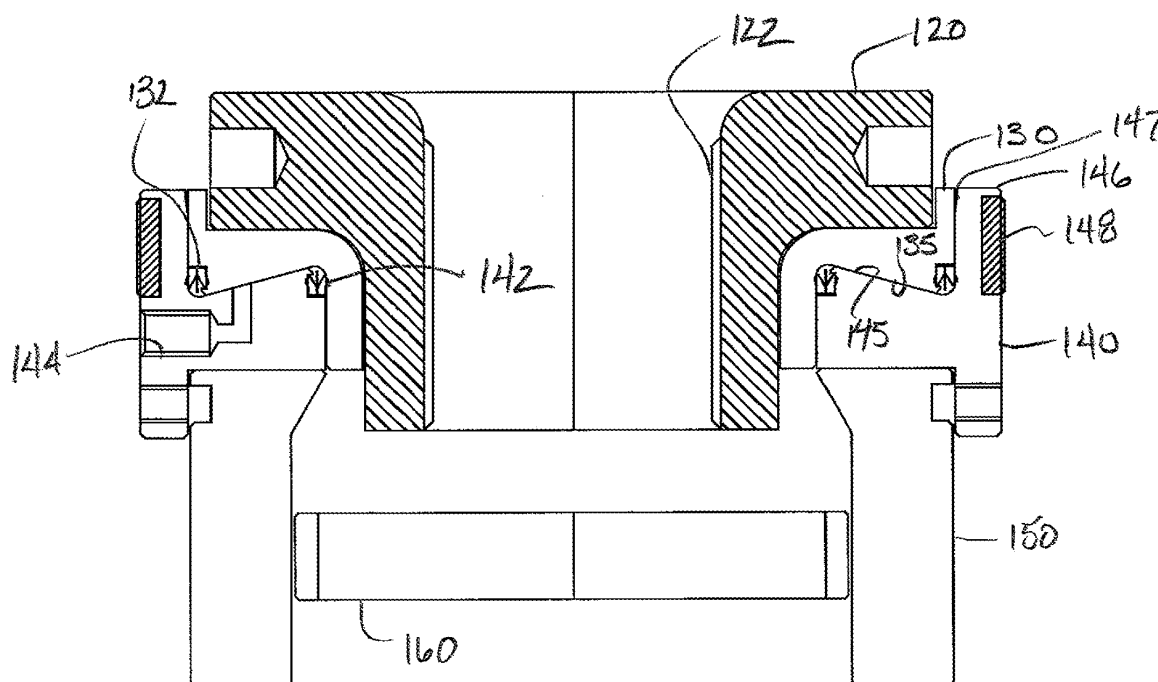
INDUSTRY & AUTOMOTIVE FASTENERS

Family 47/100 - FAMPAT - ©Questel

Title

(WO2011100259)

Hydraulic bolt tensioner and nut

Images**Publication numbers with kind code & date**

WO2011/100259	A1	2011-08-18	WO2011100259
US20110192257	A1	2011-08-11	US20110192257

**Abstract**

(WO2011/100259)

A hydraulic bolt tensioner has a reduced height by virtue of inner seals between a cylinder and piston being aligned along a same plane. The tensioner also has a reduced width by virtue of carbon fiber wound about the tensioner's housing, reducing the need for a certain thickness of material used for the tensioner's housing.

Inventors

ARMSTRONG PETER

Latest standardized assignees - inventors removed

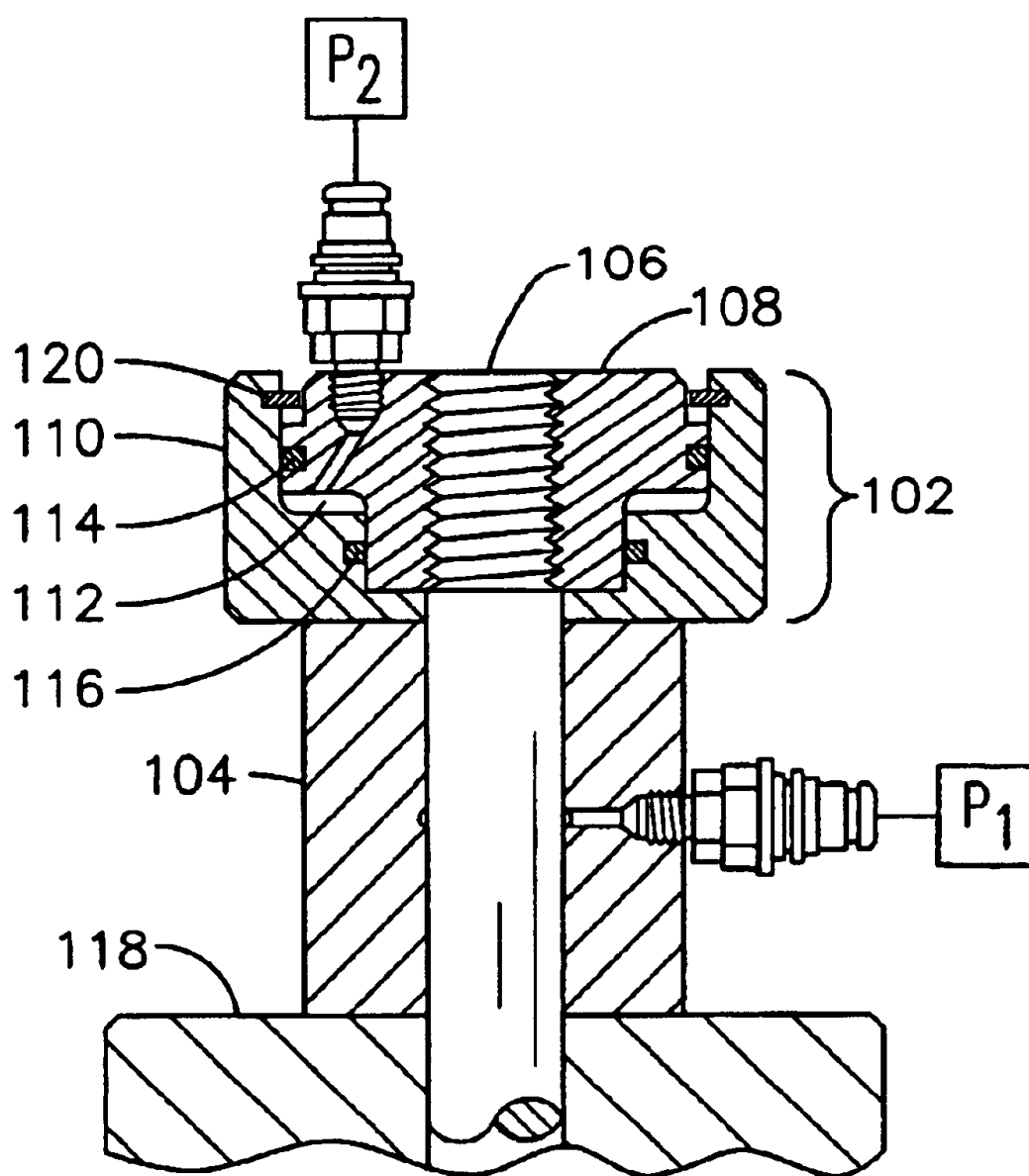
TITAN TECHNOLOGIES INTERNATIONAL

Family 48/100 - FAMPAT - ©Questel

Title

(US6840726)

Tensioning apparatus and method

Images**Publication numbers with kind code & date**[US7066699](#) B2 2006-06-27 [US7066699](#)[US6840726](#) B2 2005-01-11 [US6840726](#)

US20040115023	A1	2004-06-17	US20040115023
US20040115024	A1	2004-06-17	US20040115024

**Abstract**

(US20040115023)

A tensioning apparatus (40) for applying a closing force across a flange assembly (42). The tensioning apparatus includes a shank member (44) and an annular member (48) connected to the shank member by an interference fit. The interference fit may be selectively relaxed by applying a fluid pressure (P1) to a groove (54) between the annular member and the shank member. A tensioner (58) is used to pre-load the shank member by pulling on the shank member while pushing on the annular member while the interference fit is sufficiently relaxed to allow relative movement between the annular member and the shank member. Once the pre-load is established, the interference fit is reestablished by releasing pressure P1 to lock the annular member in position for maintaining the closure force across the flange assembly after the tensioner is removed. A lock nut (34) may be tightened against the annular member to provide additional protection against the release of the pre-load. Seals (146) may be used to minimize leakage of the fluid used for applying the fluid pressure between the annular member and the shank member.

Inventors

GOSLING MARTIN CHARLES

Latest standardized assignees - inventors removed

SIEMENS ENERGY

Family 49/100 - FAMPAT - ©Questel

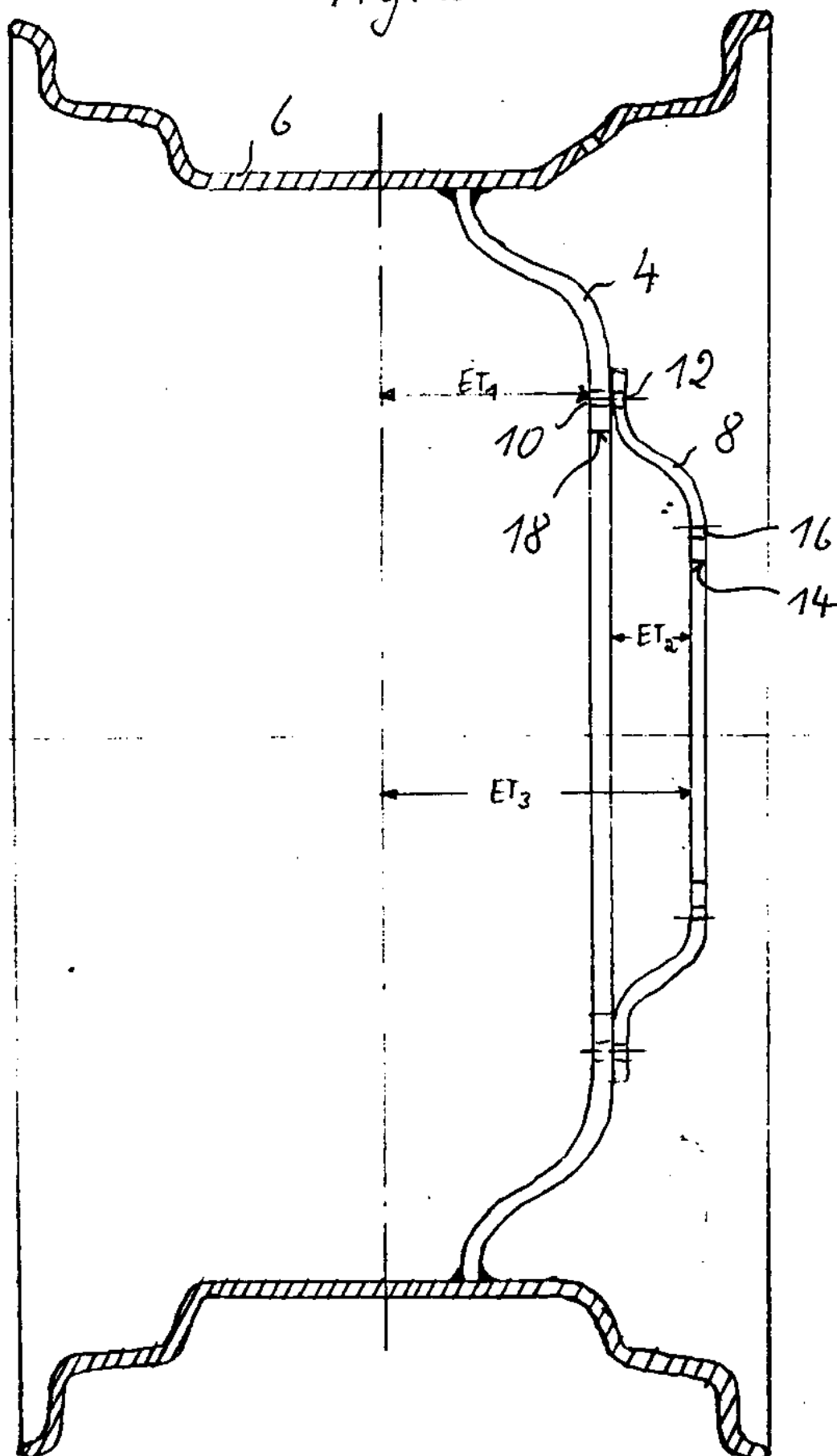
Title

(EP-521340)

Vehicle-wheel adjustable for varying track.

Images

Fig. 2a



ES2078592	T3	1995-12-16	ES2078592				
DE59203357	D1	1995-09-28	DE59203357				
AT126762	T	1995-09-15	ATE126762				
EP0521340	B1	1995-08-23	EP-521340				
EP0521340	A3	1993-06-09	EP-521340				
EP0521340	A2	1993-01-07	EP-521340				
DE9107980	U1	1991-08-29	DE9107980				

Abstract

(EP0521340)

An adjustment wheel for varying the track of a vehicle has a wheel disk and a rim which are connected to one another. In order to achieve a greater stability of the adjustment wheel and thus a longer service life of the rim while maintaining an adequate number of possible ways of varying the track, the wheel disk (4) is welded to the rim (6) and an additional disk (8) is provided for varying the track, which additional disk (8) can be screwed onto the wheel disk (4) on both sides and is equipped with a hole circle (16) for connection to the axis of the vehicle.

Inventors

PYRITZ BERND METALLBAU GRASDORF

Latest standardized assignees - inventors removed

METALLBAU GRASDORF

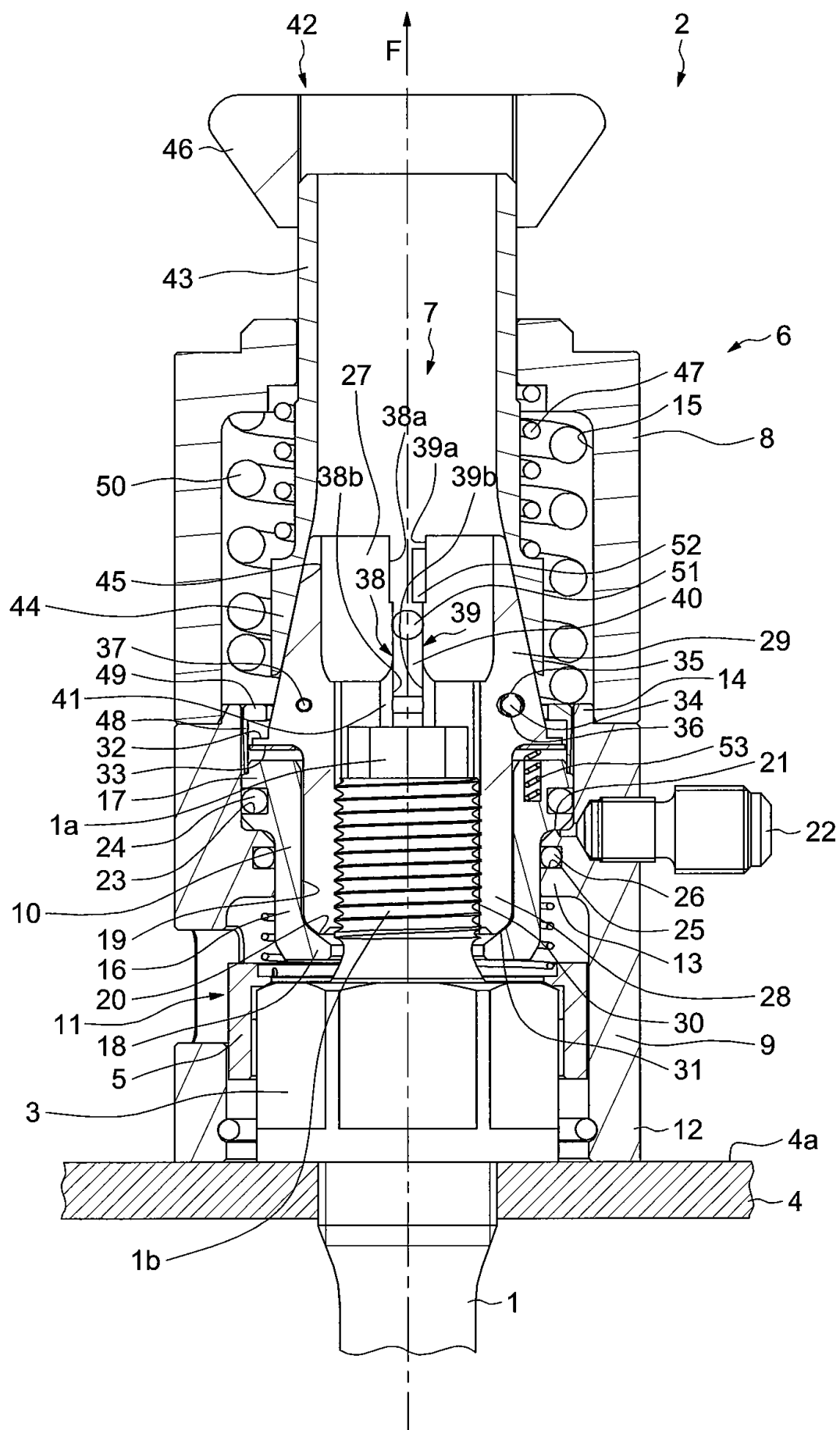
Family 50/100 - FAMPAT - ©Questel

Title

(EP2361722)

Rod tensioning device.

Images



	B1	2017-03-21	KR101718549				
JP5875767	B2	2016-01-29	JP5875767				
US8950292	B2	2015-02-10	US8950292				
CN102189400	B	2015-01-28	CN102189400B				
ES2403071	T3	2013-05-13	ES2403071				
DK2361722	T3	2013-04-15	DK2361722T				
EP2361722	B1	2013-01-16	EP2361722				
CN102189400	A	2011-09-21	CN102189400				
JP2011167840	A	2011-09-01	JP2011167840				
EP2361722	A1	2011-08-31	EP2361722				
KR20110095156	A	2011-08-24	KR20110095156				
US20110197716	A1	2011-08-18	US20110197716				

Abstract

(EP2361722)

Rod tensioning device (2) comprising an actuator (6) adapted to provide a tensioning axial force F, a tie-rod (7) capable of transmitting the axial force from the actuator (6) towards the threaded portion (1b) of a rod (1), and a locking element (42). Said tie-rod (7) comprises a plurality of jaws (27) which can move radially between a closed position, in which the tie-rod (7) is engaged with the threaded portion (1b) of the rod (1), and an opened position, in which the jaws (27) are disengaged from the threaded portion (1b) of the rod (1), and said locking element (42) comprises a sleeve (43), sliding axially around the jaws (27); said sleeve (43) comprising an internal frustoconical surface (45) in contact with an external mating surface of the jaws (27).

Inventors

DECLERCK DIDIER

LOISEAU VALERIE

Latest standardized assignees - inventors removed

SKF

Family 51/100 - FAMPAT - ©Questel

Title

(EP1784283)

Hydraulic screw clamping device

Images

The invention relates to a hydraulic screw clamping device which is used to tighten and release highly stressed screws, comprising a cylinder (5, 6, 7, 8) which is supported on a machine part (1), which is to be clamped, by means of a threaded bolt (2) and a nut (3), at least one periodically pressurised piston which is guided in a sealed manner and which is supported on an exchange bushing (21) which is screwed onto the thread end (4) of the threaded bolt, a pressure medium connection (45) which is disposed on the screw clamping device, a rotating sleeve (15) which is arranged in the cylinder and which is connected if a positive fit to the nut, a gear (47) which is drivingly-connected (16) to the rotating sleeve, a gear (9) which is drivingly-connected to the exchange bushing, a drive motor (24) for the gear, a drive device which is arranged between the gear for the exchange bushing and the gear for the rotating sleeve and a device (25) which is used to alternate the coupling of the drive motor to the exchange bushing or to the rotating bushing.

Inventors

HOHMANN JOERG

HOHMANN FRANK

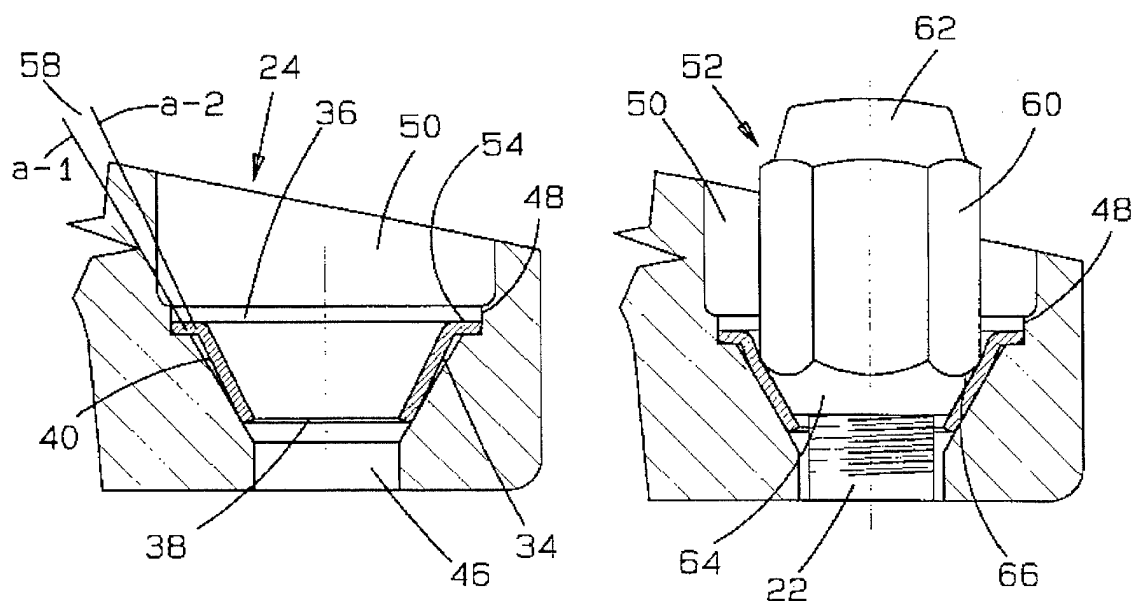
Family 52/100 - FAMPAT - ©Questel

Title

(US5542753)

Wheel opening inserts and lug nut assemblies thereof for mounting non-ferrous vehicle wheels

Images



Publication numbers with kind code & date

US5711581	A	1998-01-27	US5711581
US5542753	A	1996-08-06	US5542753



Abstract

(US5542753)

Vehicle wheel nut inserts adapted to extend into the stud-receiving openings of a vehicle wheel and particularly, a non-ferrous vehicle wheel and lug nut assemblies thereof. The inserts are uniquely designed so that the inserts can be permanently locked in the stud-receiving openings of the vehicle wheel. In one embodiment, the wheel inserts can be locked by means of an interference fit, and in another mode, the inserts can be locked by swaging and still further, the inserts may be locked by means of staking the inserts in the stud-receiving openings. Not only are the inserts permanently affixed within the stud-receiving openings, they will also operate to bear against the lug nuts. In this way, a spring-type loading is imposed on the lug nut preventing an unauthorized vibrational unwinding of the lug nut. The insert will deflect when tightened against the wheel opening by a lug nut to thereby provide a Belleville spring effect.

Inventors

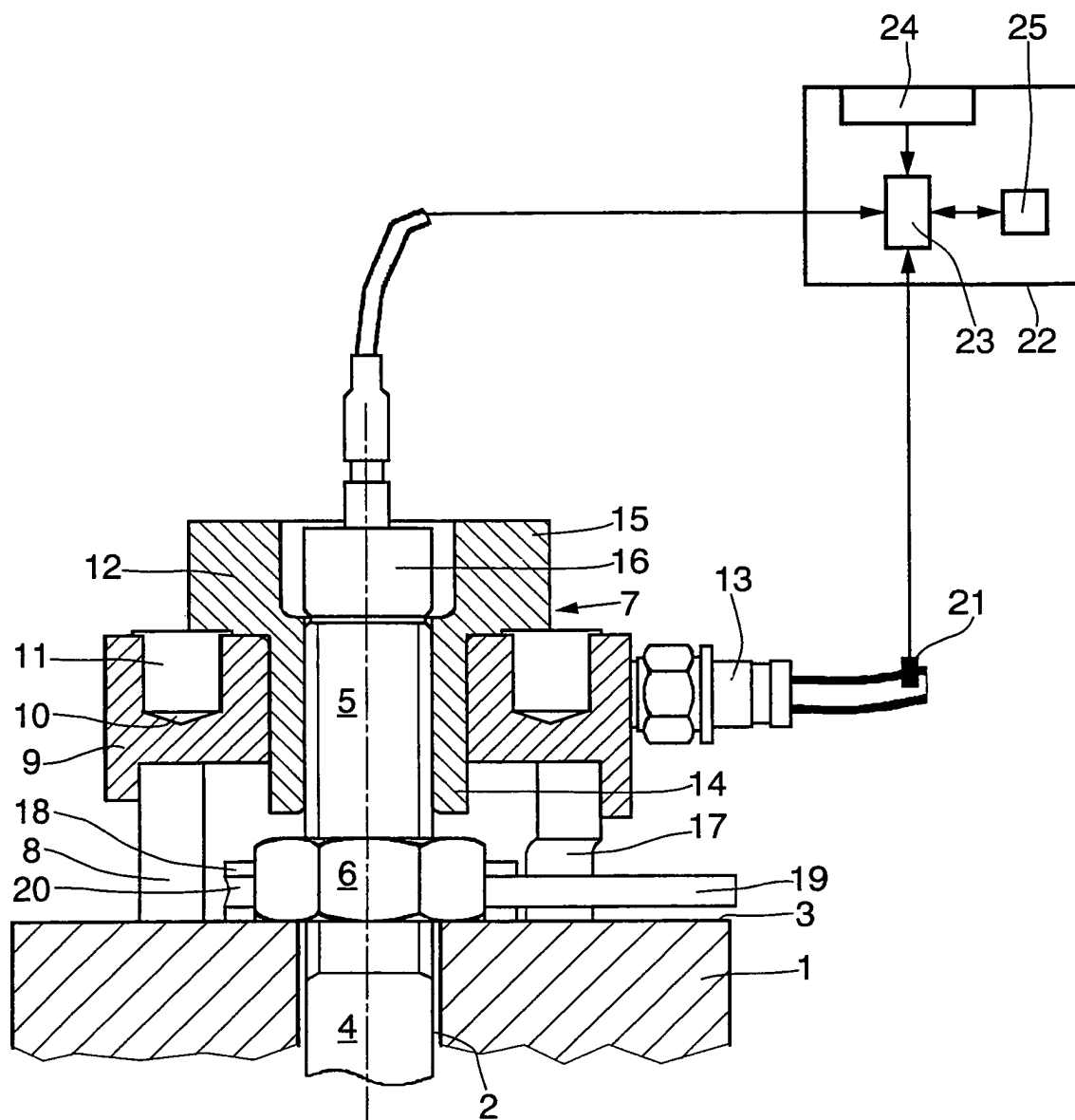
PLUMER MARK J

Family 53/100 - FAMPAT - ©Questel

Title

(EP1751513)

Method for controlling tensile stress of a bolt shank such as a screw or dowel pin and device for carrying out said method

Images**Publication numbers with kind code & date**

JP5192230	B2	2013-02-08	JP5192230
EP1751513	B1	2012-12-05	EP1751513
US8201315	B2	2012-06-19	US8201315
CN100458389	C	2009-02-04	CN100458389C
US20090013518	A1	2009-01-15	US20090013518
JP2008501943	A	2008-01-24	JP2008501943
CN1989400	A	2007-06-27	CN1989400
EP1751513	A1	2007-02-14	EP1751513
FR2871231	B1	2006-09-15	FR2871231
WO2006/000677	A1	2006-01-05	WO2006000677
FR2871231	A1	2005-12-09	FR2871231



Abstract

(EP1751513)

The inventive method for controlling tensile stress of a clamping rod (4) such as a screw or pin performed by axially tensioning the rod and positioning at least one retainer (6) prior to releasing the rod in such a way that it is locked by two ends of the useful clamping length by a residual clamping stress consists in carrying out measurements representing the elongation of the rod in the tensioned state thereof under a tensile stress and the elongation thereof after release with respect to the rod state prior to the tension by comparing the values delivered by at least one sensor during the tension and after the release with a reference value delivered by said sensor prior to the tension and in calculating a residual clamping stress in the useful clamping length of the released rod after tension on the basis of said data.

Inventors

MONVILLE JEAN-MICHEL

Latest standardized assignees - inventors removed

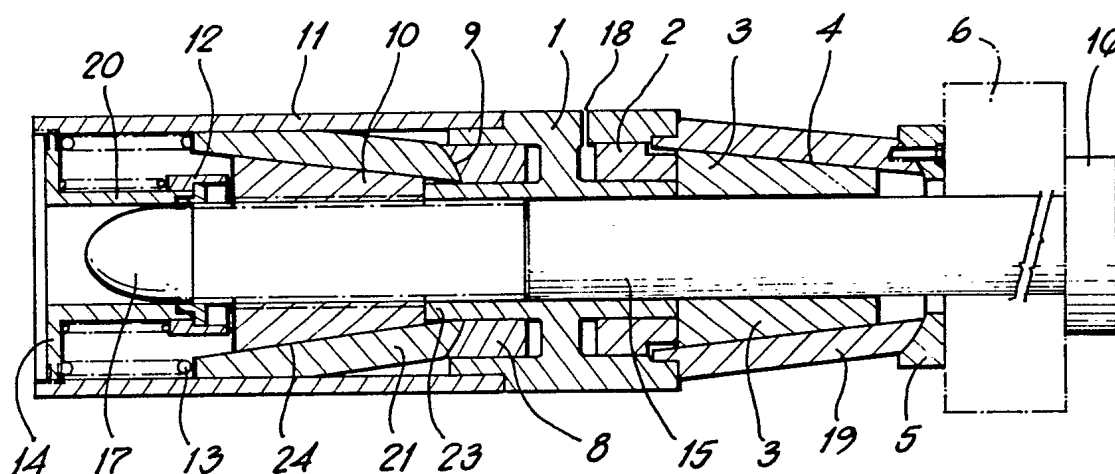
SKF

Family 54/100 - FAMPAT - ©Questel

Title

(GB2201745)

Improved fastening systems

Images**Publication numbers with kind code & date**

GB2201745	B	1990-11-21	GB2201745
GB2201745	A	1988-09-07	GB2201745
GB8703987	D0	1987-03-25	GB8703987

**Abstract**

(GB8703987)

A bolt tensioning apparatus comprises a body 1 mountable on and in encircling relation to the shank 15 of a bolt which is to be tensioned, the body 1 having a first piston-and-cylinder device 2 operable to displace axially of the body 1 a set of jaws 3 co-operating with conical cam surface 4 to cause the jaw members 3 to move radially inwards to grip the shank 15. A second piston-and-cylinder device 8 acts on a conical sleeve 21 housing a second set of jaws 10 which are forced radially inwardly against their spring. In use, the bolt shank 15 is initially tensioned by the second set of jaws 10, then the first set of jaws 3 are forced inwards and the second set of jaws 10 released. The body 1, piston-and-cylinder devices 2,8, and the second set of jaws 10 may be removed, leaving the jaws 3, extension 19 and foot 5, to maintain the connection.

Inventors

VIRGO BRIAN

Latest standardized assignees - inventors removed

HYDRA TIGHT

Family 55/100 - FAMPAT - ©Questel

Title

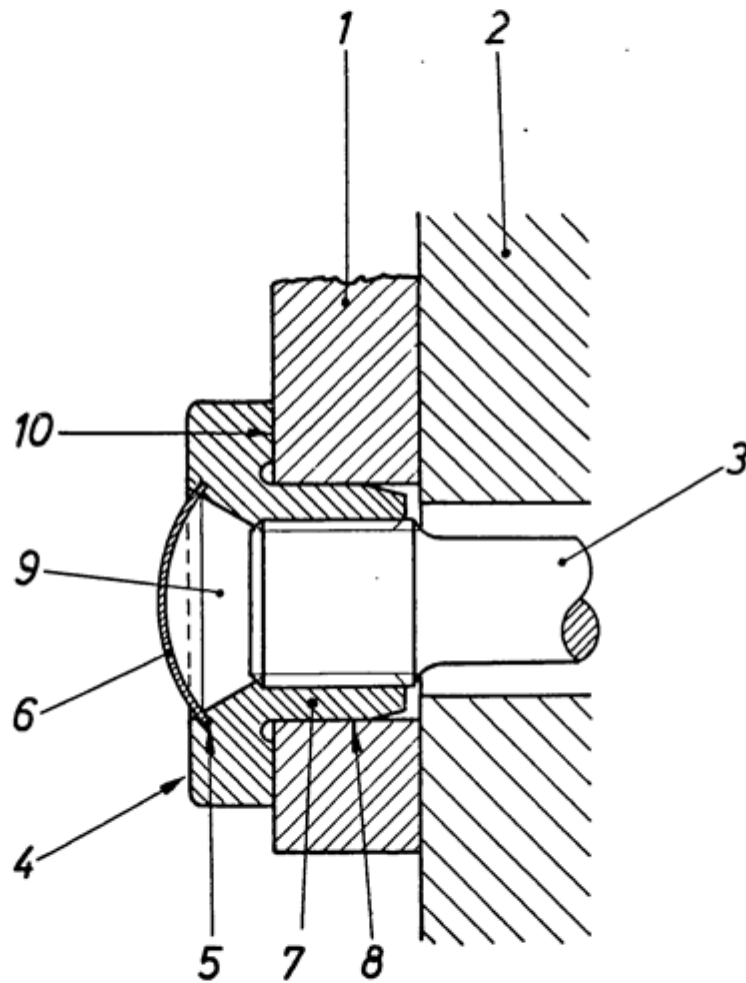
(DE2508057)

Vibration-proof safety wheel nut - has centring sleeve for accurate wheel location and pressure face to lock onto wheel

Images

ZEICHNUNGEN BLATT 1

Nummer: **25 08 057**
Int. Cl.2: **B 60 B 3/16**
Bekanntmachungstag: 6. April 1978

**Publication numbers with kind code & date**

[DE2508057](#) B2 1978-04-06 DE2508057

[DE2508057](#) A1 1976-09-09 DE2508057

**Abstract**

Inventors

FREDRIKSSON ROLAND

Latest standardized assignees - inventors removed

MOTALA VERKSTAD

Family 57/100 - FAMPAT - ©Questel

Title

(US3707107)

Screw connection for high loading

Images

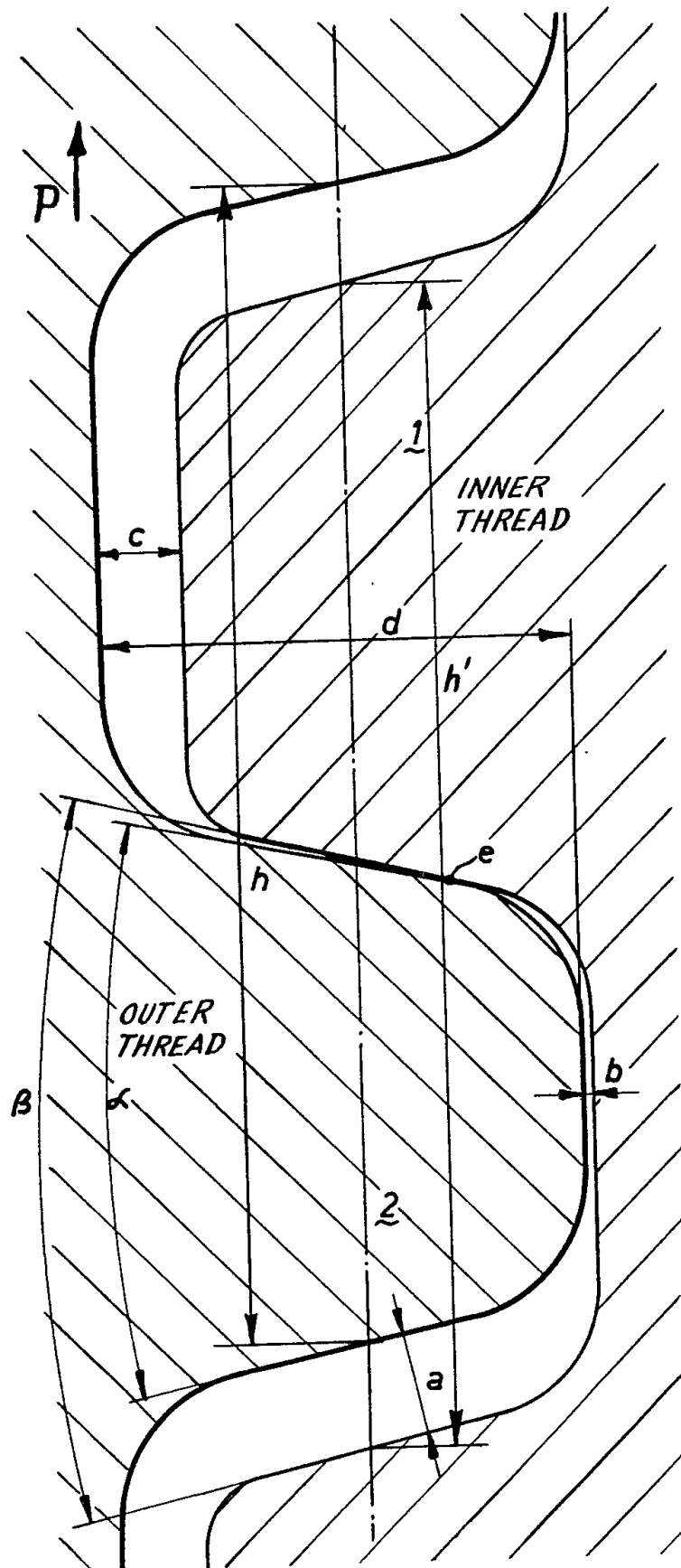


Fig. 1

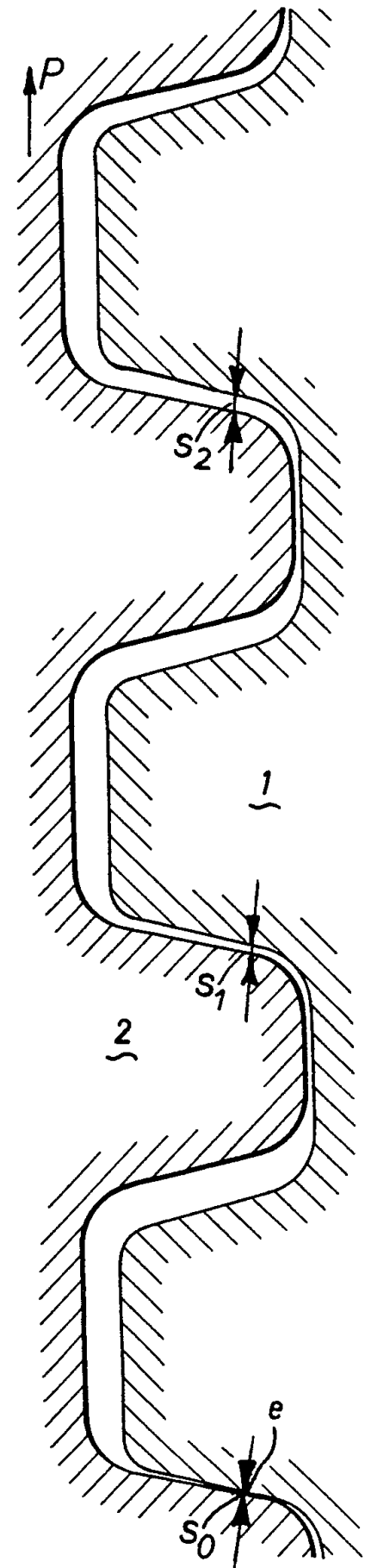


Fig. 2

Publication numbers with kind code & date

JPS544024	B2	1979-03-01	JP79004024
DE2102910	B2	1974-08-29	DE2102910
GB1339627	A	1973-12-05	GB1339627
CH544236	A	1973-11-15	CH-544236
US3707107	A	1972-12-26	US3707107
FR2077000	A5	1971-10-15	FR2077000
DE2102910	A1	1971-08-05	DE2102910

**Abstract**

(US3707107)

To interconnect structural units with a screw connection, for example with a bolt and nut, the threads of the bolt and nut are so selected that the pitch of the outer thread is smaller than the pitch of the inner thread and, additionally, the axial play (a) between the inner thread (1) and the outer thread (2) is greater than the difference in pitch arising within the length of the interengaging threads; to fasten the bolt and nut together, a pre-tensioning apparatus (8) is provided, which can be screwed on an extension of the bolt thread to axially pre-stress the bolt so that relative rotation of the holding nut and the bolt, under loading, can be avoided.

Inventors

BIERI HANS

Latest standardized assignees - inventors removed

BIERI HANS

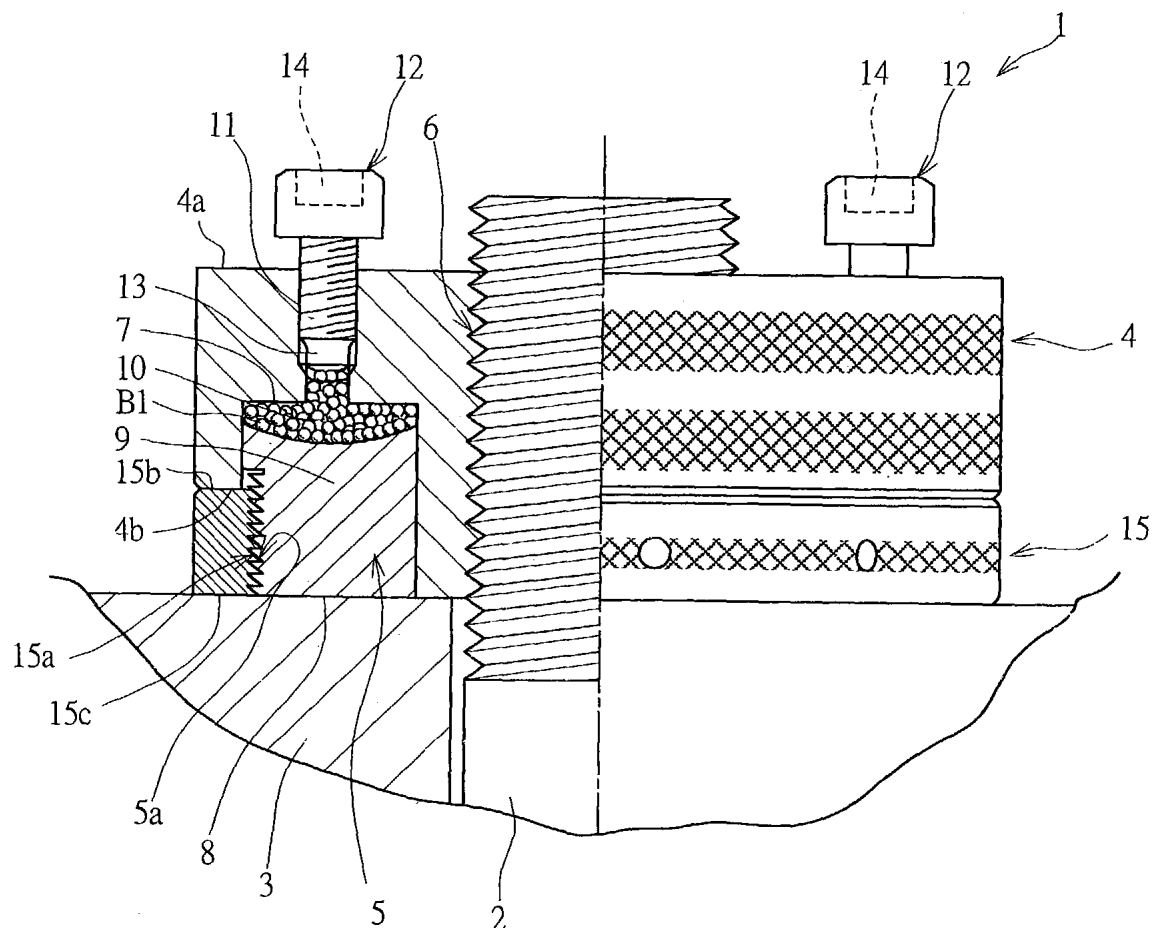
Family 58/100 - FAMPAT - ©Questel

Title

(US7008156)

Load transfer apparatus

Images



Publication numbers with kind code & date

JP3955780	B2	2007-05-11	JP3955780
US7008156	B2	2006-03-07	US7008156
US20030185642	A1	2003-10-02	US20030185642
JP2003227507	A	2003-08-15	JP2003227507



Abstract

(US20030185642)

A first load-receiving member having a cylinder and a screw hole through which a bolt is thread-engaged and a second load-receiving member having a piston and a fastening face that is made in contact with a member to be fastened are attached to a nut, and a number of balls made of steel the surface of which is lubricated by grease are loaded into a pressure chamber that is formed as a compartment by the cylinder and the piston. Since these balls exert fluidity in the pressure chamber, a load applied to the balls is transmitted to the cylinder and the piston through the balls by screwing the input bolt. Thus, the first load-receiving member is moved in the axis direction with respect to the second load-receiving member, thereby applying a tensile force to the bolt.

Inventors

IMAI AKIRA
IMAI YUTAKA
GODA TATSUO

Latest standardized assignees - inventors removed

IMAI ATUSHI

Family 59/100 - FAMPAT - ©Questel

Title

(EP1222076)

Vehicle wheel for goods vehicles

Images

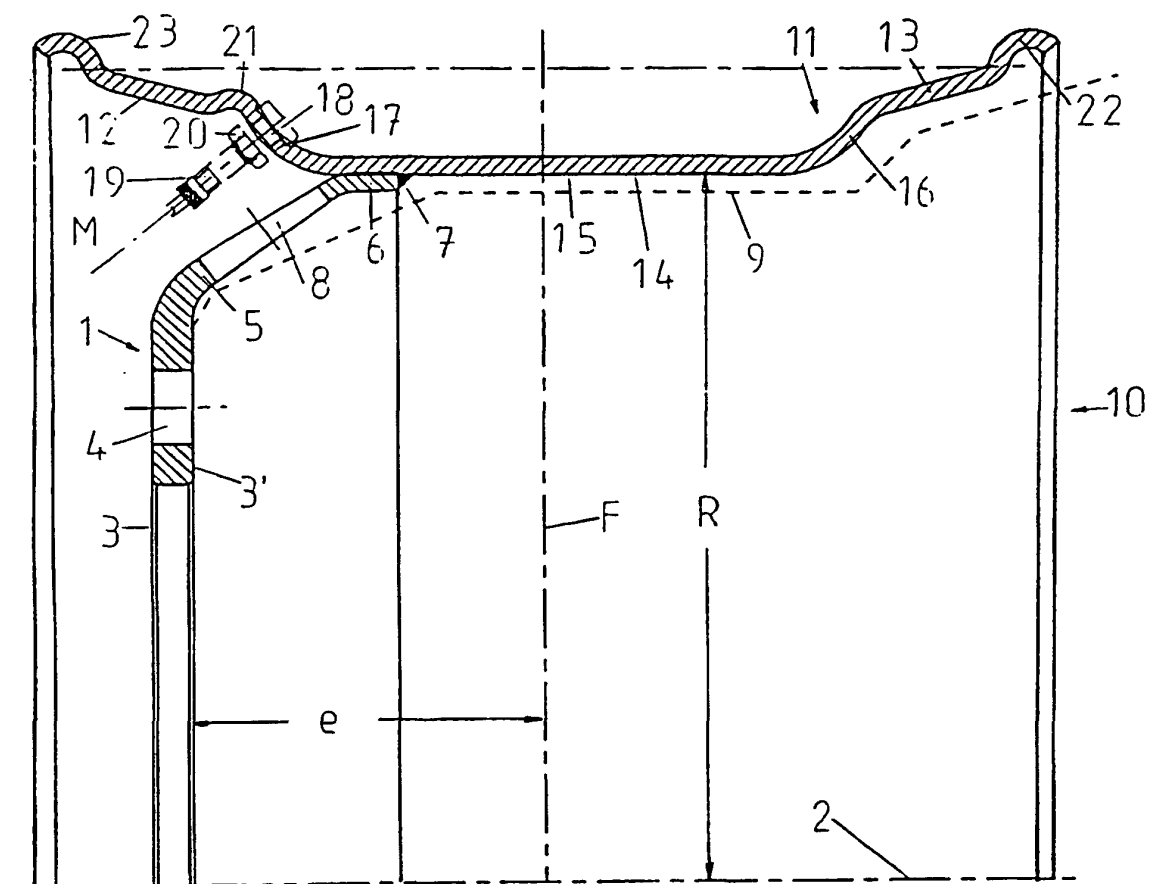


FIG 1

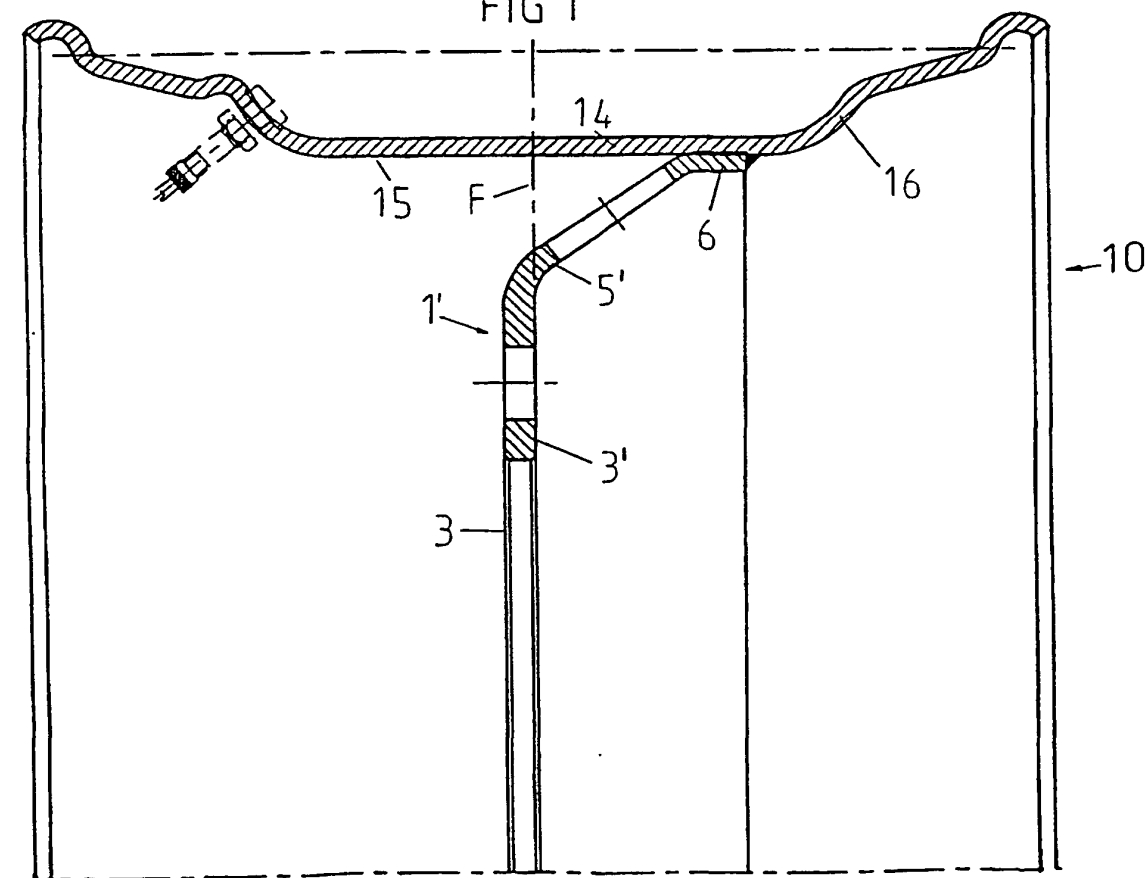


FIG 2

Publication numbers with kind code & date

ES2244471

T3 2005-12-16

ES2244471

DK1222076

T3 2005-12-12

DK1222076T



DE50010990	D1	2005-09-22	DE50010990				
AT302123	T	2005-09-15	ATE302123				
EP1222076	B1	2005-08-17	EP1222076				
EP1222076	A1	2002-07-17	EP1222076				
AU7515300	A	2001-04-30	AU200075153				
WO01/28785	A1	2001-04-26	WO200128785				
DE29918476	U1	1999-12-23	DE29918476				

Abstract

(EP1222076)

The invention relates to a vehicle wheel for the front axle of a goods vehicle, which is preferably applicable to wide base tyres and comprises a nominal rim width greater than 11.75". The vehicle wheel further comprises a wheel disc (1) and a steeply shouldered rim (11), in which a rim drop centre (14) comprising a drop centre base (15) and drop centre tapers (16, 17) is arranged. The base (15) of the drop centre (14) extends on both sides of the rim centre (F) in an essentially straight line and the outer taper (17) and inner taper (16) are respectively connected to the rim shoulders. The wheel disc (1) is welded to the base (15) of the drop centre (14). The inventive embodiment results in vehicle wheels (10) with a broad drop centre that preferably takes up 65 %-75 % of the width of the rim (11). Production of the inventive wheels requires less material and there are practically no undercuts where mud, stones and similar can collect.

Inventors

BUECHEL HANS-HEINER

KERMELK WERNER

VORBECK HANS-JOACHIM

SCHEIDHAUER HANS

Latest standardized assignees - inventors removed

HAYES LEMMERZ HOLDING

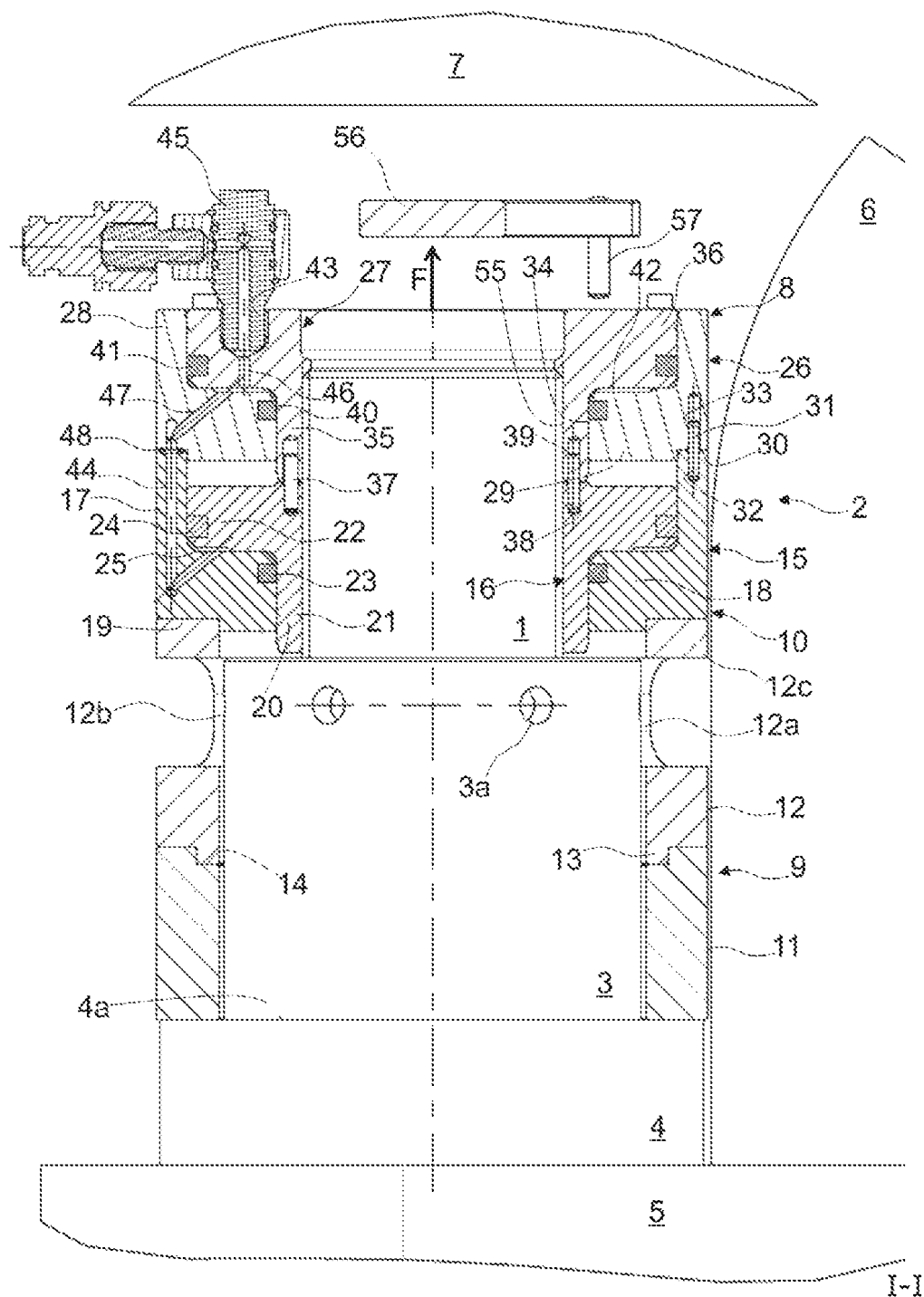
Family 60/100 - FAMPAT - ©Questel

Title

(US10245689)

Rod tensioning device and assembly process of such a device on a rod

Images



Publication numbers with kind code & date

US10245689	B2	2019-04-02	US10245689
CN107234591	A	2017-10-10	CN107234591
DE102016205086	A1	2017-10-05	DE102016205086
US20170282312	A1	2017-10-05	US20170282312



Abstract

(US20170282312)

The invention concerns a rod tensioning device having a first actuator, at least a second actuator and a tubular support sleeve dedicated to radially surround a threaded rod. Each of the actuators provides a cylinder, and a piston sliding in the cylinder and forming with the cylinder an annular chamber dedicated to be supplied with pressurized fluid. According to the invention, the at least second actuator is temporary axially arranged between the first actuator and the tubular support

sleeve for a temporary blockwise assembly, the pistons of two axially adjacent actuators being indexed in rotation together.

Inventors

ALEGRE MARC

Latest standardized assignees - inventors removed

SKF

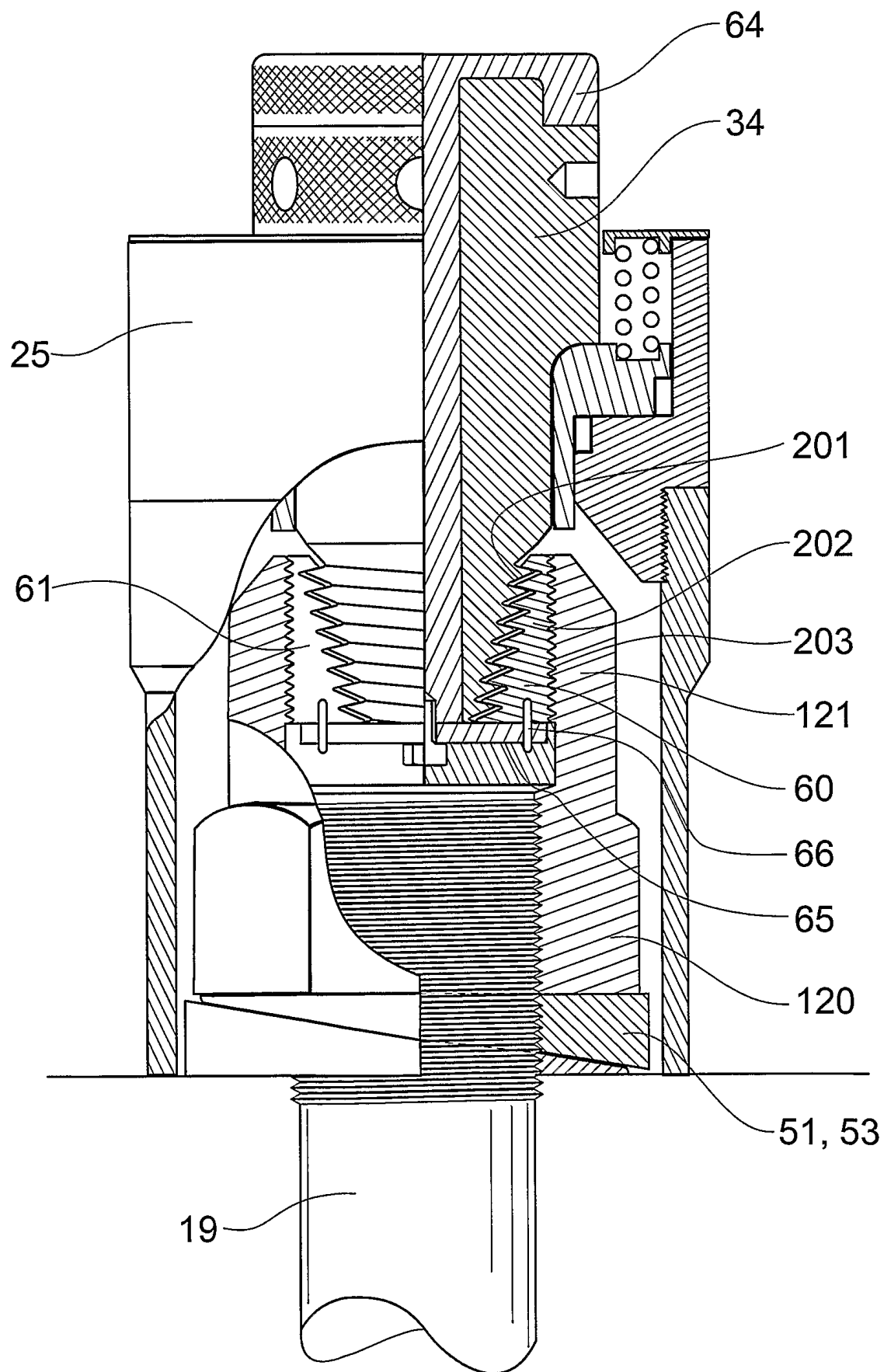
Family 61/100 - FAMPAT - ©Questel

Title

(EP1755832)

Improvements to hydraulic tensioning jacks

Images


Publication numbers with kind code & date

EP1755832	B1	2016-01-13	EP1755832
KR101205990	B1	2012-11-29	KR101205990
US8266781	B2	2012-09-18	US8266781
JP4913731	B2	2012-01-27	JP4913731



AU2005254122	B2	2010-02-18	AU2005254122				
EP1755832	A4	2010-01-13	EP1755832				
CN100546772	C	2009-10-07	CN100546772C				
US20080301926	A1	2008-12-11	US20080301926				
JP2008502487	A	2008-01-31	JP2008502487				
CN101035651	A	2007-09-12	CN101035651				
KR20070026825	A	2007-03-08	KR20070026825				
EP1755832	A1	2007-02-28	EP1755832				
AU2005254122	A1	2005-12-29	AU2005254122				
WO2005/123345	A1	2005-12-29	WO2005123345				

Abstract

(EP1755832)

Axially expandable spacers (51, 53) are insertable between a nut (20), on a bolt (19) to be tensioned, and a face (F) on a component (C) and have ramp faces (52, 54) to take up the space as the bolt (19) is tensioned by an hydraulic tensioner (25), where the puller bar (35) is engaged with an extension (121) on the nut (120). A segmented collar (60) has radially movable segments (61) to allow quick engagement/release between the puller bar (35) and the end of the bolt (19) on the nut (120).

Inventors

BUCKNELL JOHN WENTWORTH

Family 62/100 - FAMPAT - ©Questel

Title

(US3947948)

Method of assembling and disassembling a pre-tensioned screwed joint and a device for carrying out the method

Images

Publication numbers with kind code & date

JP978450	C	1979-11-29	JP-978450
DE2458810	C3	1979-06-13	DE2458810
JPS5411456	B2	1979-05-15	JP79011456
DE2458810	B2	1978-10-19	DE2458810
IT1023951	B	1978-05-30	IT1023951
GB1487219	A	1977-09-28	GB1487219
CH588332	A5	1977-05-31	CH-588332
US3947948	A	1976-04-06	US3947948
JPS50116860	A	1975-09-12	JP50116860
DK651474	A	1975-08-11	DK7406514
DE2458810	A1	1975-06-19	DE2458810
SE375832	B	1975-04-28	SE-375832

**Abstract**

(US3947948)

A pre-tensioned, screwed joint is assembled or disassembled by using a piston and rod arrangement to elastically extend the screw while a nut is applied or removed.

Inventors

FREDRIKSSON ROLAND

EKLUND INGVAR

Latest standardized assignees - inventors removed

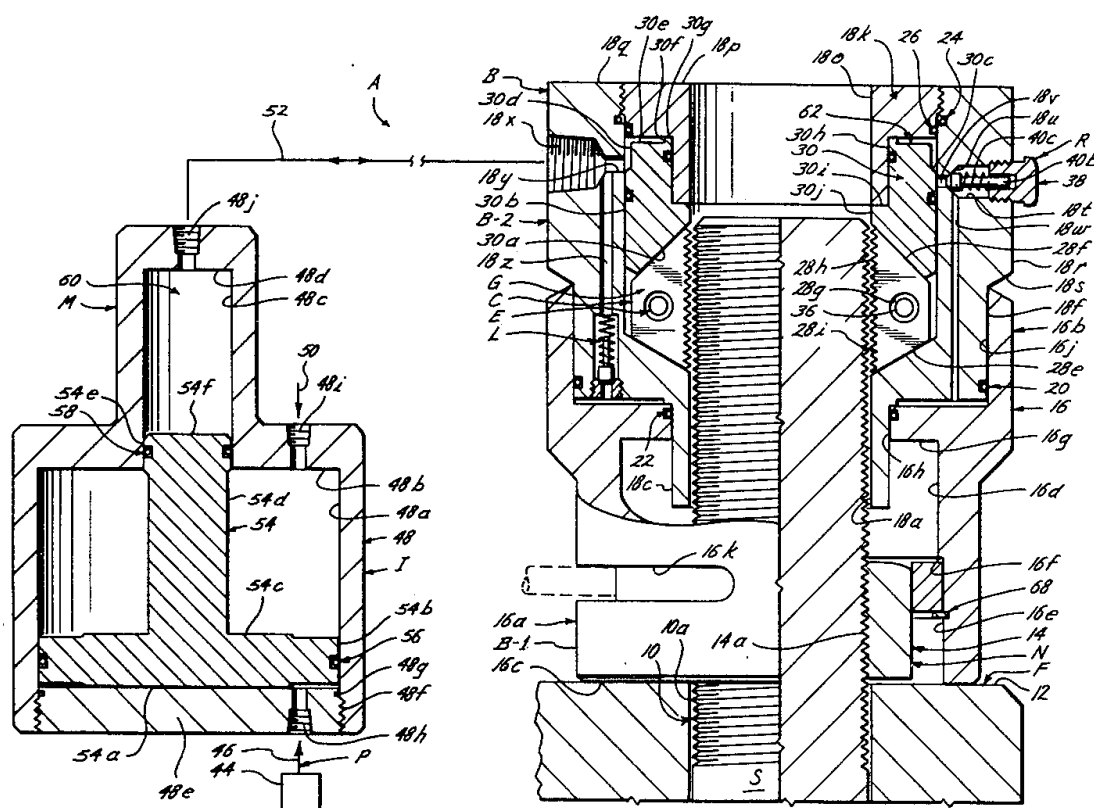
MOTALA VERKSTAD

Family 63/100 - FAMPAT - ©Questel

Title

(US4438901)

Apparatus for tensioning a stud and method of doing same

Images

Publication numbers with kind code & date

US4523742	A	1985-06-18	US4523742
US4438901	A	1984-03-27	US4438901

**Abstract**

(US4438901)

An apparatus for tensioning a stud and a method for doing same, with the apparatus including a body adapted to be removably mounted with the stud, the body including a first body member and second body member movable with respect thereto, with the second body member having a gripper assembly therewith for gripping the stud as desired, and moving means with the body for moving the second body member with respect to the first body member from a contracted position wherein the gripper assembly engages the stud and in expanded position wherein the gripper assembly tensions the stud.

Inventors

RENEAU BOBBY J

MORRIS BRUCE E

Latest standardized assignees - inventors removed

GRIPPER

MANCHESTER LUTHER L INTEREST

Family 64/100 - FAMPAT - ©Questel

Title

(EP1993853)

Vehicle wheel

Images

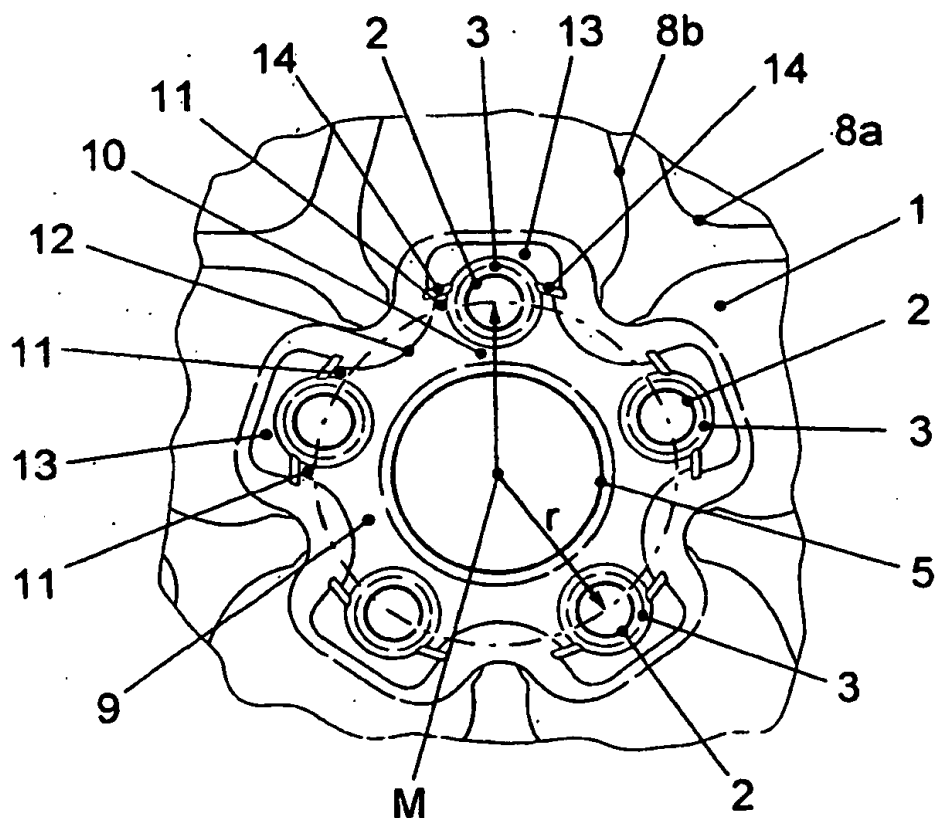


FIG. 1

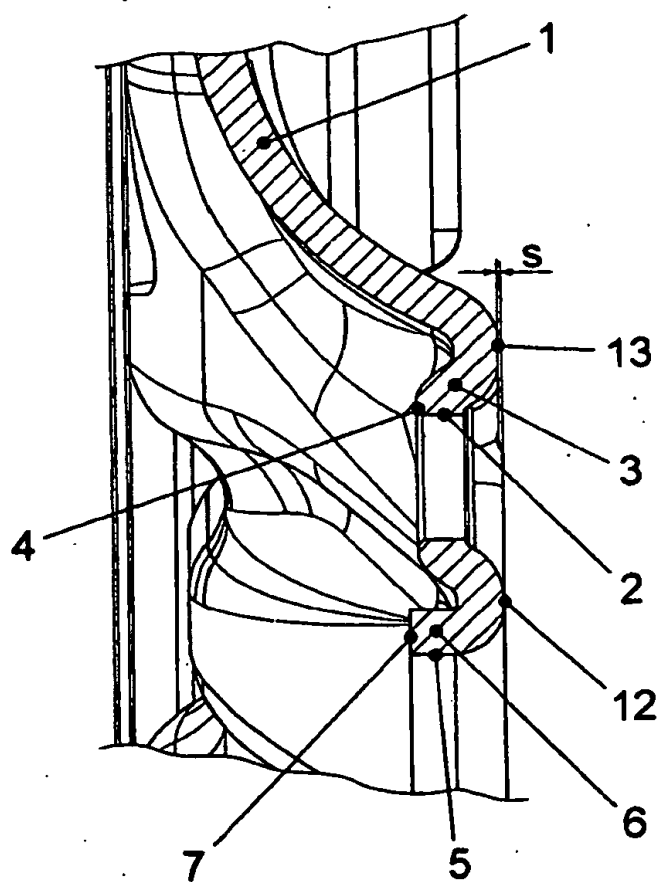


FIG. 2

Publication numbers with kind code & date

ES2356329	T3	2011-04-07	ES2356329
DE502007005894	D1	2011-01-20	DE502007005894
AT490874	T	2010-12-15	ATE490874
EP1993853	B1	2010-12-08	EP1993853
EP1993853	A1	2008-11-26	EP1993853
WO2007/101574	A1	2007-09-13	WO2007101574
DE102006009884	A1	2007-09-06	DE102006009884

**Abstract**

(EP1993853)

A vehicle wheel comprises a wheel disk (1) having a central opening (5) and contact faces which are arranged around the central opening (5), by means of which contact faces the vehicle wheel can be clamped against a mating face. Situated on at least one circle about the central point of the central opening (5) are first and second contact faces (9, 3), the first contact faces (9) of which project axially further than the second contact faces (3). It is likewise possible for the radially furthest inner contact face to project axially furthest from contact faces which are arranged concentrically around the central opening. This permits improved wheel seating properties in the case of steel structure wheels. On account of the improved force flow, it is additionally possible for the wheel disk to be formed with a lower sheet metal thickness, resulting in weight and cost advantages.

Inventors

MUENTE MARKUS

RASENACK WOLFGANG

Latest standardized assignees - inventors removed

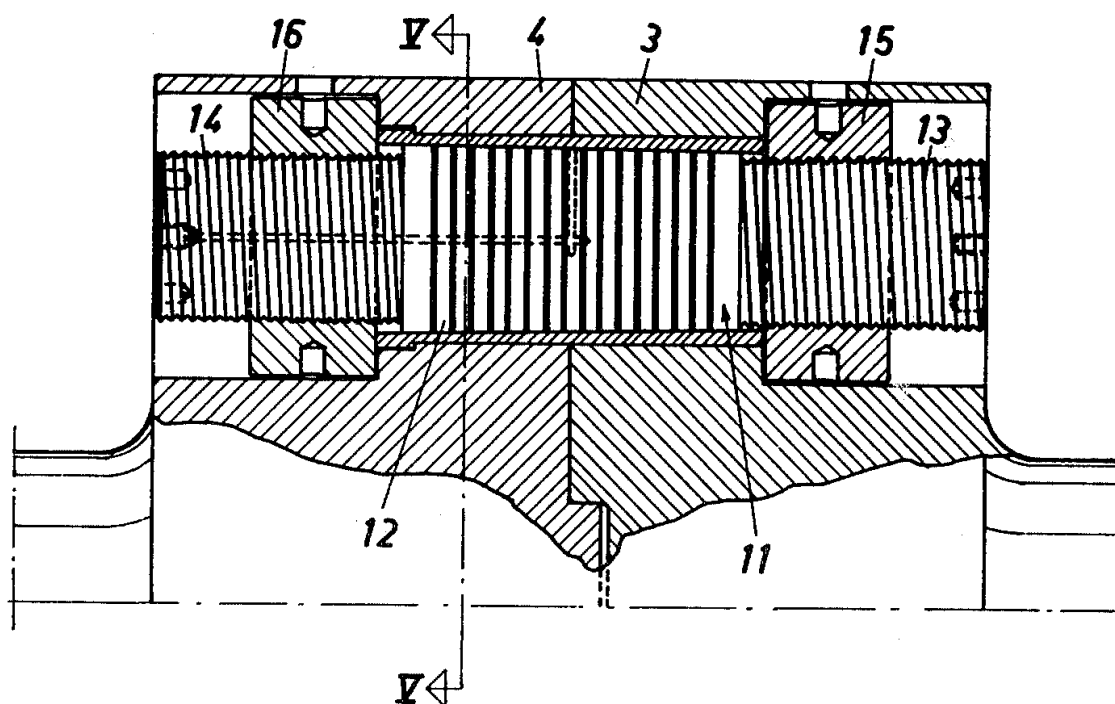
VOLKSWAGEN

Family 65/100 - FAMPAT - ©Questel

Title

(US4192621)

Method for interconnecting two shaft-ends and a shaft coupling made in accordance with said method

Images**Publication numbers with kind code & date**

DE2938476	C3	1996-02-08	DE2938476
JPH0151685	B2	1989-11-06	JP89051685
DE2938476	C2	1989-03-09	DE2938476
FR2437523	B1	1986-04-18	FR2437523
SE444046	B	1986-03-17	SE-444046
CH643331	A5	1984-05-30	CH-643331
NO147042	C	1983-01-19	NO-147042
NO147042	B	1982-10-11	NO-147042
DE2938476	A1	1980-08-14	DE2938476
FR2437523	A1	1980-04-25	FR2437523
JPS5554720	A	1980-04-22	JP55054720
NO793063	L	1980-03-27	NO-793063
SE7907825	L	1980-03-27	SE7907825
US4192621	A	1980-03-11	US4192621



Abstract

(US4192621)

The invention refers to a method for interconnecting two flange-provided shaft ends by means of taper pin bolts and expander sleeves co-operating therewith as well as a shaft coupling assembled accordingly. The shaft coupling is intended to transfer very large torques and great bending stresses, e.g. in steam and nuclear power plants. The new shaft coupling and the mounting method enable the use of the same bolt as an expansion-shell bolt, for achieving the desired press fit, and as a set bolt, which can be pre-loaded to function like a hard-tightened fitting bolt. This has been achieved on one hand by preventing the expander sleeve from moving axially, when the bolt is tightened, and on the other hand by abolishing the friction between the sleeve and the bolt after achieving the desired press fit, whereupon the bolt is further tightened up close to the yield point of the bolt. In this position the bolt is fixed by means of the nut so that the bolt preserves the desired press fit as well as the pre-load.

Inventors

BARTH AKSEL

Latest standardized assignees - inventors removed

SKF STEEL HOFORS

OVAKO STEEL COUPLINGS

Family 66/100 - FAMPAT - ©Questel

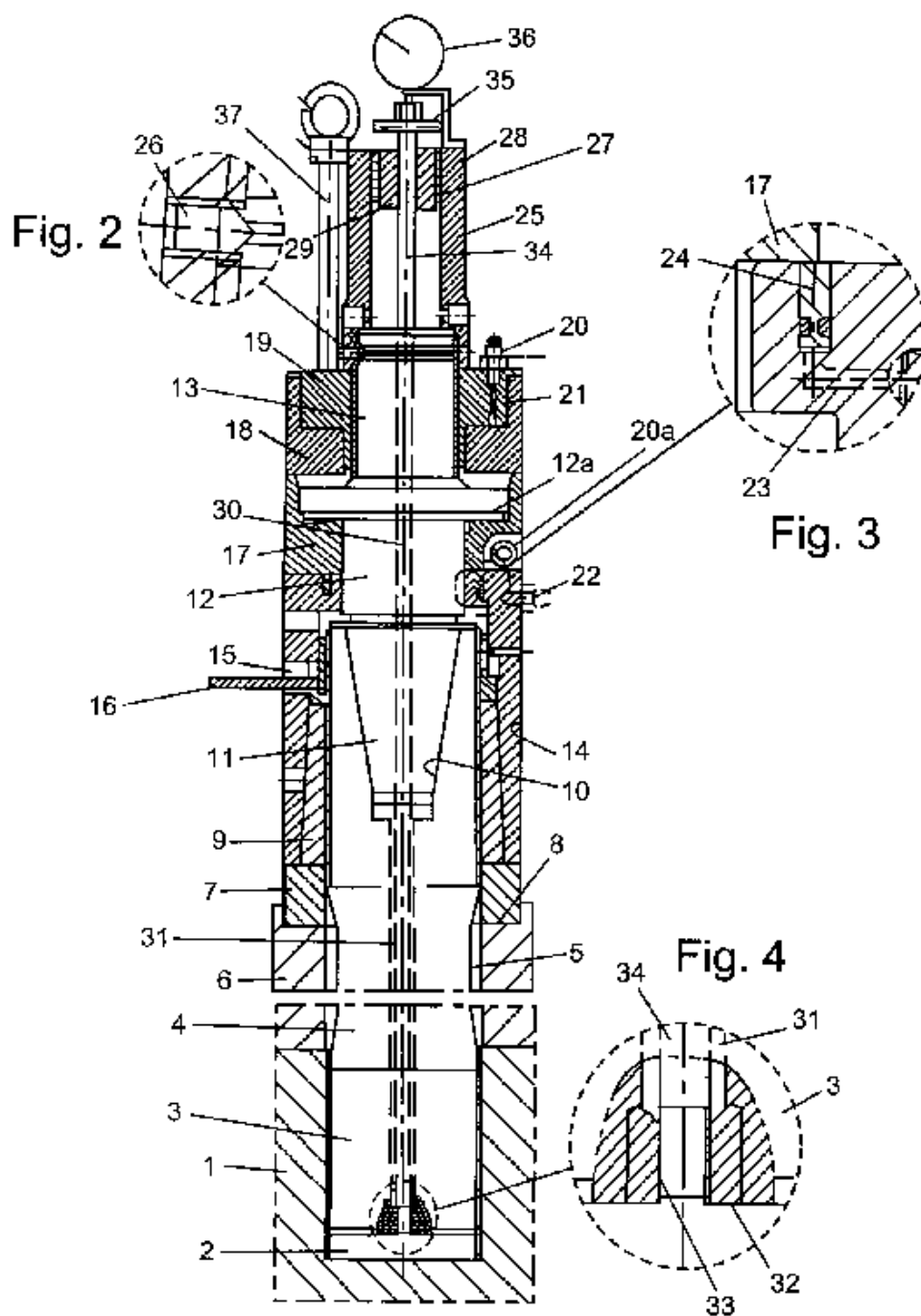
Title

(EP-907466)

A safety device at preloaded bolts

Images

Fig. 1



Publication numbers with kind code & date

CA2251824	C	2003-12-02	CA2251824
DE69708091	T2	2002-07-04	DE69708091
ES2167738	T3	2002-05-16	ES2167738
DE69708091	D1	2001-12-13	DE69708091
EP0907466	B1	2001-11-07	EP-907466
KR100287614	B1	2001-04-16	KR100287614
JP3144690	B2	2001-03-12	JP3144690
JP2000507510	A	2000-06-20	JP2000507510
US6077008	A	2000-06-20	US6077008
KR20000005375	A	2000-01-25	KR20000005375



AU704414	B2	1999-04-22	AU-704414				
EP0907466	A1	1999-04-14	EP-907466				
ZA9703151	B	1997-11-14	ZA9703151				
AU2417797	A	1997-11-07	AU9724177				
SE505947	C2	1997-10-27	SE-505947				
CA2251824	A1	1997-10-23	CA2251824				
WO97/38827	A1	1997-10-23	WO9738827				
SE9601427	L	1997-10-17	SE9601427				
SE9601427	D0	1996-04-16	SE9601427				

Abstract

(EP0907466)

A safety device at preloading of bolts for providing the bolt with an internal stress in mounted condition, and which bolt (3) at a first end is secured to a first element (1) and extends through a second element (6), which shall be clamped to the first element, and where a hydraulic preloading device (11-14, 17-19) is temporarily applied to a second end of said bolt for axially stretching the bolt (3), to create said internal stress, wherein the safety device incorporates a safety tensile bar (34) detachably fitted to the said first end of the bolt (3), and extending through a central bore (31) in the bolt (3) and further through said hydraulic preloading device (11-14, 17-19), and being held adjacent its opposite end in an expanding plug (28), provided to create in combination with friction against a sleeve (25) guiding said plug (28), a counterhold absorbing relieved energy in case of the breaking of such a bolt (3) during the preloading operation.

Inventors

ELGH MARTIN

Latest standardized assignees - inventors removed

OVAKO COUPLINGS

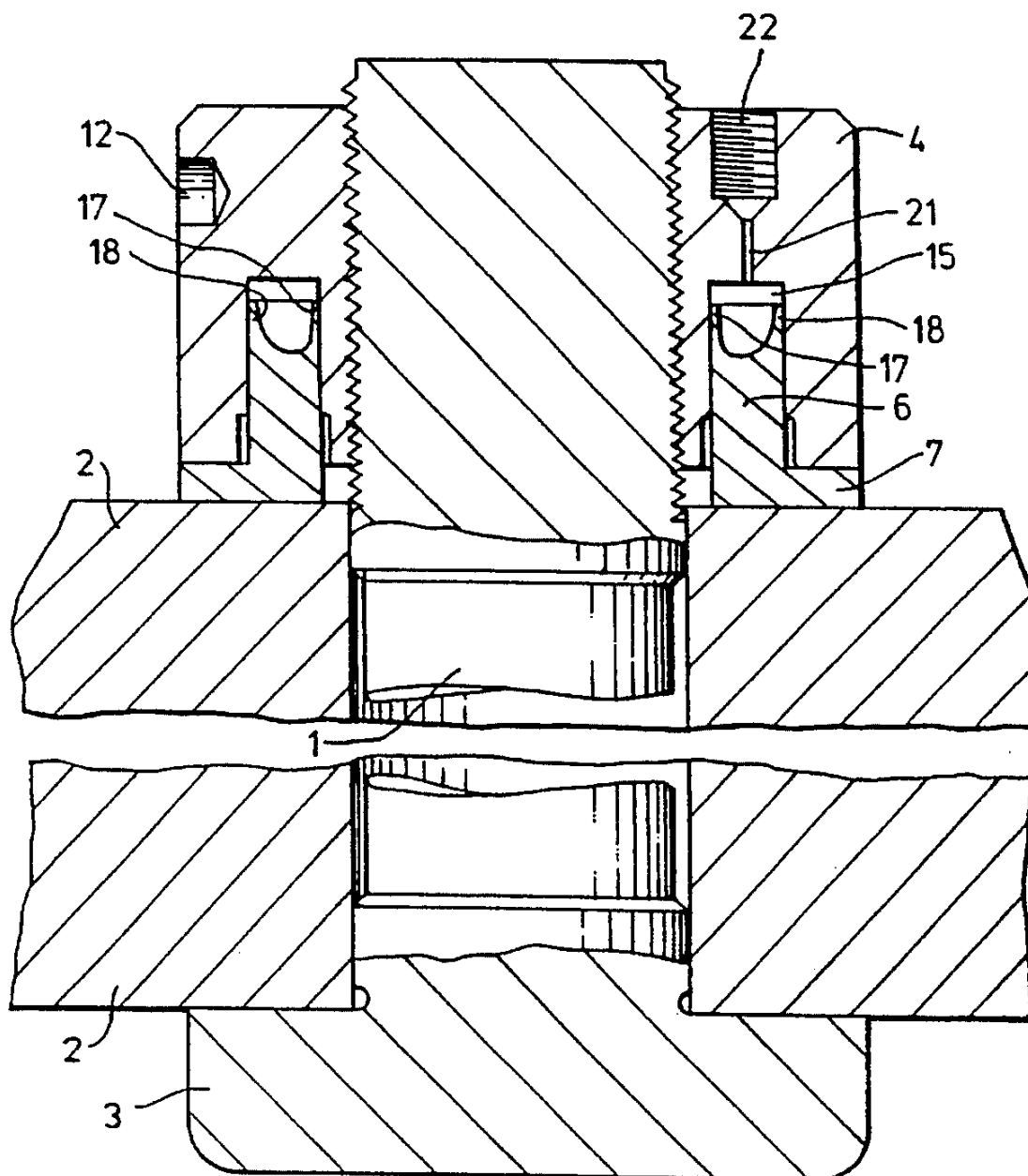
Family 67/100 - FAMPAT - ©Questel

Title

(EP-602030)

Improvements in and relating to fasteners

Images



Publication numbers with kind code & date

DE69123856	T2	1997-05-15	DE69123856
ES2098369	T3	1997-05-01	ES2098369
DE69123856	D1	1997-02-06	DE69123856
EP0602030	B1	1996-12-27	EP-602030
US5468106	A	1995-11-21	US5468106
EP0602030	A1	1994-06-22	EP-602030
WO93/05306	A1	1993-03-18	WO9305306



Abstract

(EP0602030)

An annular piston and cylinder device comprises an annular cylinder and a piston therefor, the piston having sidewall portions which extend into the cylinder towards the base thereof in the form of tapering annular webs which together define between them a recess of asymmetrical cross section.

Inventors

PERCIVAL-SMITH HARRY DAVID

Latest standardized assignees - inventors removed

HYDRATIGHT

Family 68/100 - FAMPAT - ©Questel

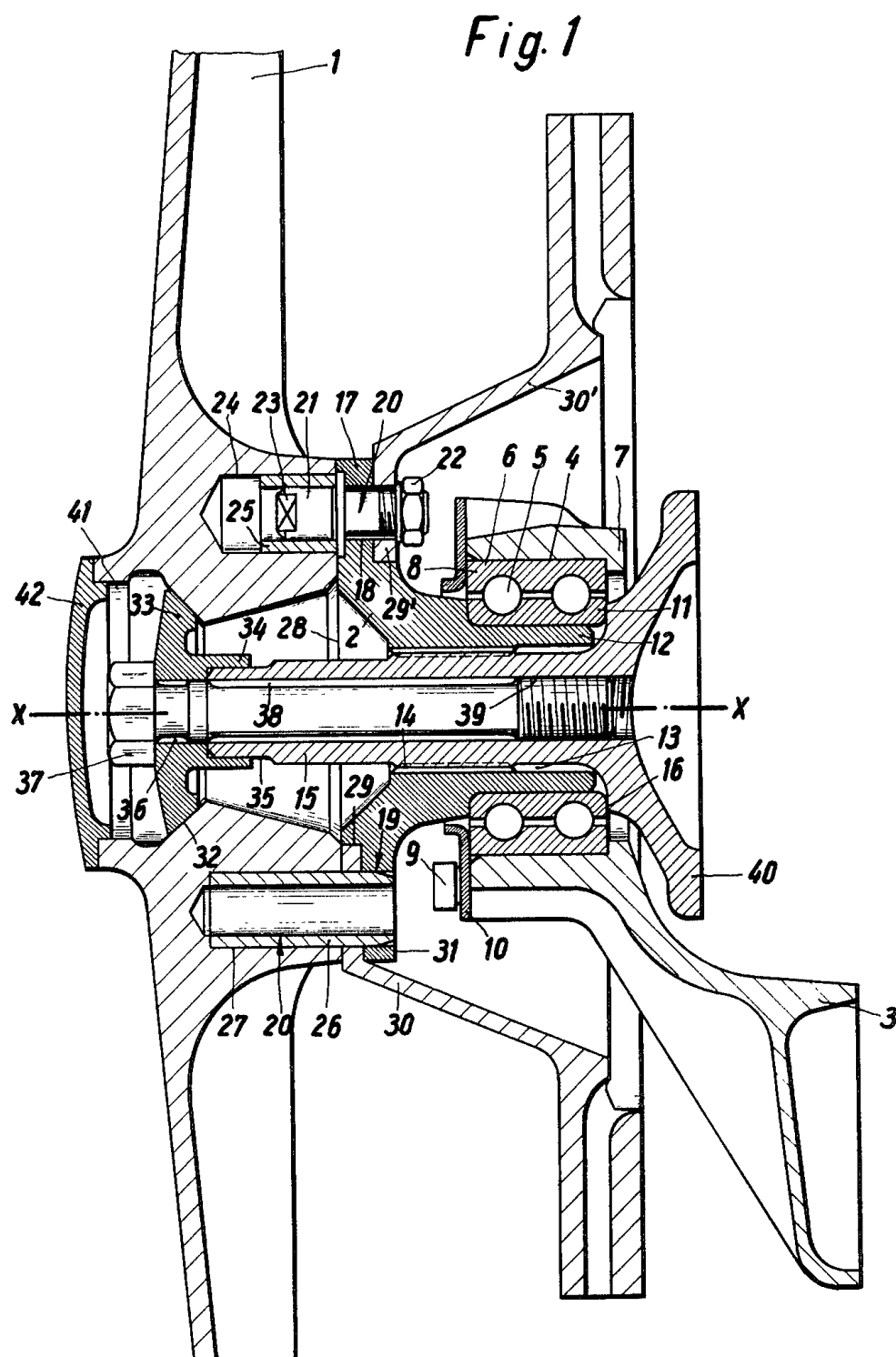
Title

(US3635303)

Bearing for wheels, particularly automotive vehicle wheels

Images

SHEET 1 OF 2

*Inventors*

RICHARD HETMANN, ERICH STOTZ, LUDWIG ASEL,
and KARL ARNOLD

BY *Craig, Antonelli, Stewart & Hill*
Attorneys

Publication numbers with kind code & date

DE1806566	C3	1978-07-13	DE1806566
DE1806566	B2	1977-11-10	DE1806566
JPS4829922	B2	1973-09-14	JP73029922
GB1274773	A	1972-05-17	GB1274773
US3635303	A	1972-01-18	US3635303
FR2022460	A	1970-07-31	FR2022460
FR2022460	A1	1970-07-31	FR2022460
DE1806566	A1	1970-05-21	DE1806566

**Abstract**

(US3635303)

A bearing for wheels, particularly for automotive vehicle wheels, wherein the wheel bearing inserted in a wheel carrier is held between a wheel spindle associated with a clamping disk and a hub, which has screwless catches disposed radially with respect to the wheel axis, for the rim. The bearing is a multiple-row antifriction roller bearing, the outer ring of which is inserted in a recess of the wheel carrier and the inner ring being clamped between the wheel spindle and the hub. The wheel spindle is tensioned with respect to the inner ring of the bearing by means of an expanding bolt extending in the direction of the wheel axle and the abutment for the expanding bolt is the clamping disk resting in the rim.

BACKGROUND OF THE INVENTION

The present invention relates to a bearing for wheels, and more particularly, to a bearing for automotive vehicle wheels, wherein the rim is attached to the wheel carrier with the aid of a wedge-shaped clamping member by means of a centrally arranged clamping bolt.

In a conventional automobile wheel bearing as shown, for example, in German published application 1,009,950, the wheel rim is held on a hub by means of a central mounting bolt or screw. In this construction, the wheel rim has a cup-shaped hub with a clamping bolt disposed in the center, by means of which an expandable sleeve having a conical inner wall is braced in the cup-shaped part. However, this type of central mounting exhibits the disadvantage that the wheel rim is held exclusively by means of a single mounting bolt in a frictional connection. This wheel bearing and mounting is suitable only for the transmission of a relatively minor range of driving torques, since in the case of larger driving torques there is the always present danger that the wheel rim will spin with respect to the wheel hub. Therefore, utilization of light metal rims in a conventional wheel bearing is impossible.

SUMMARY OF THE INVENTION

It is the aim of the present invention to provide a wheel bearing with a central wheel mounting that is lightweight in construction.

It is a further aim of the present invention to provide a bearing for wheels of automotive vehicles suitable for light metal rims, distinguished by a simple structure, low weight, and sure and reliable transmission of the driving power.

The underlying problems are solved in accordance with the present invention by providing that the wheel bearing inserted in the wheel carrier is held between a wheel spindle or trunnion associated with the clamping disk and a hub, which has screwless catches or engaging pieces disposed at a distance with respect to the wheel axis, for the rim.

Advantageously, the outer ring of an antifriction roller bearing is inserted in a recess of the wheel carrier with the inner ring being clamped between the wheel spindle and the hub.

A further advantage resides in the fact that the wheel spindle is tensioned with respect to the inner ring of the antifriction bearing with the aid of an expanding screw extending in alignment with the wheel axle. The abutment for the expanding screw is a conical clamping or tightening disk resting in the rim.

Furthermore, the hub rotating with the wheel spindle is provided with a flange. Distributed along the circumference of this flange, catches or engaging means for the wheel rim are inserted. This flange simultaneously carries the brake member associated with the wheel. This arrangement is preferably such that the catches are formed by cylindrical bolts which can be inserted in guide bushings disposed in the wheel rim. The catches can also be formed by tabular guide bushings inserted in the wheel rim, the length of which is at least three times the diameter thereof.

In a bearing for automotive vehicle wheels where the wheel carrier is fashioned to be steerable, a lock or clamping nut is

preferably provided which engages at the wheel carrier and serves to retain the hub with respect to the antifriction bearing. This locknut is disposed in a recess of the rim between the clamping disk and the hub. The locknut is preferably provided with a groove on its outer circumference for receiving a retaining ring which is disposed at a minor axial spacing with respect to an abutment surface provided in the rim. In this connection, the abutment surface is suitably arranged between the retaining ring and the front face of the hub.

In the case of vehicle wheels where the wheel spindle can be connected with a drive link serving to drive the wheel, it is advantageous to connect the wheel spindle in a shape-mating or form-locking manner with the hub, and the hub has a bearing base for the inner ring of the multiple-row antifriction bearing.

With the above arrangement, a compact wheel bearing with small antifriction bearing dimensions results. The bearing, which is also lightweight, is distinguished by a simple drive connection with the wheel spindle being especially suitable for light metal rims. In this connection, the advantage of a central mounting in the wheel axle is preserved.

By the use of an expanding screw for the central mounting, no additional securing means are required and a flush seat of the wheel rim is obtained under all operating conditions. The screwless catches or engaging means inserted in the hub or in the rim, respectively, ensure a flawless mounting of the rim. With this construction, an unintended rotation of the rim with respect to the hub is safely avoided.

The retaining ring prevents the rim from detaching itself from the hub upon breakage of the expanding screw, whereby additional safety is provided in connection with centrally mounted wheels. Furthermore, the wheel spindle can be exchanged at any time quickly and economically after the expanding screw has been released. This provides the additional possibility of mounting the axle shafts in a simple manner without having to disassemble, the entire vehicle wheel.

Inventors

HETMANN RICHARD

STOTZ ERICH

ASEL LUDWIG

ARNOLD KARL

Latest standardized assignees - inventors removed

PORSCHE

Family 69/100 - FAMPAT - ©Questel

Title

(EP-948422)

An axial tensioned bolting system and method thereof

Images

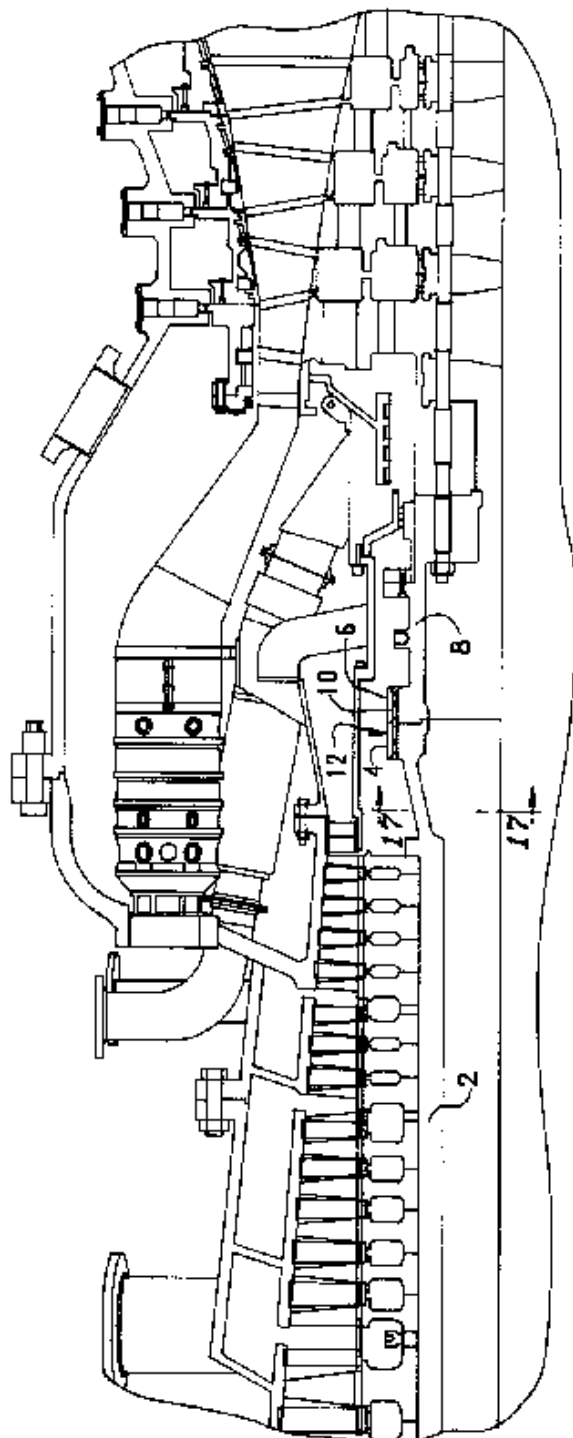


FIG. 1

Publication numbers with kind code & date

KR100570190	B1	2006-04-11	KR100570190
DE69711231	T2	2002-10-17	DE69711231
DE69711231	D1	2002-04-25	DE69711231
EP0948422	B1	2002-03-20	EP-948422
KR20000057590	A	2000-09-25	KR20000057590
EP0948422	A1	1999-10-13	EP-948422
US5927157	A	1999-07-27	US5927157
CA2274917	A1	1998-06-25	CA2274917
WO98/26899	A1	1998-06-25	WO9826899



Abstract

(EP0948422)

A bolting system for securing at least two structures having a bolt, a coupling nut, a hydraulic tensioner, and a lock nut. The bolt has a body with a threaded end and another end with a bolt head. The coupling nut is engageable with the threaded end of the bolt and has a top face having one or more dog indentations. The hydraulic tensioner has a hydraulic cell with an engagement end that engages the threaded end of the bolt. The hydraulic cell stretches the bolt while an engaging member of the hydraulic tensioner engages the dog indentations of the coupling nut with complementing, engaging member dogs. The engaging member rotates the coupling nut while the engagement end of the hydraulic tensioner tensions the bolt. The lock nut is engageable with the threaded end of the bolt.

Inventors

GOSLING MARTIN C

Latest standardized assignees - inventors removed

WESTINGHOUSE ELECTRIC

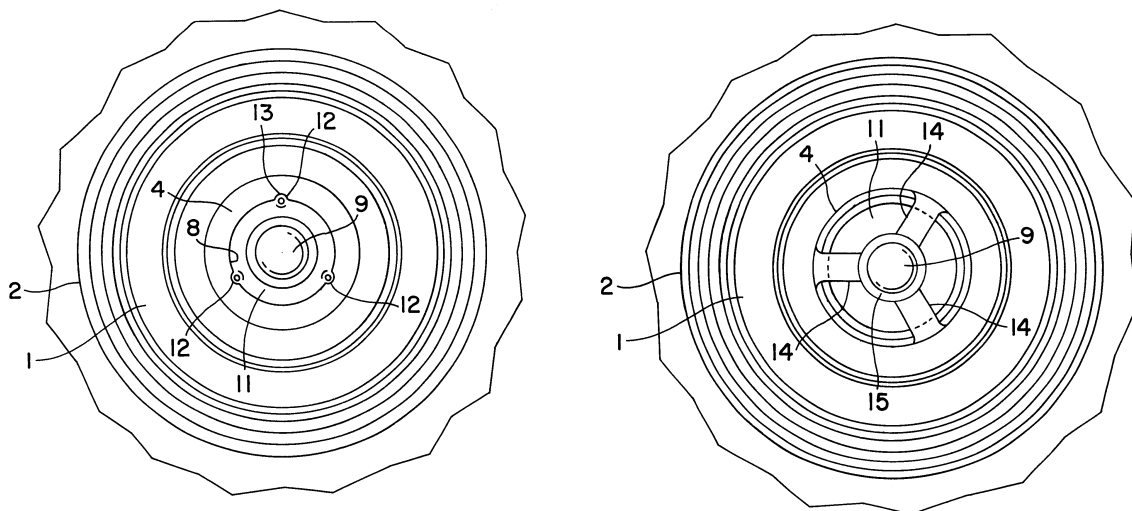
SIEMENS ENERGY

Family 70/100 - FAMPAT - ©Questel

Title

(US6241257)

Fastening device for belt pulleys

Images**Publication numbers with kind code & date**

US6241257	B1	2001-06-05	US6241257
FR2771467	B1	2000-04-28	FR2771467
FR2771467	A1	1999-05-28	FR2771467
DE29720776	U1	1998-01-15	DE29720776

**Abstract**

(US6241257)

The combination comprising, a bearing housed in a belt pulley, a sealing disk covering the bearing clamped between the head of a screw and the inner ring of the roller bearing, means attaching said sealing disk 4 directly to the inner ring axially and radially and including projections 13, 14 extending into the bore of the inner ring to secure the screw 3 for transport.

Inventors

HAUCK HELMUT

PLOESSL DEITER

STOLZ ROBERT

STOYKE BETTINA

Latest standardized assignees - inventors removed

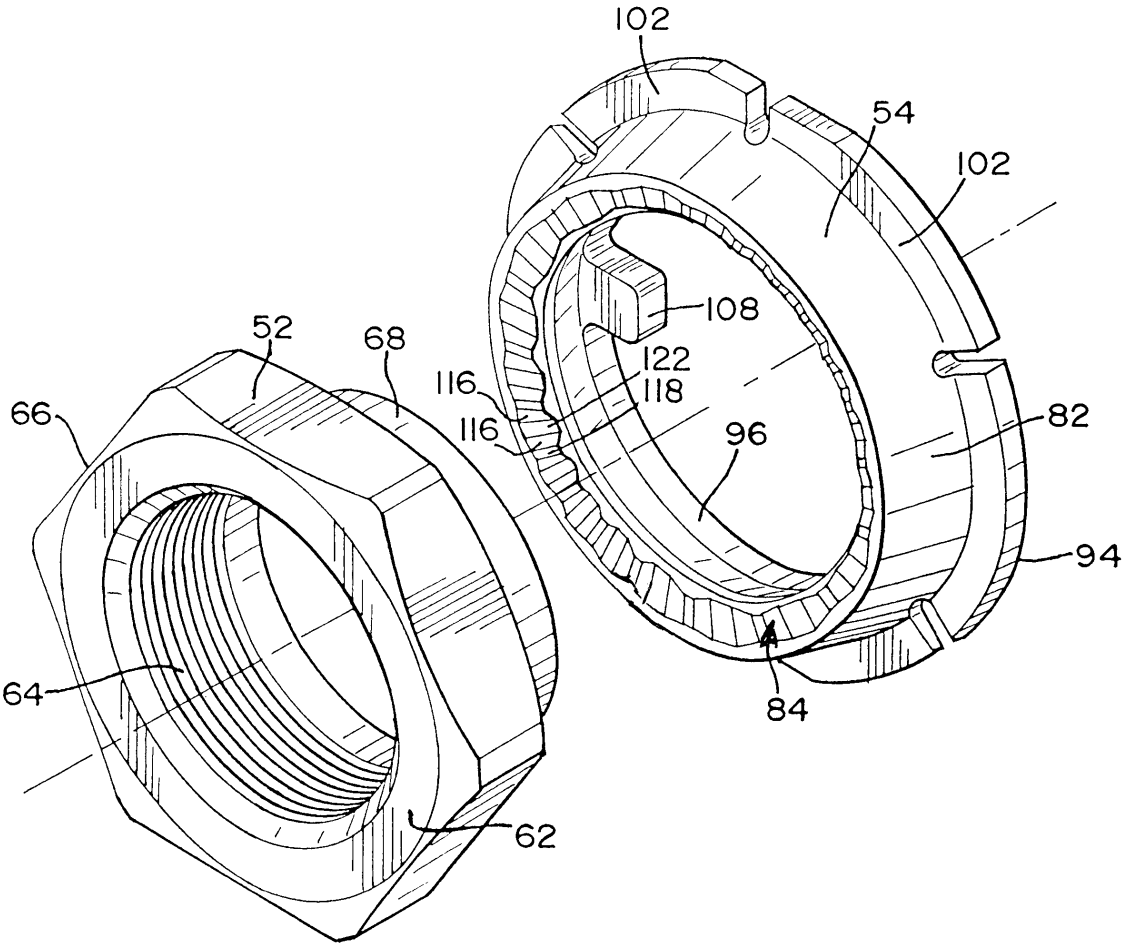
SKF

Family 71/100 - FAMPAT - ©Questel

Title
(EP1286064)

Locking fastener assembly

Images



Publication numbers with kind code & date

US8011866	B2	2011-09-06	US8011866
US7334975	B2	2008-02-26	US7334975
CA2376542	C	2007-10-30	CA2376542
US20070189876	A1	2007-08-16	US20070189876
US7226259	B2	2007-06-05	US7226259
DE60206116	T2	2006-07-13	DE60206116
JP3808812	B2	2006-05-26	JP3808812
ES2248491	T3	2006-03-16	ES2248491
DE60206116	D1	2005-10-20	DE60206116
AT304665	T	2005-09-15	ATE304665
EP1286064	B1	2005-09-14	EP1286064
US6749386	B2	2004-06-15	US6749386
US20040086354	A1	2004-05-06	US20040086354
US20040009052	A1	2004-01-15	US20040009052
JP2003074533	A	2003-03-12	JP2003074533



[EP1286064](#)

A1 2003-02-26 EP1286064

[CA2376542](#)

A1 2003-02-20 CA2376542

[US20030035699](#)

A1 2003-02-20 US20030035699

**Abstract**

(EP1286064)

A locking fastener assembly comprising a nut and a washer. The nut and washer each have opposed load bearing surfaces which include a series of annularly extending, slightly inclined faces forming shallow undulations around each surface. The load bearing surface on the nut is generally spherically convex and the load bearing surface on the washer is generally spherically concave. The nut rotates as it is installed while the washer is prevented from rotating so that the undulating bearing surface on the nut slides over the undulating bearing surface on the washer against ever increasing resistance until the assembly is properly seated and the nut is effectively prevented from counter-rotating by interference between opposed, inclined faces. A concave clamping surface is formed on the outer end of the washer on a radially extending flange. The flange flexes when the assembly is installed and resiliently urges the washer against the nut.

Inventors

HARRIS DAVID A

Latest standardized assignees - inventors removed

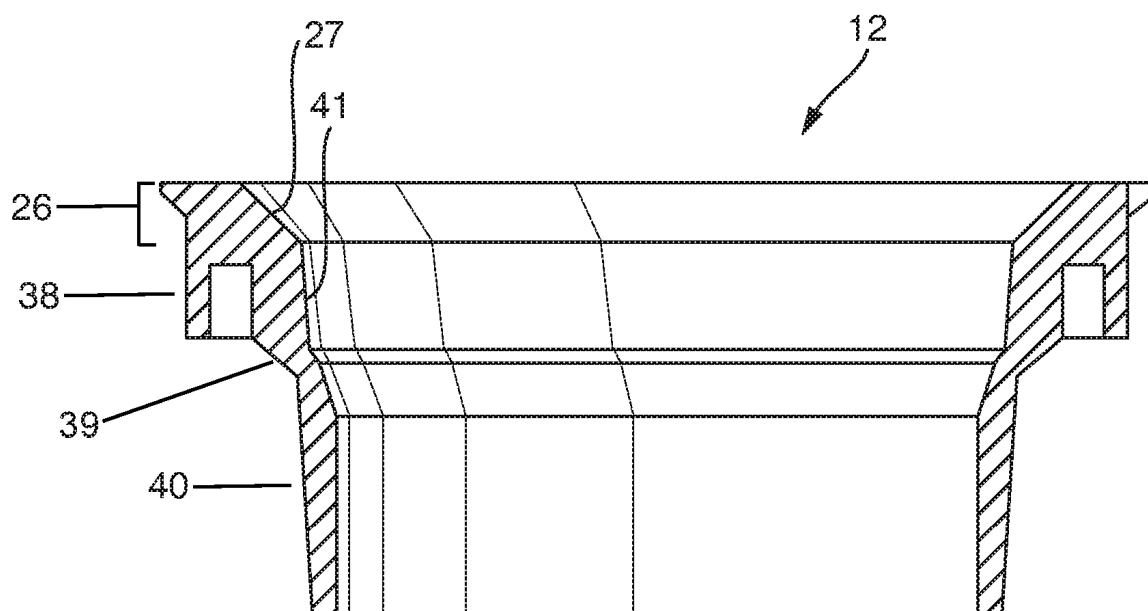
MAC LEAN FOGG

Family 72/100 - FAMPAT - ©Questel

Title

(EP3180199)

Wheel spacer system for motor vehicles

Images**Publication numbers with kind code & date**[US20190039408](#)

A1 2019-02-07 US20190039408

[US10086644](#)

B2 2018-10-02 US10086644

[JP2017527486](#)

A 2017-09-21 JP2017527486

[CN107000473](#)

A 2017-08-01 CN107000473

[EP3180199](#)

A1 2017-06-21 EP3180199

[CN205075582](#)

U 2016-03-09 CN205075582U

[DE102014215986](#)

A1 2016-02-18 DE102014215986

[US20160046146](#)

A1 2016-02-18 US20160046146

[WO2016/023848](#)

	A1	2016-02-18	WO201623848
JP3197651	U	2015-04-30	JP3197651U
DE202015000487	U1	2015-03-12	DE202015000487

**Abstract**

(EP3180199)

The invention relates to a wheel spacer system for motor vehicles having at least one wheel spacer disc (10) and a centering ring (12) inserted in a center opening of the wheel spacer disc (10), wherein the centering ring (12) has a centering section (40) which protrudes beyond a front side of the wheel spacer disc (10) and is intended to be inserted into a center opening of a rim, wherein the centering ring (12) is made of plastic and has at least one first detent apparatus arranged on the free end of a spring-loaded arm (32), wherein the wheel spacer disc (10) has a matching second detent apparatus, wherein the first detent apparatus is designed as a detent lug (34) protruding outward in the radial direction and wherein the second detent apparatus is designed by means of a circumferential recess around the center opening, a circumferential bevel around the center opening or a circumferential groove (36) around the center opening.

Inventors

WEIDNER ANDREAS

SIMONJAN EDGAR

Latest standardized assignees - inventors removed

WOHLFARTH KLAUS

Family 73/100 - FAMPAT - ©Questel

Title

(EP2812156)

Pretensioning tool and method for tightening a nut

Images

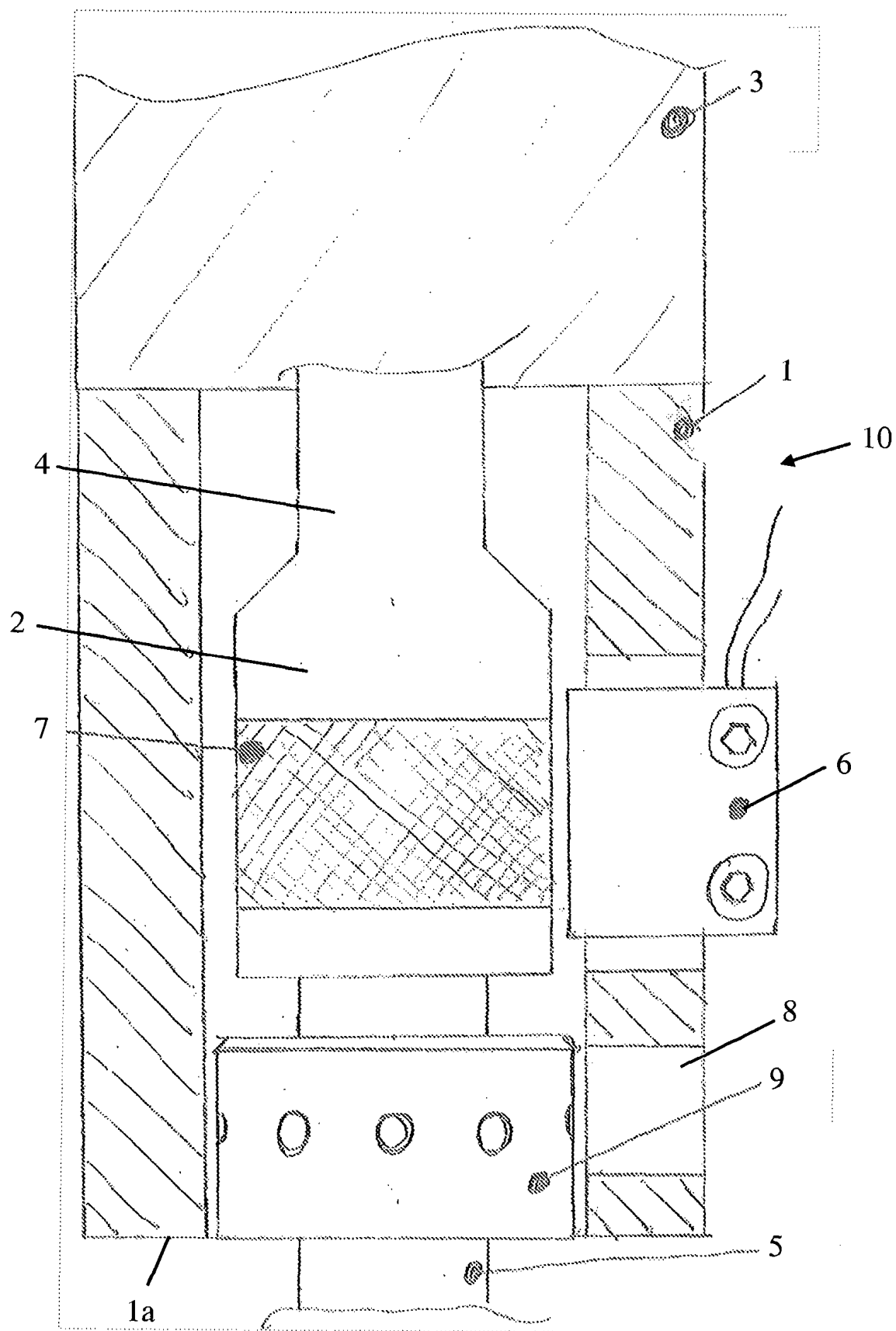


FIG. 1

Publication numbers with kind code & date

CN104053525	B	2016-08-17	CN104053525B
EP2812156	B1	2016-06-08	EP2812156
FI124931	B	2015-03-31	FI-124931



EP2812156	A1	2014-12-17	EP2812156				
CN104053525	A	2014-09-17	CN104053525				
WO2013/117807	A1	2013-08-15	WO2013117807				
FI20125142	A	2013-08-10	FI201205142				

Abstract

(EP2812156)

The pretensioning tool (10) for stud bolts (5) comprises a body (1), which can be supported against a surface of a part that is clamped by the stud bolts (5), a gripping means (2) for gripping a free end of a stud bolt (5), and at least one hydraulic cylinder (3) comprising a piston (4) that is connected to the gripping means (2) for exerting a force on the gripping means (2) in the axial direction of the stud bolt (5). The gripping means (2) comprises magnetic material, and the pretensioning tool (10) comprises a sensor (6) for measuring the movement of said magnetic material. The invention also concerns a method for tightening a nut (9) by using the pretensioning tool (10).

Inventors

MÄENPÄÄ JUHO

HUHTA TERO

Latest standardized assignees - inventors removed

WAERTSILAE

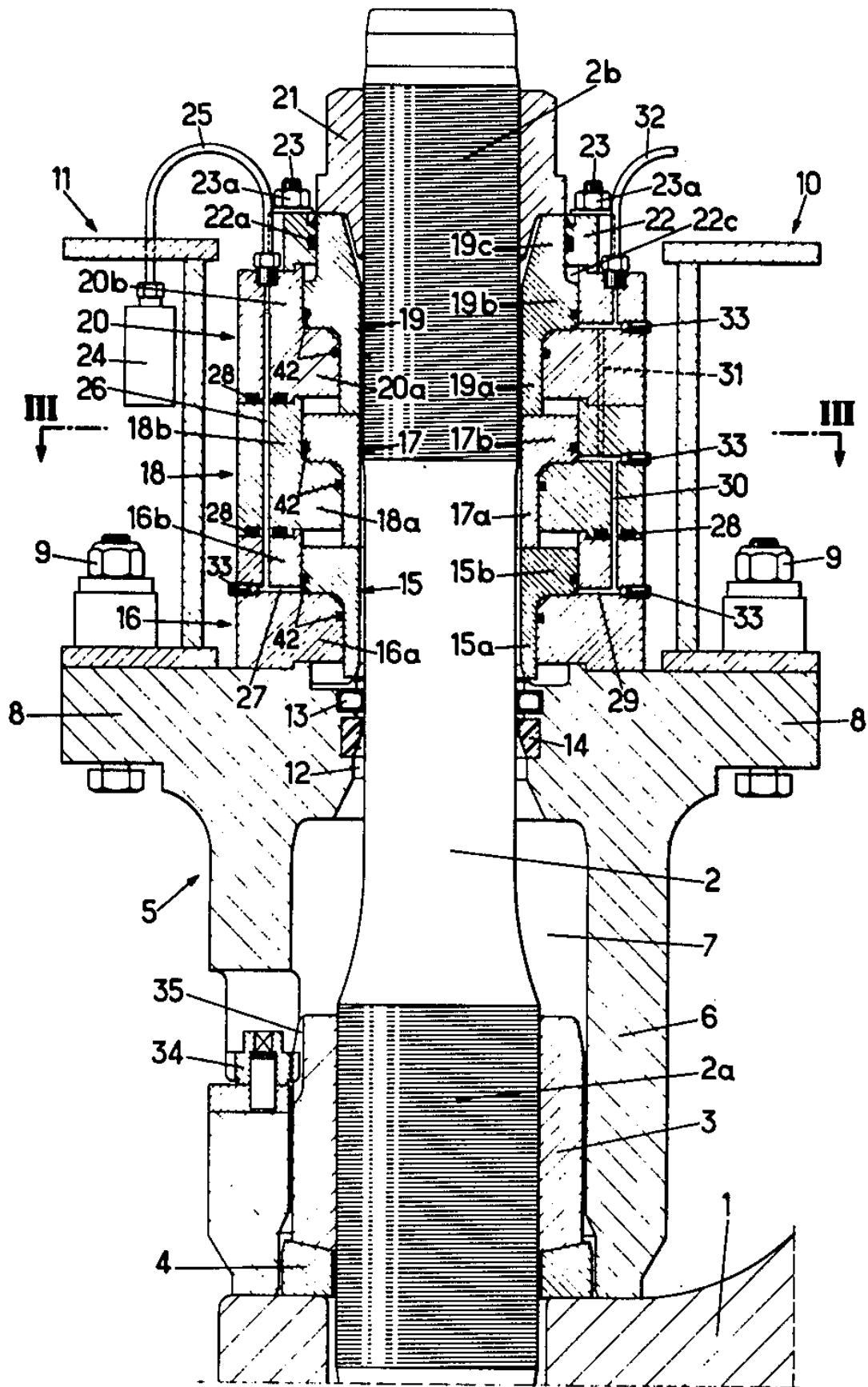
Family 74/100 - FAMPAT - ©Questel

Title

(US4074890)

Multi-stage hydraulic stretcher for elongated fasteners

Images



Publication numbers with kind code & date

DE2648722	C2	1982-04-22	DE2648722
FR2329414	B1	1979-06-15	FR2329414
US4074890	A	1978-02-21	US4074890
FR2329414	A1	1977-05-27	FR2329414
DE2648722	A1	1977-05-05	DE2648722



BE847674

A 1977-04-27 BE-847674

Abstract

(US4074890)

Hydraulic device for exerting a pre-stressing traction on bolts or pins comprises three stages, with each stage comprising a piston within a chamber. The thickness of the skirts of the piston increases from stage to stage in proportion to the pressure to which the piston of that stage is subjected during a stretching operation.

Inventors

BOUDET GEORGES

CHARPENTIER JACQUES

VINEL RENE

DESMOULINS JEAN-CLAUDE

DE BLIC EMMANUEL

Latest standardized assignees - inventors removed

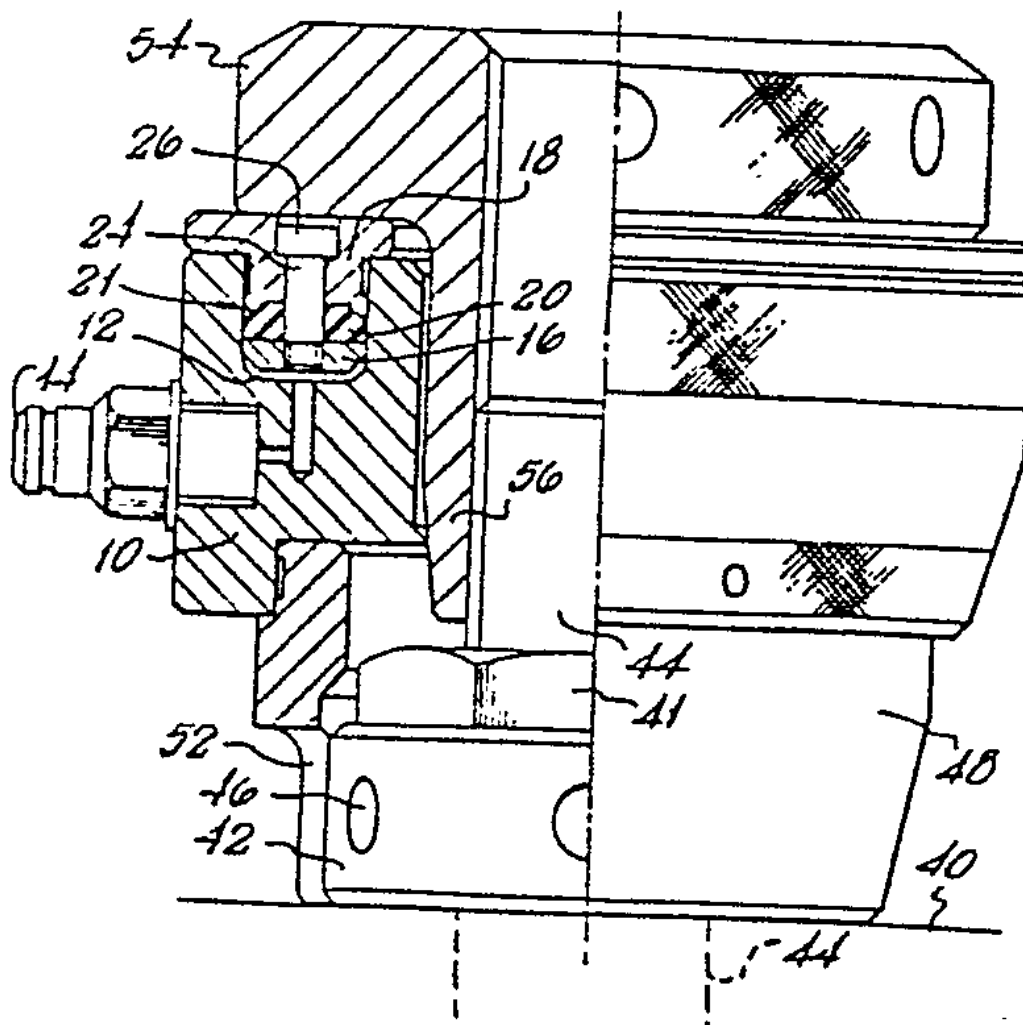
SKF

Family 75/100 - FAMPAT - ©Questel

Title

(EP---5028)

Bolt tensioning device

Images**FIG. 1**

Publication numbers with kind code & date

JP1414031	C	1987-12-10	JP1414031
JPS6219606	B2	1987-04-30	JP87019606
DK148499	C	1985-12-23	DK-148499C
DK148499	B	1985-07-22	DK-148499
FI66557	C	1984-11-12	FI--66557
FI66557	B	1984-07-31	FI--66557
AU536761	B2	1984-05-24	AU-536761
IN150679	B	1982-11-20	IN-150679
NO146528	C	1982-10-20	NO-146528
MX146848	A	1982-08-25	MX-146848
NO146528	B	1982-07-12	NO-146528
DE2961744	D1	1982-02-25	DE2961744
EP0005028	B1	1982-01-06	EP---5028
CA1101249	A	1981-05-19	CA1101249
US4249718	A	1981-02-10	US4249718
ZA7901823	B	1980-08-27	ZA7901823
GR64899	B	1980-06-07	GR--64899
AR216981	A1	1980-02-15	AR-216981
JPS556076	A	1980-01-17	JP55006076
ES479658	A1	1980-01-01	ES-479658
AU4613679	A	1979-11-22	AU7946136
EP0005028	A1	1979-10-31	EP---5028
BR7902335	A	1979-10-23	BR7902335
DK156879	A	1979-10-19	DK7901568
FI791256	A	1979-10-19	FI7901256
NO791272	L	1979-10-19	NO-791272
PT69499	A	1979-05-01	PT--69499

**Abstract**

(EP0005028)

Hydraulic bolt tightening means comprises a body (10), a piston (16, 18) mounted in the body, the piston (16, 18) and the body (10) being of generally annular configuration to allow the device to be assembled in encircling fashion to a bolt or like component (44), and an annular chamber (12) between the body (10) and the piston (16, 18) for the admission of fluid under pressure to effect relative axial displacement of the body (10) and the piston (16, 18) whereby the axial dimension is increased, the piston comprising an inner part (16) having a pressure area which is subject to the pressure in said chamber (12) and an outer part (18) to which the fluid pressure is transmitted via said inner part (16) and an interposed mass of solid, yielding and substantially incompressible material (20) received in a recess or groove in said outer piston part (18) and whose effective pressure area is less than that of said inner piston part whereby, in use, said mass is caused to expand radially so as to seal against leakage of fluid from the chamber (12) while at the same time transmitting the pressure to the outer piston part (18).

Inventors

HEATON, FREDERICK

Latest standardized assignees - inventors removed

HYDRA TIGHT

Family 76/100 - FAMPAT - ©Questel

Title

(EP2289663)

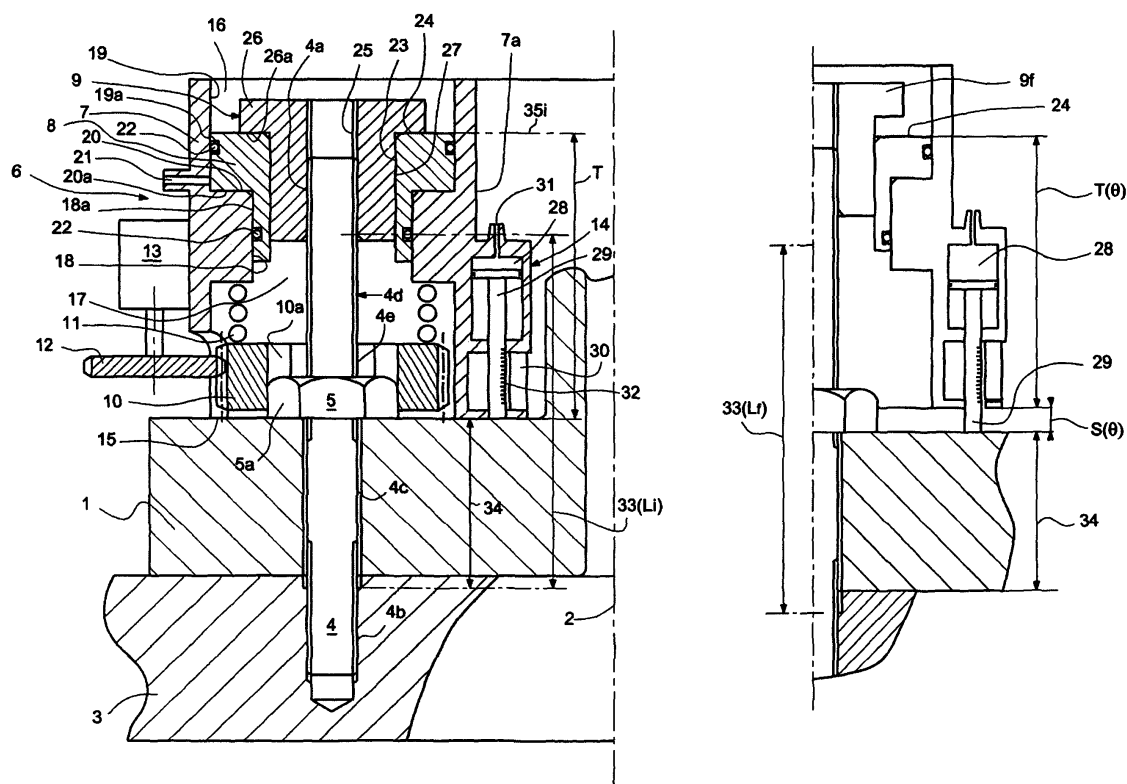
Hydraulic stud bolt tensioning device and method for pulling large screws using hydraulic stud bolt tensioning device

Family 77/100 - FAMPAT - ©Questel

Title

(EP2057450)

Process and device for setting up and controlling a hydraulic chucking of one or a plurality of bolts

Images**Publication numbers with kind code & date**

EP2057450	B1	2016-04-13	EP2057450
CN101512313	B	2013-02-27	CN101512313B
US8261421	B2	2012-09-11	US8261421
JP2010501875	A	2010-01-21	JP2010501875
US20100005663	A1	2010-01-14	US20100005663
CN101512313	A	2009-08-19	CN101512313
FR2905460	B1	2009-08-07	FR2905460
KR20090060413	A	2009-06-12	KR20090060413
EP2057450	A2	2009-05-13	EP2057450
WO2008/025922	A3	2008-04-17	WO200825922
FR2905460	A1	2008-03-07	FR2905460
WO2008/025922	A2	2008-03-06	WO200825922

**Abstract**

(EP2057450)

Process for setting up and controlling the axial preloading of a chucking portion (34) of at least one stem of the screw or bolt type (4). Preloading comprises tensioning the extended portion (33) of the stem (4) comprising the chucking portion (34), using a load-handling device (9) of the stem (4) and a tensioning device (6). The control process comprises a stage where, before preloading, the tensioning device is brought into a rest position and the load-handling device (9) is brought alongside the tensioning device (6) in the rest position, and a stage where, after the preloading has been completed, the tensioning device is returned to the said rest position and flattened in the rest position toward one of the extremities of the extended portion (33) and a comparison is made, in relation to a threshold, of the difference between the initial length (Li) and the final length (Lf) of the extended portion (33).

Inventors

MONVILLE JEAN-MICHEL

Latest standardized assignees - inventors removed

SKF

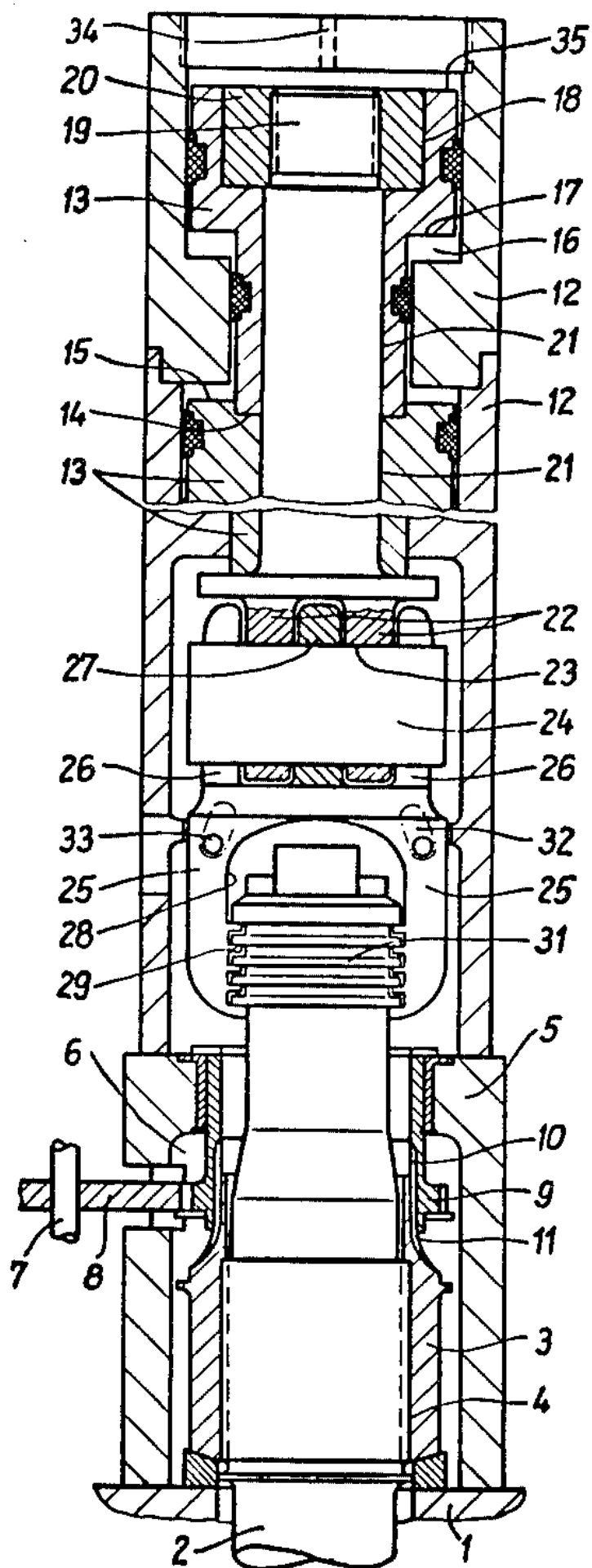
Family 78/100 - FAMPAT - ©Questel

Title

(US4175453)

Device for tensioning several screw bolts

Images



Publication numbers with kind code & date

CH624596	A5	1981-08-14	CH-624596
FR2387732	B1	1980-08-29	FR2387732
US4175453	A	1979-11-27	US4175453
JPS53132900	A	1978-11-20	JP53132900
FR2387732	A1	1978-11-17	FR2387732
DE2718602	A1	1978-10-26	DE2718602
SE7714590	L	1978-10-23	SE7714590

**Abstract**

(US4175453)

A device for tensioning a screw bolt wherein the device comprises a lifting cylinder having a piston and arranged on a support ring and means responsive to the piston for engaging the screw bolt in a positive locking manner including: a first member engaged by the piston; a second member hinged to the first member; and guide surfaces for pressing the second member against an engagement surface of the screw bolt in a positive engaging and self-locking manner.

Inventors

EXNER GERHARD

FESTINORI VOLFANGO

Latest standardized assignees - inventors removed

KRAFTWERK UNION

Family 79/100 - FAMPAT - ©Questel

Title

(US9375815)

Tension device for prestressing an assembly by means of a threaded rod, and method for assembling the tension device

Images

Publication numbers with kind code & date

DE69805941	D1	2002-07-18	DE69805941
NO312752	B1	2002-07-01	NO-312752
EP0922527	B1	2002-06-12	EP-922527
US6065737	A	2000-05-23	US6065737
EP0922527	A1	1999-06-16	EP-922527
NO985771	L	1999-06-10	NO-985771
NO985771	D0	1998-12-09	NO9805771
GB9726092	D0	1998-02-11	GB9726092

**Abstract**

(EP0922527)

An hydraulic, bolt tensioning device comprising a reaction component (11) which in use bears against the member (12) from which the bolt shank (13) protrudes, the reaction component (11) having a shank receiving bore (17) extending therethrough, an annular, axially moveable component (21) carried by said reaction component (11) and moveable axially relative thereto by the introduction of hydraulic fluid under pressure between said components, a cam ring (26) secured to said axially moveable component (21) for axial movement therewith, and rotatable relative to said component (21) about the axis thereof, and, a tensioning nut (34) secured to said cam ring (26) for movement therewith, said tensioning nut (34) being divided into at least two relatively displaceable segments (38, 39) moveable relative to said cam ring (26) between an open position in which the shank of a bolt to be tensioned can pass freely between said segments, and an operative position in which the thread portions on said segments mate with the thread of said bolt shank, said cam ring (26) cooperating with said nut segments (38, 39) when said nut segments are engaged with a bolt shank (13) and said axially moveable member (21) is moved axially in a direction to tension the bolt shank, to load the segments radially inwardly to grip the bolt shank. <IMAGE>

Inventors

RICHARDSON MARTIN EDWARD GEORG

WELLINGS PETER

Latest standardized assignees - inventors removed

HYDRA TIGHT

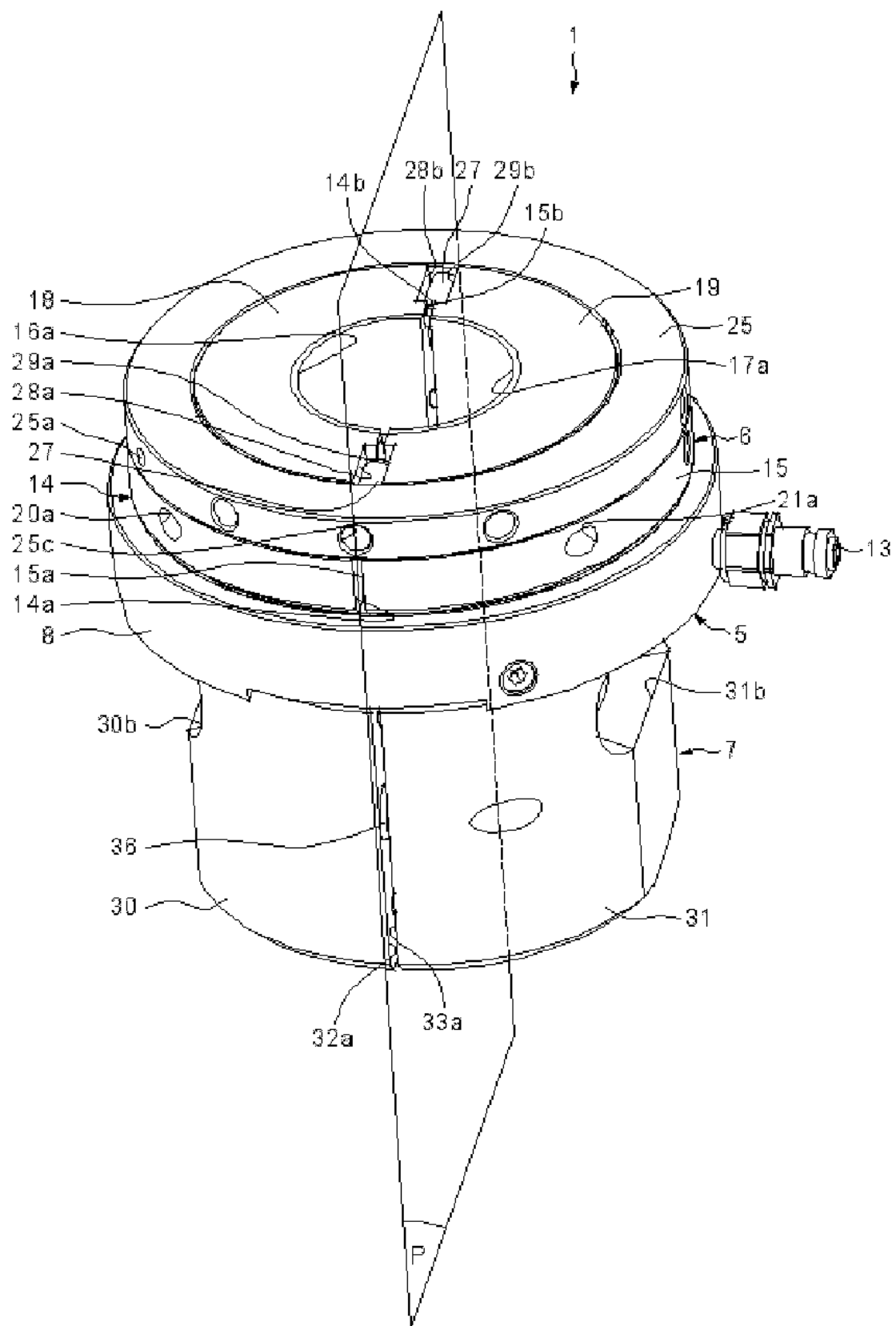
Family 81/100 - FAMPAT - ©Questel

Title

(EP2689887)

Tension device for prestressing an assembly by means of a threaded rod, and method for assembling the tension device

Images

FIG.1**Publication numbers with kind code & date**

CN103573783	B	2017-04-12	CN103573783B
EP2689887	B1	2015-07-15	EP2689887
RU2013134938	A	2015-01-27	RU2013134938
FR2993807	B1	2014-08-29	FR2993807



[CN103573783](#) A 2014-02-12 CN103573783

[FR2993807](#) A1 2014-01-31 FR2993807

[EP2689887](#) A1 2014-01-29 EP2689887



Abstract

(EP2689887)

Device (1) for tensioning a threaded rod (2) comprising an actuator (5) able to exert an axial tensile force on the threaded rod (2) with respect to a structure (4) to be tensioned, the said tension device (1) comprising a cylinder (8), a piston (9), a tubular skirt (7) in contact with the cylinder (8) and a surface (4a) of the said structure (4) to be tensioned, and a tie (6) for transmitting the axial tensile force of the actuator (5) towards an end (2a) of the threaded rod (2). The tie (6) and the tubular skirt (7) each comprise at least two semicylindrical parts (14, 15; 30, 31) each having two substantially planar axial surfaces (14a, 14b, 15a, 15b; 32a, 32b, 33a, 33b), the two axial surfaces (14a, 14b; 32a, 32b) of one semicylindrical part (14, 30) being joined radially respectively with one of the two axial surfaces (15a, 15b; 33a, 33b) of the other semicylindrical part (15, 31), so as to form a part of revolution.

Inventors

FAUS JOSÉ

DECLERCK DIDIER

Latest standardized assignees - inventors removed

SKF

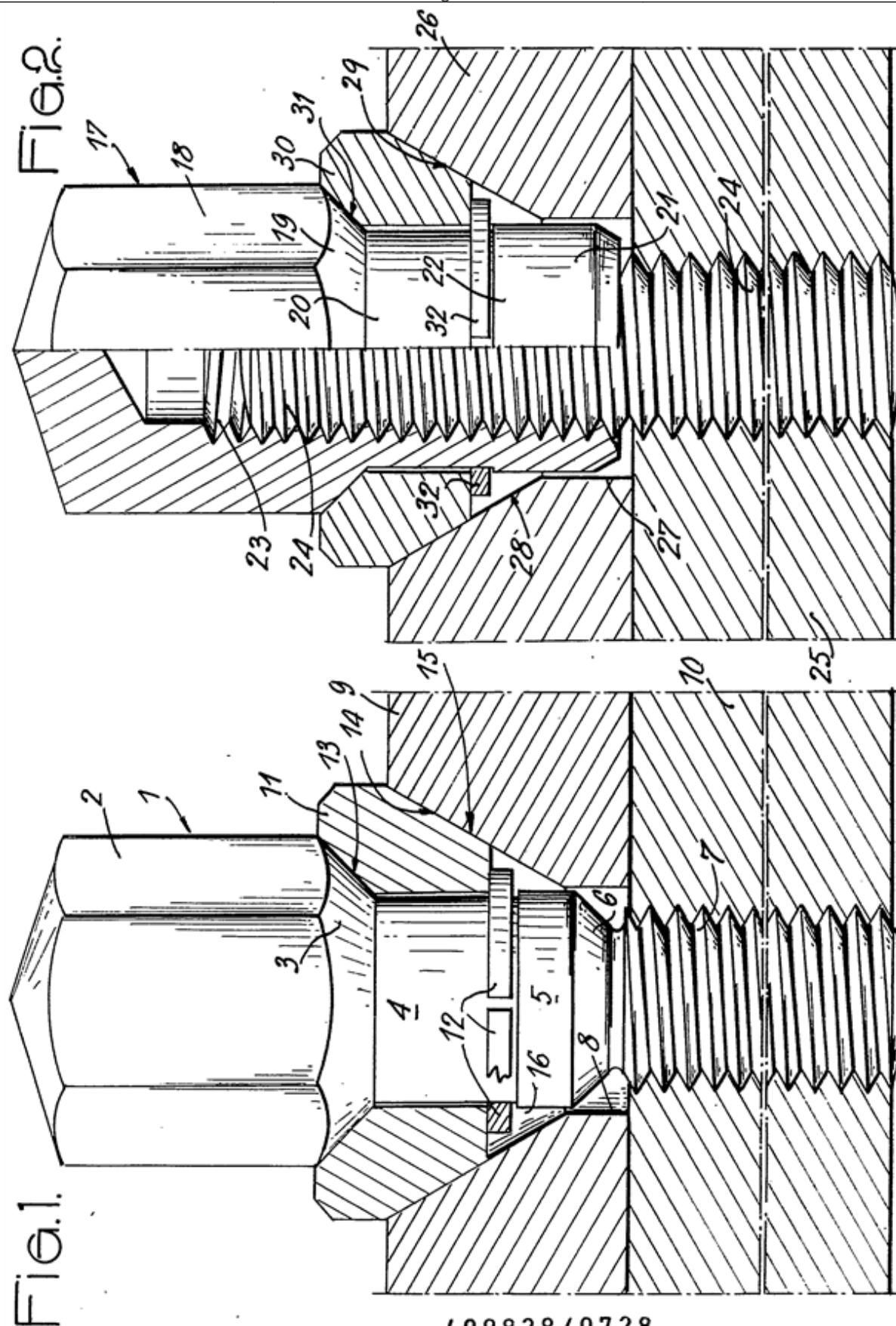
Family 82/100 - FAMPAT - ©Questel

Title

(FR2210515)

Organe de fixation pour roue de véhicule.

Images



409828/0728

Publication numbers with kind code & date

FR2210515	B1	1976-06-04	FR2210515
IT1001161	B	1976-04-20	IT1001161
DE2362837	B2	1975-10-02	DE2362837
GB1398697	A	1975-06-25	GB1398697
FR2210515	A	1974-07-12	FR2210515
FR2210515	A1	1974-07-12	FR2210515



DE2362837

A1 1974-07-11 DE2362837

**Abstract**

(FR2210515)

1398697 Attaching vehicle wheels to hubs AMIL SA 12 Dec 1973 [20 Dec 1972] 57618/73 Heading B7C [Also in Division F2] A light alloy or synthetic resin vehicle wheel 9 (Fig. 1) or 26 (Fig. 2) is secured to a supporting disc 10, 25 by fixing devices 1, 17 each comprising a head 2, 18 connected by a frusto-conical portion 3, 19 to a cylindrical portion 4, 20, and either a screw thread 7 formed on a shank extension of the portion 4 (Fig. 1) or an internal screw thread 23 (Fig. 2), and a captive washer 11, 30 of harder material than the wheel 9, 26, freely rotatable on the cylindrical portion 4, 20 and having an internal frusto-conical bearing surface 13, 31 co-operating with the portion 3, 19 and an external frusto-conical bearing surface 14, 29 seating in a frusto-conical bearing surface 15, 28 of the wheel disc 9, 26. The washer is retained on the bolt 1 or nut 17 by a circlip 12, 32 bearing on a shoulder or in a peripheral groove round the cylindrical portion 4, 20. The nut 17 may have a through bore or, as shown, be closed at the head end. The bearing surface 14, 29 may have protuberances to increase friction with the seating 15, 28.

(From GB1398697 A)

Inventors

ZEPPELLINT, SERGE VICTOR AMILCAR, FONTENAY-SOUS-BOIS (FRANKREICH)

Latest standardized assignees - inventors removed

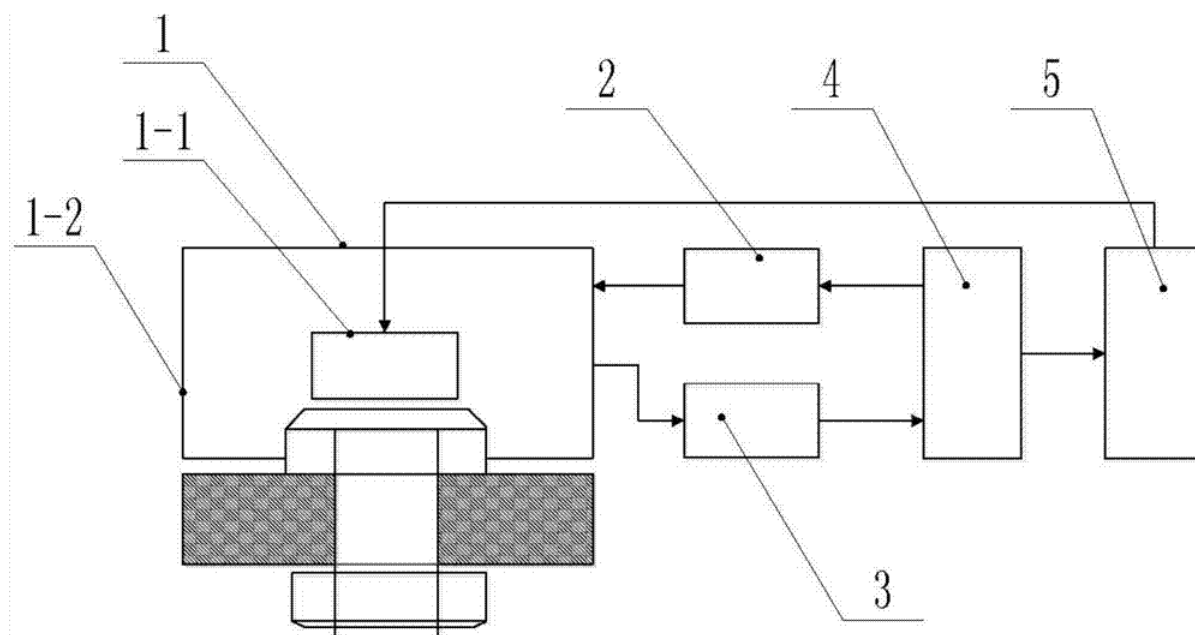
AMIL

Family 83/100 - FAMPAT - ©Questel

Title

(CN108015530)

Bolt pretightening force automatic loading and control device

Images**Publication numbers with kind code & date**

CN108015530

A 2018-05-11 CN108015530

**Abstract**

(CN108015530)

The invention relates to the field of bolt pretightening force detection, and particularly relates to a bolt pretightening force automatic loading and control device. The bolt pretightening force automatic loading and control device comprises a bolt pretightening force loading and measuring device, an electromagnetic ultrasonic transmitting device, an electromagnetic ultrasonic receiving device, a control device and a servo motor, wherein the bolt pretightening force loading and measuring device comprises a bolt pretightening force loading device and a bolt pretightening force measuring device, the servo motor

is connected with the bolt pretightening force loading device, the electromagnetic ultrasonic transmitting device and the electromagnetic ultrasonic receiving device are respectively connected to the input end and the output end of the bolt pretightening force measuring device, the output end of the electromagnetic ultrasonic receiving device is connected with the input end of the control device, and the output end of the control device is connected with the servo motor. According to the bolt pretightening force automatic loading and control device, a numerical value of pretightening force can be detected in real time in a pretightening force loading process, the loading of the pretightening force is adjusted according to the measured value, an ultrasonic coupling agent is not needed in a detection process, and a measuring result is not influenced by the surface roughness of a bolt.

Inventors

LI CE

ZHAO PU

LI YONGQIAN

JIANG CHUANLIU

QU ZHENGYANG

XIA SHENG

WANG KAICAN

ZHAI GUOFU

Latest standardized assignees - inventors removed

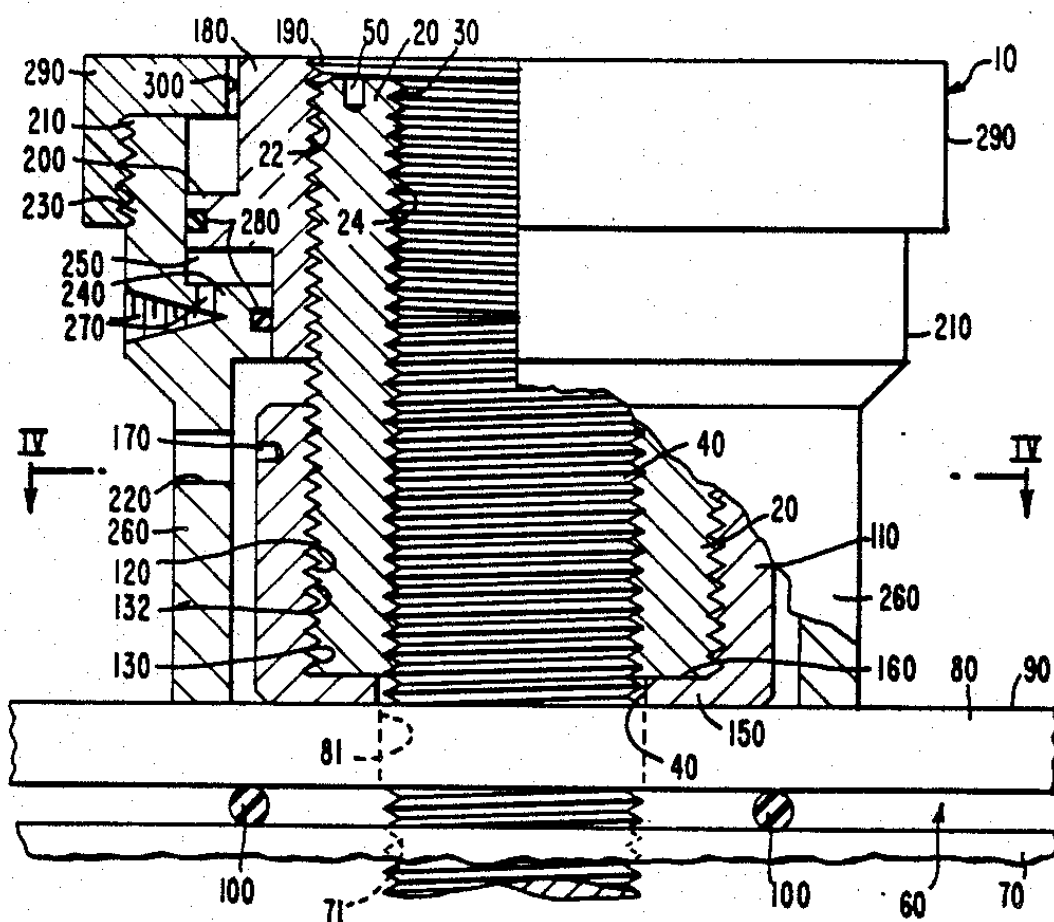
HARBIN LINGSHENG TECHNOLOGY

Family 84/100 - FAMPAT - ©Questel

Title

(US4844418)

Short stud tensioning apparatus

Images

Publication numbers with kind code & date[US4844418](#)

A 1989-07-04 US4844418

**Abstract**

(US4844418)

Disclosed herein is a short stud tensioning apparatus for tensioning and detensioning an externally threaded stud or bolt protruding a short distance above a surface. The apparatus includes an internally threaded sleeve and a gripper having internal and external threads. The gripper surrounds the stud for threadably engaging the stud and the sleeve surrounds the gripper for threadably engaging the gripper. When engaged on the stud, the gripper serves as an extension of the stud. Hydraulic force is applied to a puller bar which is threadably connected to the gripper so that the gripper travels upwardly when hydraulic force is applied to the puller bar. The upwardly travel of the puller bar causes a correspondingly upward translation of the stud thus tensioning the stud. While the stud is in tension, the sleeve is run down the gripper until the sleeve engages the surface from which the stud protrudes. The stud will thus remain in tension even after the hydraulic force acting on the puller bar is removed. After the tensioning operation is completed, only the sleeve and gripper remain about the stud. Hence, the sleeve and gripper combination replaces the traditional nut. Of course, the stud may be detensioned in a manner similar to its tensioning except that the sleeve is disengaged from the surface by running the sleeve and gripper up the stud.

Inventors

COLE WILLIAM G

Latest standardized assignees - inventors removed

WESTINGHOUSE ELECTRIC

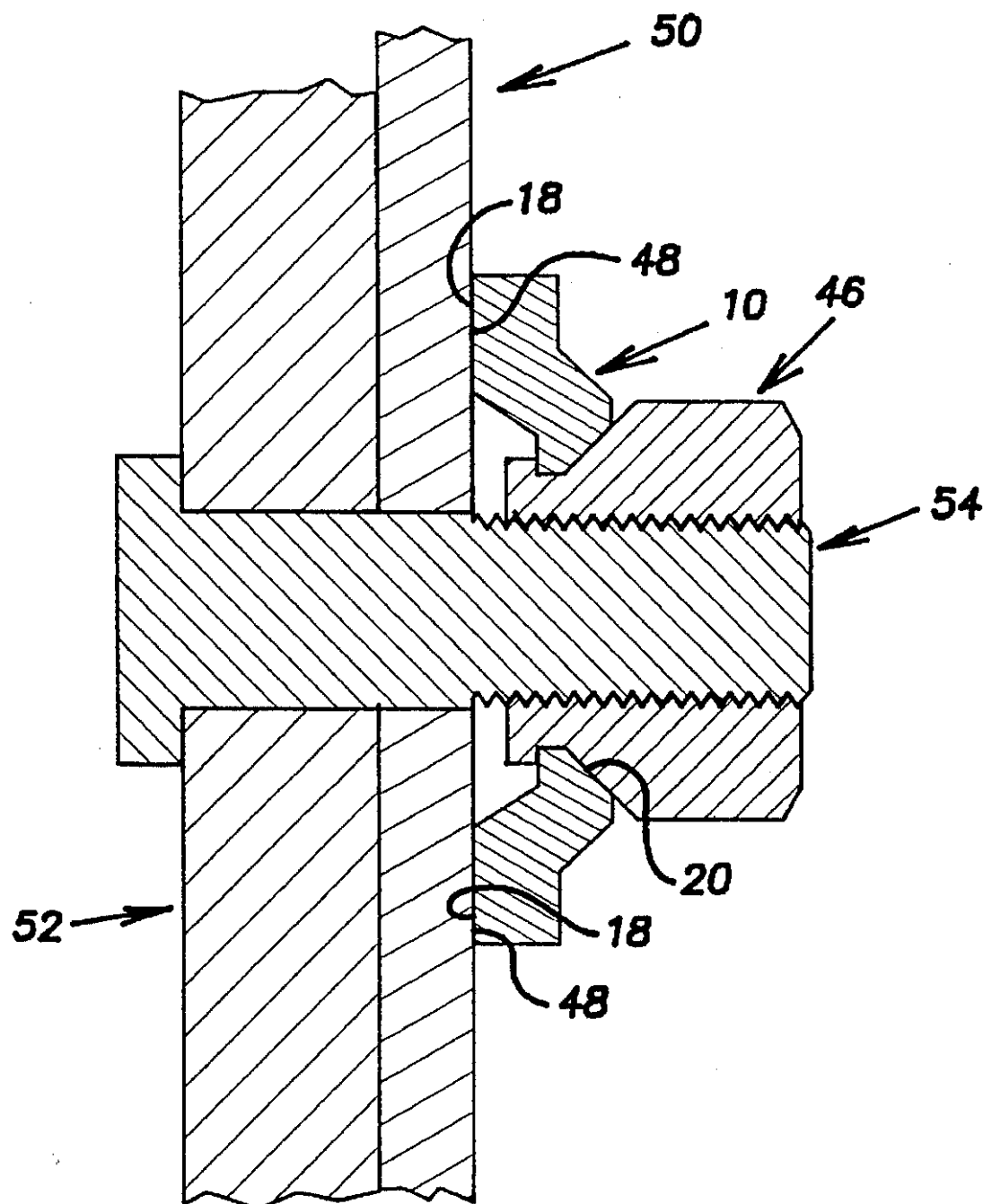
Family 85/100 - FAMPAT - ©Questel

Title

(US5597279)

Wheel nut

Images

**Publication numbers with kind code & date**[US5597279](#)

A 1997-01-28 US5597279

**Abstract**

(US5597279)

A washer for a male or female threaded fastener includes an annular ring portion and a seat portion with a cantilever portion extending therebetween. The washer hardness is selected to exceed the threaded fastener hardness by an amount that enhances the elastic deflection of the washer and reduces the tendency of the fastener to loosen. The selected hardness relationship also reduces the washer diameter dilation during loading and the permanent deformation of the washer diameter.

Inventors

THOMAS DAVID E

BOCZAR FRED A

GOFORTHE RONALD D

Latest standardized assignees - inventors removed

INTEGRATED LOGISTICS HOLDING

RB & W MANUFACTURING
SUPPLY TECHNOLOGIES
C T MANUFACTURING
FECO
SNOW DRAGON
PARK OHIO FORGED & MACHINED PRODUCTS
TOCCO
COLUMBIA NUT & BOLT
RED BIRD
INTEGRATED LOGISTICS SOLUTIONS
POVI
GENERAL ALUMINUM MANUFACTURING
GATEWAY INDUSTRIAL SUPPLY
LALLEGRO
INDUCTION MANAGEMENT SERVICES
SUMMERSPACE
BLUE FALCON TRAVEL
FLUID ROUTING SOLUTIONS
CONTROL TRANSFORMER
AJAX MANUFACTURING
PARK OHIO INDUSTRIES
STMX
ATBD
SOUTHWEST STEEL PROCESSING
ST HOLDING
WB & R ACQUISITION
INTEGRATED HOLDING
LEWIS & PARK SCREW & BOLT
RB & W
CLANCY BING
FORGING PARTS & MACHINING
AJAX TOCCO MAGNETHERMIC
PARK OHIO PRODUCTS
PHARMACEUTICAL LOGISTICS
ILS TECHNOLOGY
P O REALTY
PRECISION MACHINING CONNECTION
PHARMACY WHOLESALE LOGISTICS
R B & W

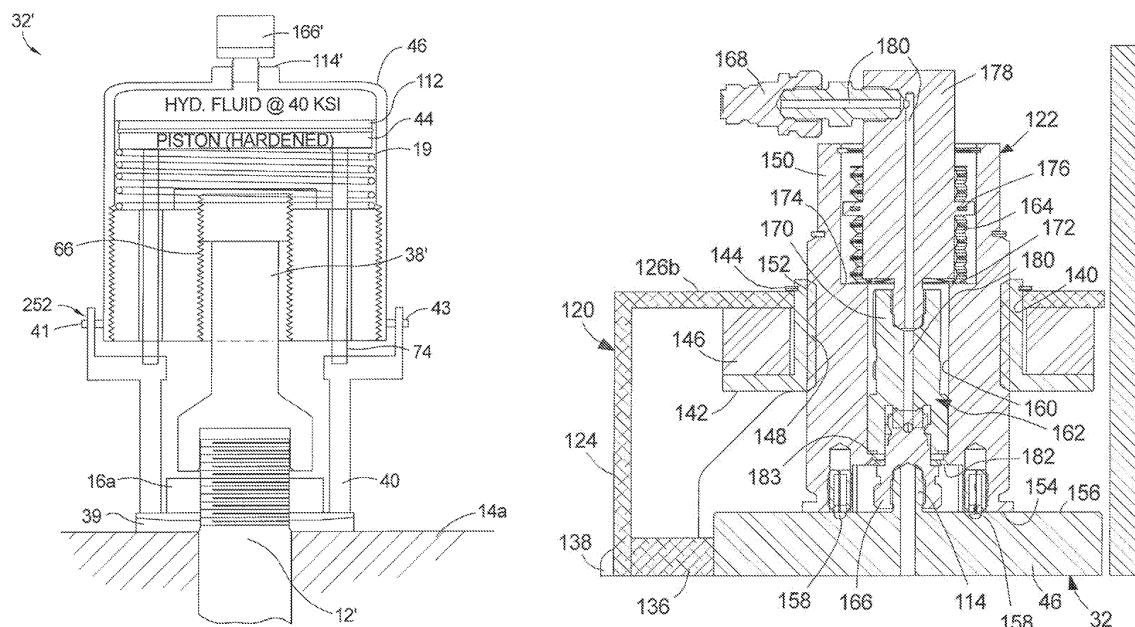
Family 86/100 - FAMPAT - ©Questel

Title

(US9188146)

Hydraulic rod tensioning system

Images



Publication numbers with kind code & date

US10364835	B2	2019-07-30	US10364835
US9506492	B2	2016-11-29	US9506492
US20160069372	A1	2016-03-10	US20160069372
US20160069373	A1	2016-03-10	US20160069373
US9188146	B1	2015-11-17	US9188146



Abstract

(US9188146)

A tensioning system for tensioning a stud is provided. The system includes a nut having an external surface, an internal surface engaging the external surface of the stud or puller screw, and at least two bores defined therein. The posts have first and second ends and are disposed in the bores. The first ends engage a stop surface, and the second ends extend outwardly from the bores. A cylinder includes an internal surface engaged with the external surface of the nut, and has a bore defined therein. A locking screw may be threadably positioned within the cylinder bore and engages the nut. A piston is positioned within the cylinder to define a hydraulic chamber and is configured for being engaged with the second ends of the posts. Further, a biasing member is disposed between the nut and piston. A tensioning system safety guard is also provided.

Inventors

TRAUTMAN TIMOTHY J
 REILLY PATRICK SHAWN
 DONEGAN RICHARD JOSEPH
 WHITNEY ROBERT MICHAEL

Latest standardized assignees - inventors removed

RIVERHAWK

Family 87/100 - FAMPAT - ©Questel

Title

(US6068344)

Wheel mount

Images

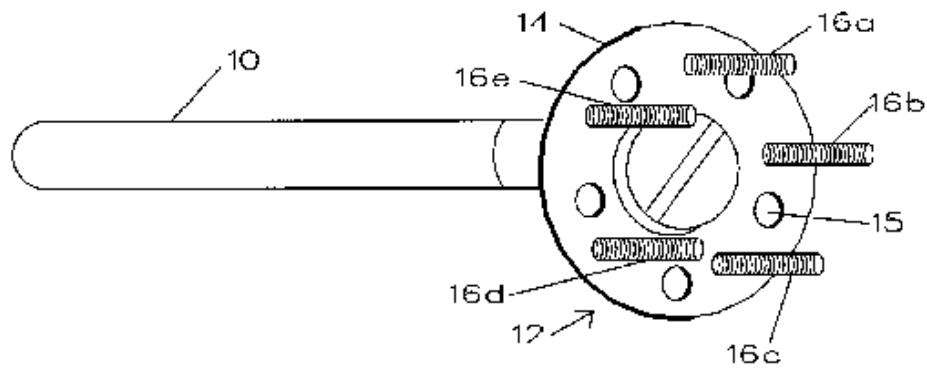


FIG. 1

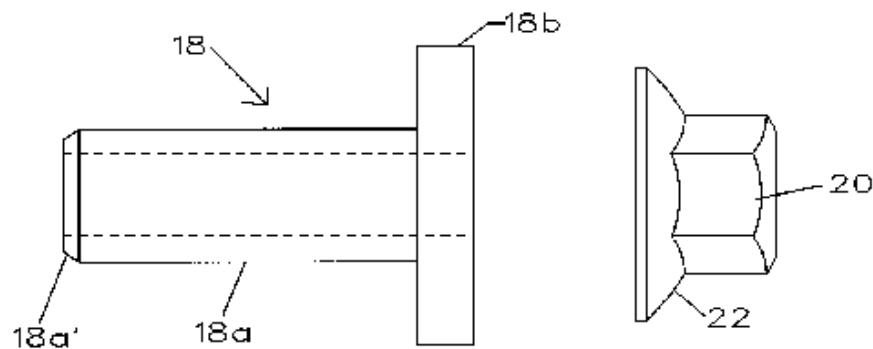
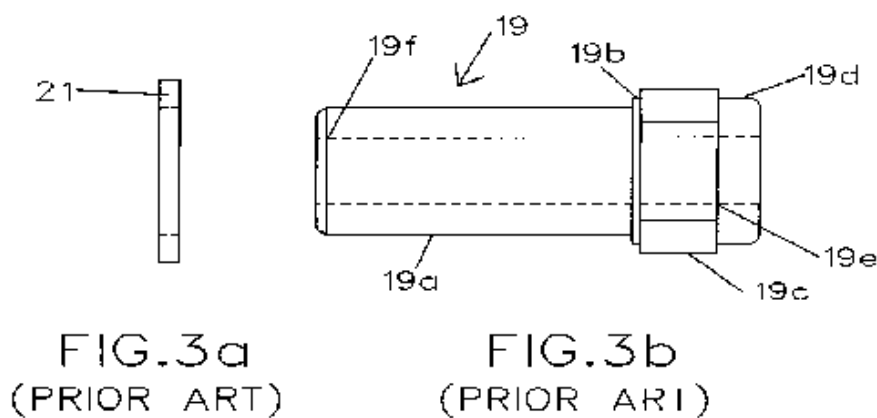


FIG. 2a

FIG. 2b

FIG. 3a
(PRIOR ART)FIG. 3b
(PRIOR ART)**Publication numbers with kind code & date**[US6068344](#)

A 2000-05-30 US6068344

**Abstract**

(US6068344)

A vehicle wheel mounting system utilizing flanged sleeves. There is a sleeve for each of the studs on the axle end. Each sleeve is slidably mounted on one of the studs and extends within one of the wheel mounting holes. The flanges bear against the portions of the surface of the web of the wheel surrounding the wheel mounting holes. Mounting nuts tighten on the stud ends against the flanges to complete the assembly.

Inventors

NETHER JOSEPH G

Latest standardized assignees - inventors removed

G & S RACING SERVICES & PROMOTIONS

Family 88/100 - FAMPAT - ©Questel

Title

(US1928068)

Wheel for motor vehicles and the like

Images

Fig. 1.

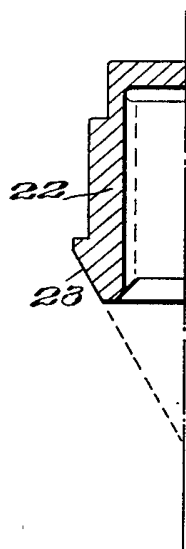


Fig. 2.

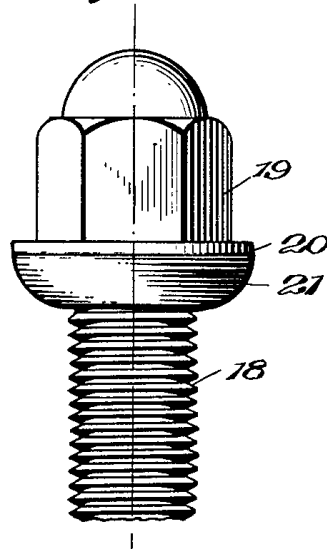


Fig. 3.

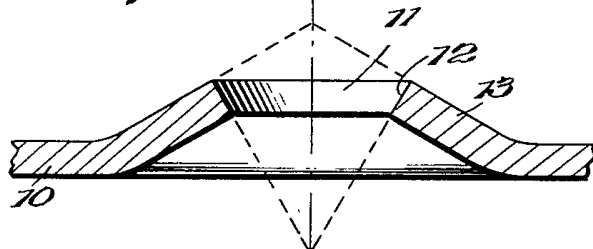


Fig. 4.

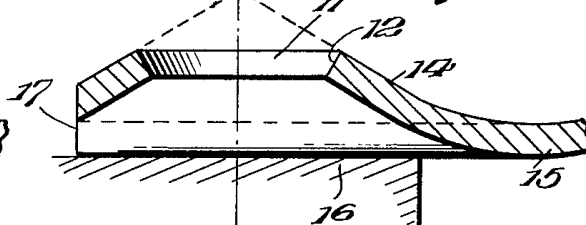


Fig. 5.

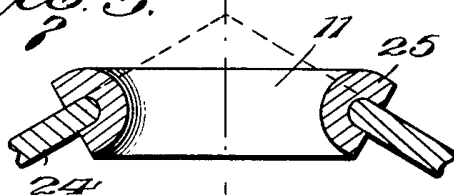
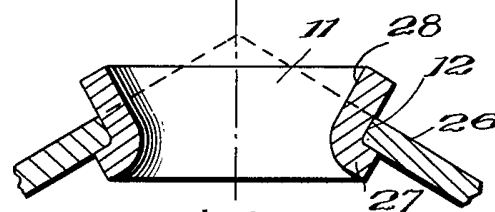


Fig. 6.



Inventor
André Jules Michelin,

By

Wilkinson & Mawhinney

Attorneys.

Publication numbers with kind code & date

[US1928068](#) A 1933-09-26 US1928068

**Inventors**

JULES MICHELIN ANDRE

Latest standardized assignees - inventors removed

MICHELIN

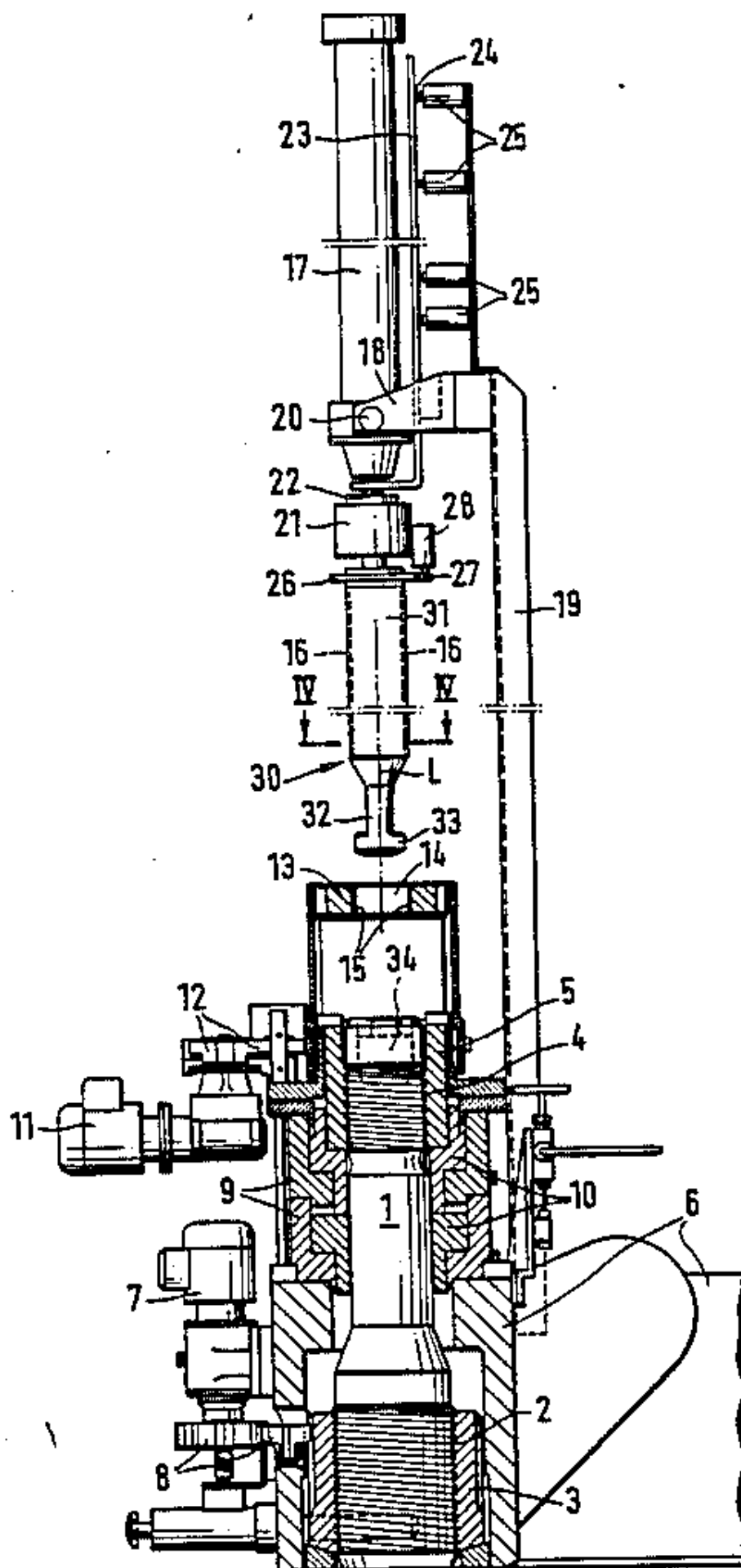
Family 89/100 - FAMPAT - ©Questel

Title

(EP-129717)

Device for turning and axially moving bolts

Images



Publication numbers with kind code & date

JPH0262724	B2	1990-12-26	JP90062724
DE3461851	D1	1987-02-05	DE3461851
AT24582	T	1987-01-15	ATE024582
EP0129717	B1	1986-12-30	EP-129717
US4565111	A	1986-01-21	US4565111
EP0129717	A1	1985-01-02	EP-129717
ZA8403827	B	1984-12-24	ZA8403827
JPS59226707	A	1984-12-19	JP59226707
DE3318941	A1	1984-11-29	DE3318941

**Abstract**

(EP0129717)

The device for rotating and axially moving a bolt comprises the bolt and a coupling part engageable with the end of the bolt wherein the bolt has a chamber which is accessible from the front end and is provided with at least one tangential abutment and at least one axial abutment for a head with a transverse projection on the coupling part.

(From US4565111 A)

Inventors

ECKER, KARL-HEINZ

HOFFMANN, ERHARD

Latest standardized assignees - inventors removed

WIRTH MASCHINEN & BOHRGERATE FABRIK

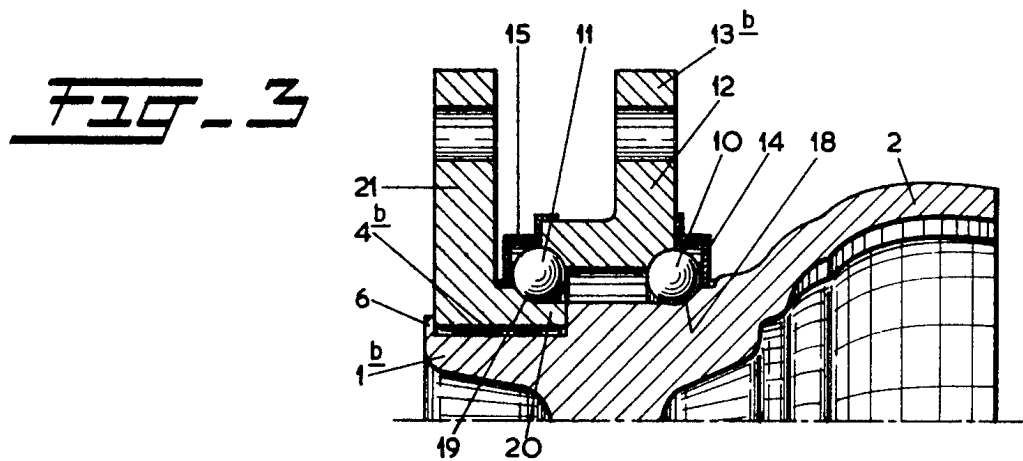
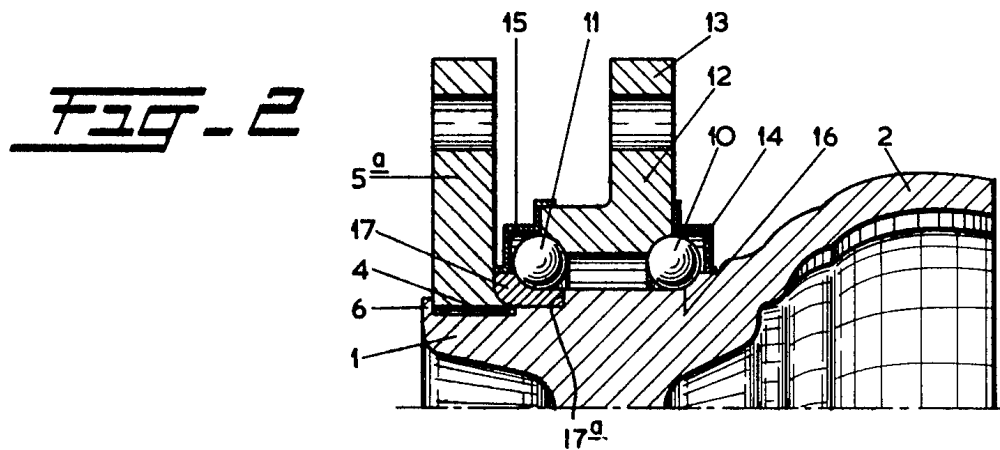
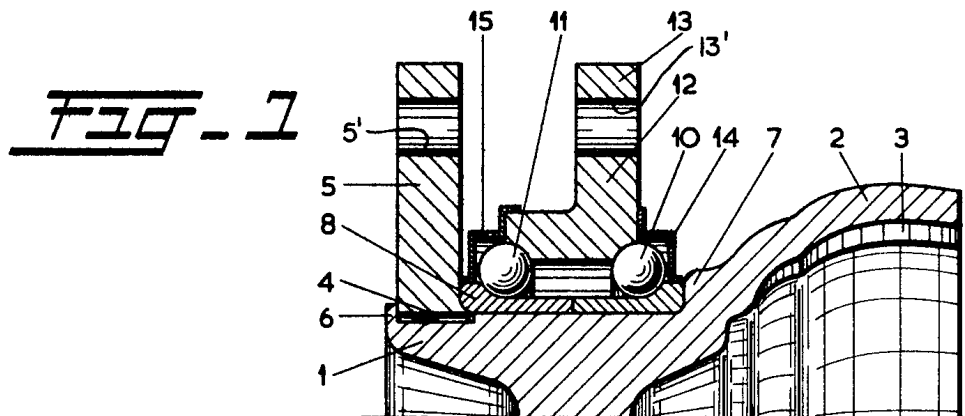
Family 90/100 - FAMPAT - ©Questel

Title

(US3583511)

Rolling bearing

Images



INVENTOR:
STURE LENNART ASBERG

BY
Howson & Howson
ATTORNEY

Publication numbers with kind code & date

SU656491	A3	1979-04-05	SU-656491
CS163177	B2	1975-08-29	CS-163177



SE358345	B	1973-07-30	SE-358345
DE1915932	B2	1973-04-26	DE1915932
GB1267395	A	1972-03-15	GB1267395
US3583511	A	1971-06-08	US3583511
FR2005981	A	1969-12-19	FR2005981
FR2005981	A1	1969-12-19	FR2005981
DE1915932	A1	1969-10-23	DE1915932
NL6805109	A	1969-10-14	NL6805109



Abstract

(US3583511)

A bearing assembly for a driven wheel mounting arrangement for a vehicle including a part of a homokinetic coupling, an axle member secured to said part of the homokinetic coupling and a support member on which the axle is supported, said bearing assembly comprising an outer ring for at least two rows of rolling elements including means to secure the outer ring to the support member, flange means for attaching the wheel to the axle, means defining an inner raceway surface on the axle for the rows of rolling elements characterized in that said flange means, axle and inner raceway means form an integral unit.

Inventors

ASBERG STURE LENNART

Latest standardized assignees - inventors removed

SKF INDUSTRIAL TRADING & DEVELOPMENT

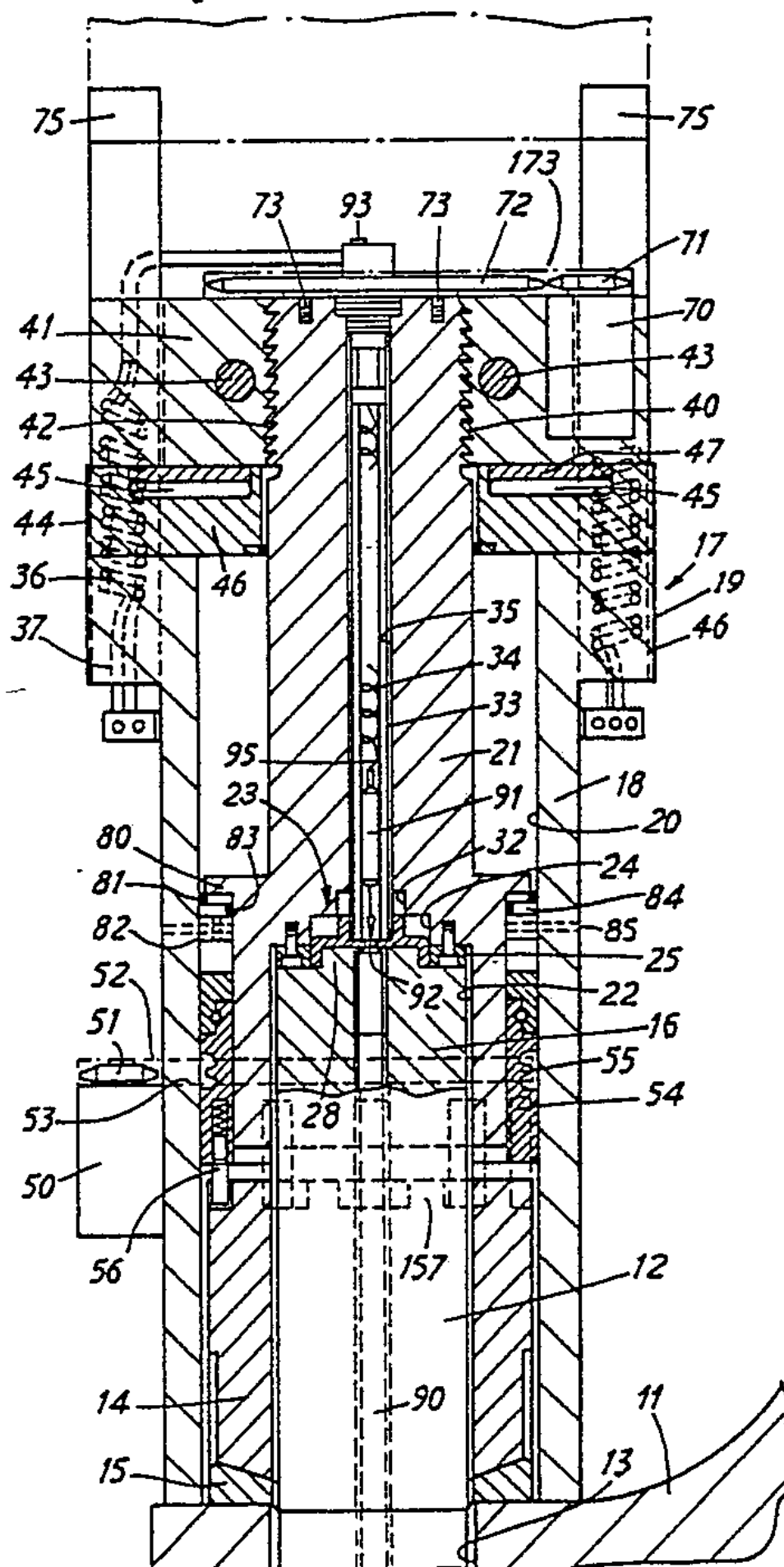
Family 91/100 - FAMPAT - ©Questel

Title

(EP-215879)

Improvements in multi-stud tensioners

Images



Publication numbers with kind code & date

DE3676262	D1	1991-01-31	DE3676262
AT59157	T	1991-01-15	ATE059157
EP0215879	B1	1990-12-19	EP-215879
US4773146	A	1988-09-27	US4773146
EP0215879	A1	1987-04-01	EP-215879
WO86/05135	A1	1986-09-12	WO8605135

**Abstract**

(EP0215879)

A multi-stud tensioner (17) comprises a circular carousel ring (18) with bores (20) corresponding in number to the number of studs (12) to be tensioned. A tension bar (21) has a socket (22) which screws onto an extension (16) of the stud. The tension bar can turn in a thrust block (41) which can be raised by means of a hydraulic tensioning device (44). The reaction is transmitted to the workpiece (11) by the carousel ring (18). A motor (50) tightens the working nut (14) by means of a chain driven dog ring (54) with spring-load driving dogs (55).

Inventors

BUNYAN, THOMAS, WALTER 15 CONDUIT HOUSE

Latest standardized assignees - inventors removed

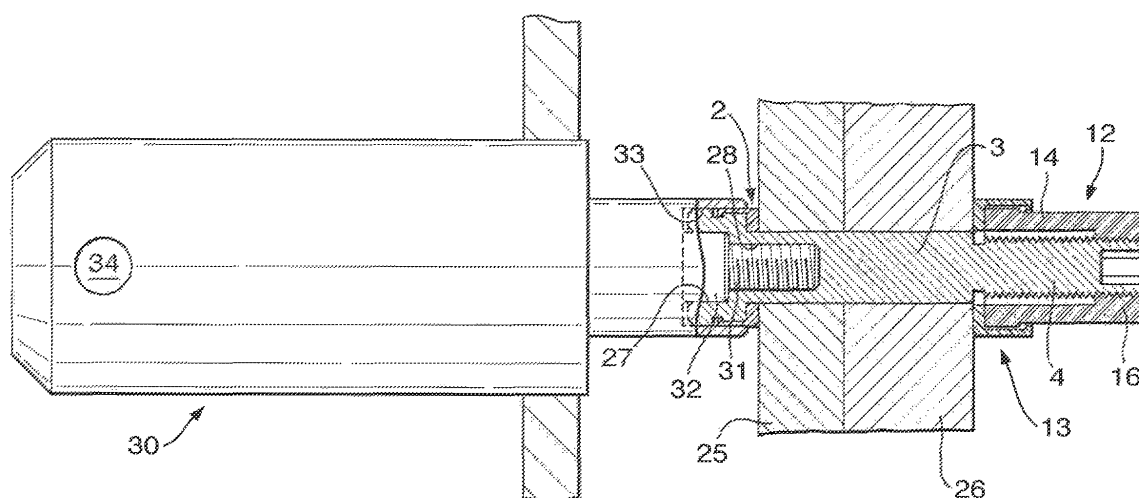
PILGRIM ENGINEERING DEVELOPMENTS

Family 92/100 - FAMPAT - ©Questel

Title

(EP1960678)

A fastener assembly

Images**Publication numbers with kind code & date**

EP1960678	B1	2015-02-25	EP1960678
JP5267796	B2	2013-05-17	JP5267796
US8152428	B2	2012-04-10	US8152428
RU2442910	C2	2012-02-20	RU2442910
BRPI0619913	A2	2011-10-25	BR200619913
CN101331330	B	2011-06-08	CN101331330B
RU2008129140	A	2010-01-27	RU2008129140
JP2009519138	A	2009-05-14	JP2009519138
CN101331330	A	2008-12-24	CN101331330
US20080273938	A1	2008-11-06	US20080273938
EP1960678			



	A1	2008-08-27	EP1960678				
CA2633015	A1	2007-06-21	CA2633015				
WO2007/068937	A1	2007-06-21	WO200768937				
GB0525689	D0	2006-01-25	GB200525689				

Abstract

(EP1960678)

A fastener assembly includes a bolt (1) having first and second ends and comprising a bolt head (2) at the first end and a shank, at least a part of which is screw threaded, a nut (12) for screw threaded engagement with the shank of the bolt (2), and a template alignment pin (30), wherein the bolt head (2) is provided with a coupling formation (27, 28) for detachably coupling to a corresponding formation (31, 32) on the template alignment pin (30).

Inventors

ROWE JAMES HENRY

MOORE JOHN

Latest standardized assignees - inventors removed

AIRBUS OPERATIONS

Family 93/100 - FAMPAT - ©Questel

Title

(EP-748671)

Hydraulic bolt tensioner

Images



JP3418046	B2	2003-06-16	JP3418046
GR3035669	T3	2001-06-29	GR3035669
PT748671	E	2001-06-29	PT-748671
DK0748671	T3	2001-06-18	DK-748671T
DE69520039	T2	2001-06-13	DE69520039
ES2155501	T3	2001-05-16	ES2155501
DE69520039	D1	2001-03-08	DE69520039



AT199000	T	2001-02-15	ATE199000				
EP0748671	B1	2001-01-31	EP-748671				
KR100241226	B1	2000-03-02	KR100241226				
RU2145682	C1	2000-02-20	RU2145682				
AU693358	B2	1998-06-25	AU-693358				
US5690458	A	1997-11-25	US5690458				
KR970000460	A	1997-01-21	KR19970000460				
JPH091474	A	1997-01-07	JP09001474				
AU5592396	A	1997-01-02	AU9655923				
CN1137965	A	1996-12-18	CN1137965				
EP0748671	A1	1996-12-18	EP-748671				
TW287977	B	1996-10-11	TW-287977				

Abstract

(EP0748671)

A hydraulic bolt tensioner having a first chamber (5) and a second chamber (12), a hollow first piston (6,7) movable in the first chamber (5) and partially extending into the second chamber (12), a second piston (9,10) displaceable inside the first piston (6,7) and movable in the second chamber (12), the second piston (9,10) having connecting means (11) for connecting with an end of a bolt (17), and a hydraulic fluid supply for supplying hydraulic fluid into the first chamber (5) so that, when hydraulic fluid pressure is applied to the first chamber (5), the first piston (6,7) moves so that the first piston displaces the hydraulic fluid in the second chamber and moves the second piston (9,10) to pull the end of the bolt.

Inventors

JUNKERS JOHN K

Latest standardized assignees - inventors removed

HYTORC DIVISION UNEX

Family 94/100 - FAMPAT - ©Questel

Title

(CN201102227U)

Integral hydraulic drawing device

Publication numbers with kind code & date
[CN201102227](#) Y 2008-08-20 CN201102227U   
Abstract

(CN201102227)

The utility model provides an integral type hydraulic elongator which comprises a support bushing, a retaining plate, a hydraulic cylinder, a piston, a tightening nut and a bolt to be drawn, etc; a nut sleeve is arranged on the support bushing through an elastic retaining ring and a bearing to form a part; in addition an automatic resetting device, a gear locking device and a travel indicator are also provided; the support bushing is arranged on the surface of the work piece to be connected; when the high-pressure oil is injected into the oil inlet of the elongator, a clearance is formed between the nut on the bolt to be drawn and the work piece to be connected; a clamp axis is rotated to drive a pinion, a bull gear and a locknut of the nut sleeve, which can realize the pre-tightening of the bolt to be drawn; after the high pressure oil in the hydraulic cylinder of the elongator is discharged, the tightening nut is pulled reversely so as to make the piston reset under the action of the return spring. The beneficial effect of the integral type hydraulic elongator is that the structure of the elongator is more compact; the operation is more convenient; the work efficiency is improved; and the entire drawing course can be observed and controlled through the travel indicator.

Inventors

YU ZHONGHAI

LIU JIALIANG

Latest standardized assignees - inventors removed

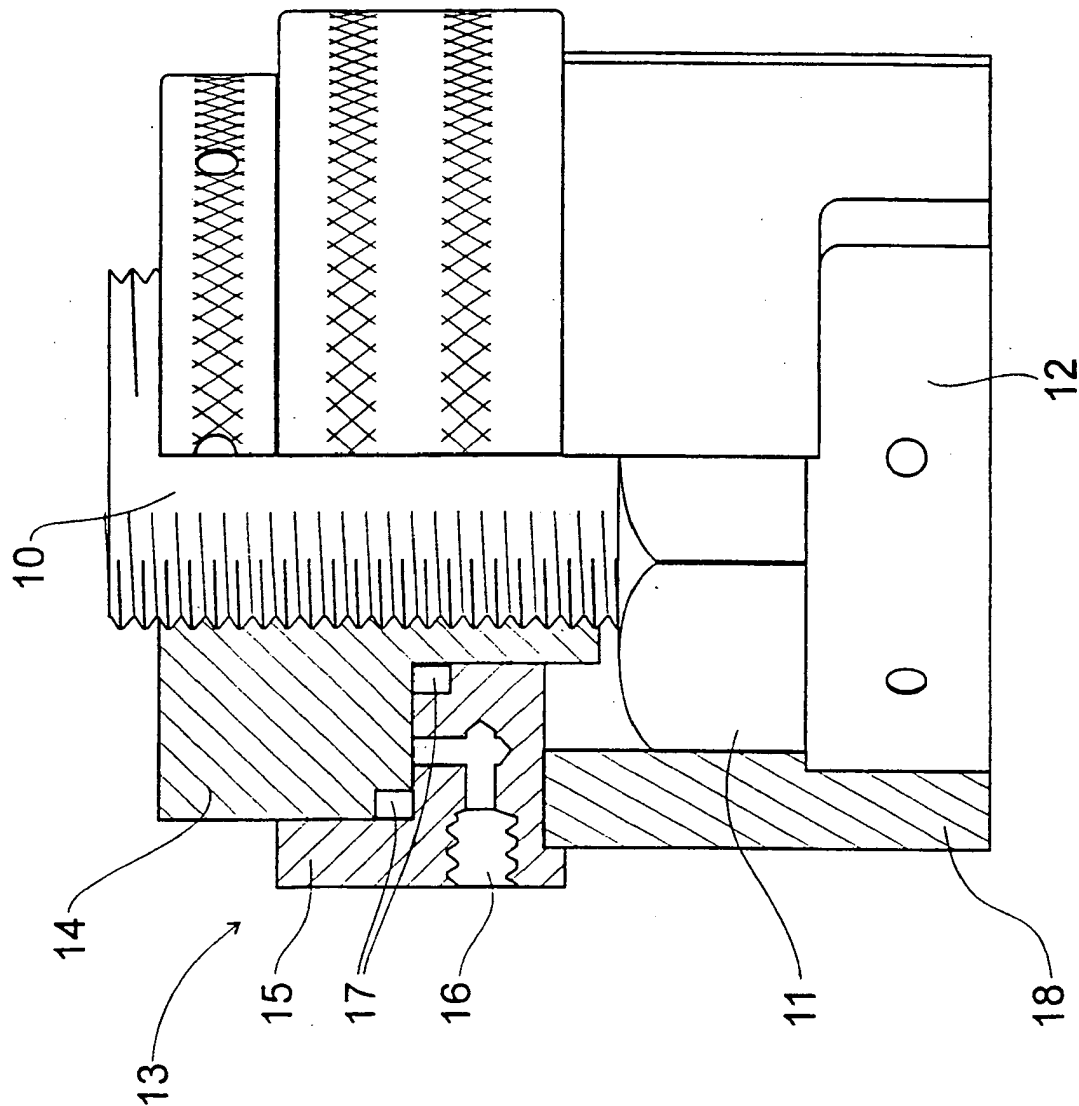
SHANGHAI DIANJI UNIVERSITY

Family 95/100 - FAMPAT - ©Questel

Title

(EP1163086)

Tensioning hydraulic nuts

Images**FIG. 1****Publication numbers with kind code & date**

ES2377494	T3	2012-03-28	ES2377494
AT539850	T	2012-01-15	ATE539850
EP1163086	B1	2012-01-04	EP1163086
JP4659218	B2	2011-01-07	JP4659218
CA2365284	C	2008-09-16	CA2365284
EP1163086	A4	2008-01-23	EP1163086
KR100700120	B1	2007-03-28	KR100700120
CN1136079	C	2004-01-28	CN1136079C
JP2002538389	A	2002-11-12	JP2002538389



AU753866	B2	2002-10-31	AU-753866				
CN1344193	A	2002-04-10	CN1344193				
KR20020006518	A	2002-01-19	KR20020006518				
EP1163086	A1	2001-12-19	EP1163086				
AU2786300	A	2000-09-21	AU200027863				
CA2365284	A1	2000-09-08	CA2365284				
WO00/51791	A1	2000-09-08	WO200051791				
AUPP890599	A0	1999-03-25	AU-890599				

Abstract

(EP1163086)

A hydraulic tensioning system (25) for nuts (21) on studbolts (19) has a puller bar (35) and a puller buddy (37) which are coupled to the studbolt (19), and a bridge (38) around the nut (20). The puller bar (35) is internally coupled to the studbolt (19) and the puller buddy (37) is externally coupled to the studbolt (19) (and may engage the nut (20) before the tension is applied). The nut (20) can comprise a cone nut (21) which co-operates with a complementary collar or shell (23) with a conical inner face (23a) and a spherical base washer (25).

Inventors

BUCKNELL JOHN WENTWORTH

Latest standardized assignees - inventors removed

CURTISS WRIGHT FLOW CONTROL

Family 96/100 - FAMPAT - ©Questel

Title

(EP3161272)

Screw bolt, casing for a turbine, turbine and method for assembling a casing of a turbine

Images



US20170298977	A1	2017-10-19	US20170298977				
CN107076186	A	2017-08-18	CN107076186				
BR112017008565	A1	2017-05-30	BR112017008565				
EP3161272	A1	2017-05-03	EP3161272				
IN201717004065	A	2017-04-21	IN201717004065				
WO2016/066315	A1	2016-05-06	WO201666315				
DE102014222060	A1	2016-05-04	DE102014222060				

Abstract

(EP3161272)

The invention relates to a screw bolt 10 for connecting a lower casing part 30 of a turbine 50 and an upper casing part 40 of a turbine 50, having a bolt body 11 with a lower end 12 and an upper end 13, an external thread 14 being arranged on both the lower end 12 and the upper end 13. The invention also relates to a casing 20 for a turbine 50, having a lower casing part 30, an upper casing part 40, a screw bolt 10 and two attachment nuts 22 screwed onto ends 12, 13 of the screw bolt 10, wherein the upper casing part 40 has an upper receiving section 41 and the lower casing part 30 has a lower receiving section 31 of a continuous screw bolt receiving portion 21 for receiving the screw bolt 10; and to a turbine 50, having a casing 20 and to a method for assembling a casing 20 of a turbine 50.

Inventors

KNOBLOCH THOMAS

LOCHNER KLAUS

STRAUCH MATTHIAS

Latest standardized assignees - inventors removed

SIEMENS

Family 97/100 - FAMPAT - ©Questel

Title

(EP1866123)

Hydraulic threaded bolt clamping device and method for tightening large screws by means of said hydraulic threaded bolt clamping device

Images

The invention relates to a hydraulic threaded bolt clamping device and to methods for tightening large screws by means of said hydraulic threaded bolt clamping device. The inventive device comprises a pressurised medium supply (6); a pressurised medium connection (7); a cylinder supported on a machine part (1) to be clamped by means of a threaded bolt (2) and a nut (3); at least one piston (31) which is guided into the cylinder (5) in a sealed manner, periodically subjected to pressure, and supported on an insert nut (21) screwed onto the threaded end (1) of the threaded bolt (2); a control device (9) for controlling the pressurised medium supply (6) to the threaded bolt clamping device and for stopping the pressurised medium supply (6) once a nominal pressure corresponding to the nominal prestress is reached; an input device (10) for inputting a nominal screw clamping force or an input device (10) for inputting a residual nominal screw prestress force or a corresponding nominal pressure of the pressurised medium supply (6); a measuring device (16, 19, 20, 22) for measuring the relative displacement of the threaded end (4) of the threaded bolt (2) in relation to the cylinder (5); and an evaluation device (11) for determining the residual screw prestress following the pressure release of the threaded bolt clamping device.

Inventors

HOHMANN JOERG

HOHMANN FRANK

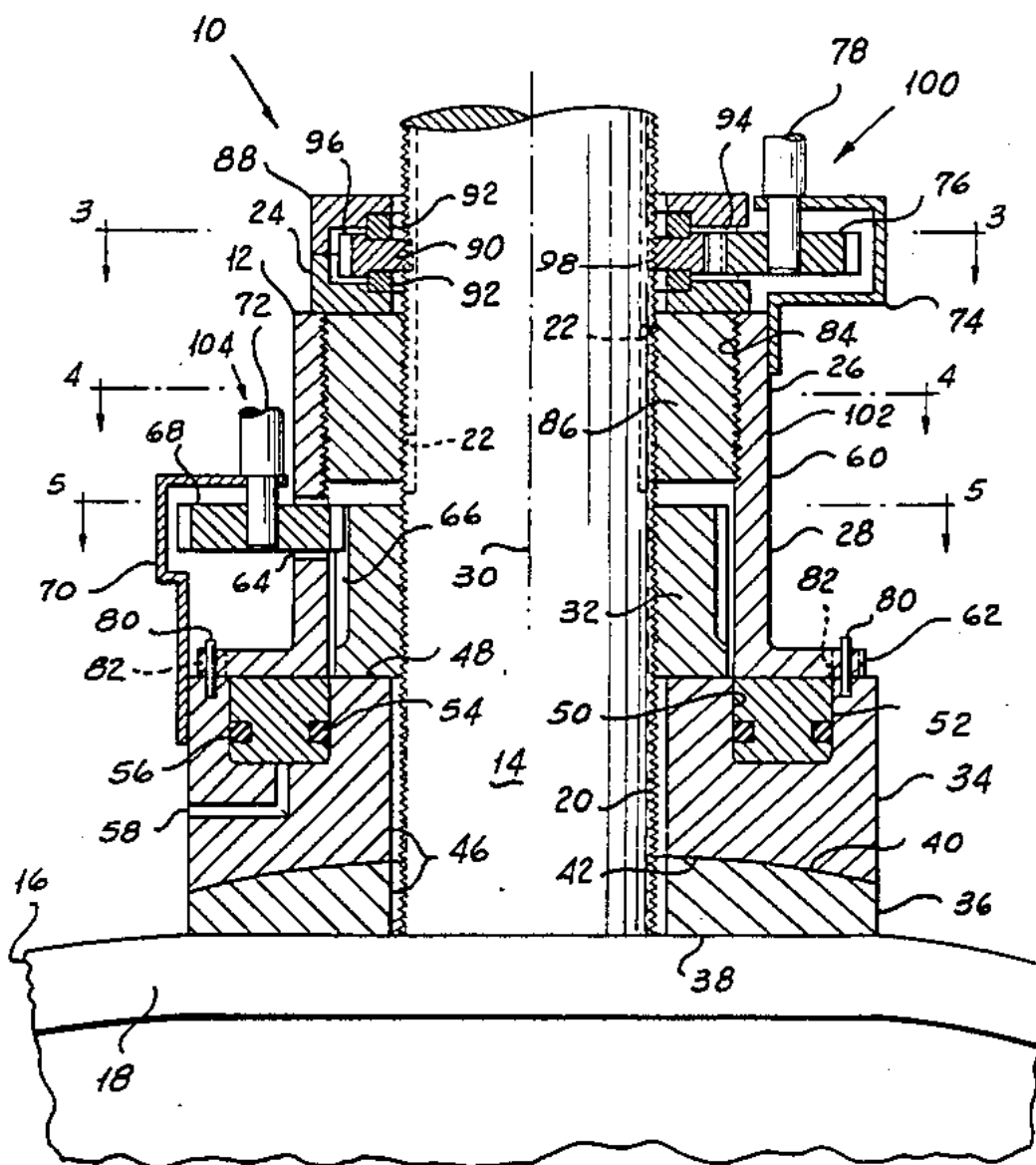
Family 98/100 - FAMPAT - ©Questel

Title

(US4535656)

Integral tensioner assembly for tensioning, inserting and removing a stud

Images



Publication numbers with kind code & date

US4535656

A 1985-08-20 US4535656



Abstract

(US4535656)

An integral tensioner assembly mountable on a stud selectively to insert and remove the stud as from a pressure vessel or the like, or to place the stud under tension so that a holding nut can be freely turned on the stud to tighten or loosen the stud connection to the pressure vessel. The assembly includes a housing which carries a plurality of nuts operable in selective pairs. Each of the pairs of nuts has a separate nut turning mechanism which is carried by the housing. The integral stud assembly is fastened to the vessel to operate on the stud without the need of extra bulky temporary connection systems.

Inventors

ORBAN JOSEPH N

Latest standardized assignees - inventors removed

BIACH INDUSTRIES

Family 99/100 - FAMPAT - ©Questel

Title

(EP1694975)

Outer ring of a wheel bearing mounted in a wheel carrier

NIEBLING PETER

HEIM JENS

HOFMANN HEINRICH

LANGER ROLAND

DLUGAI DARIUS

DOEPPLING HORST

STEINBERGER WOLFGANG

Latest standardized assignees - inventors removed

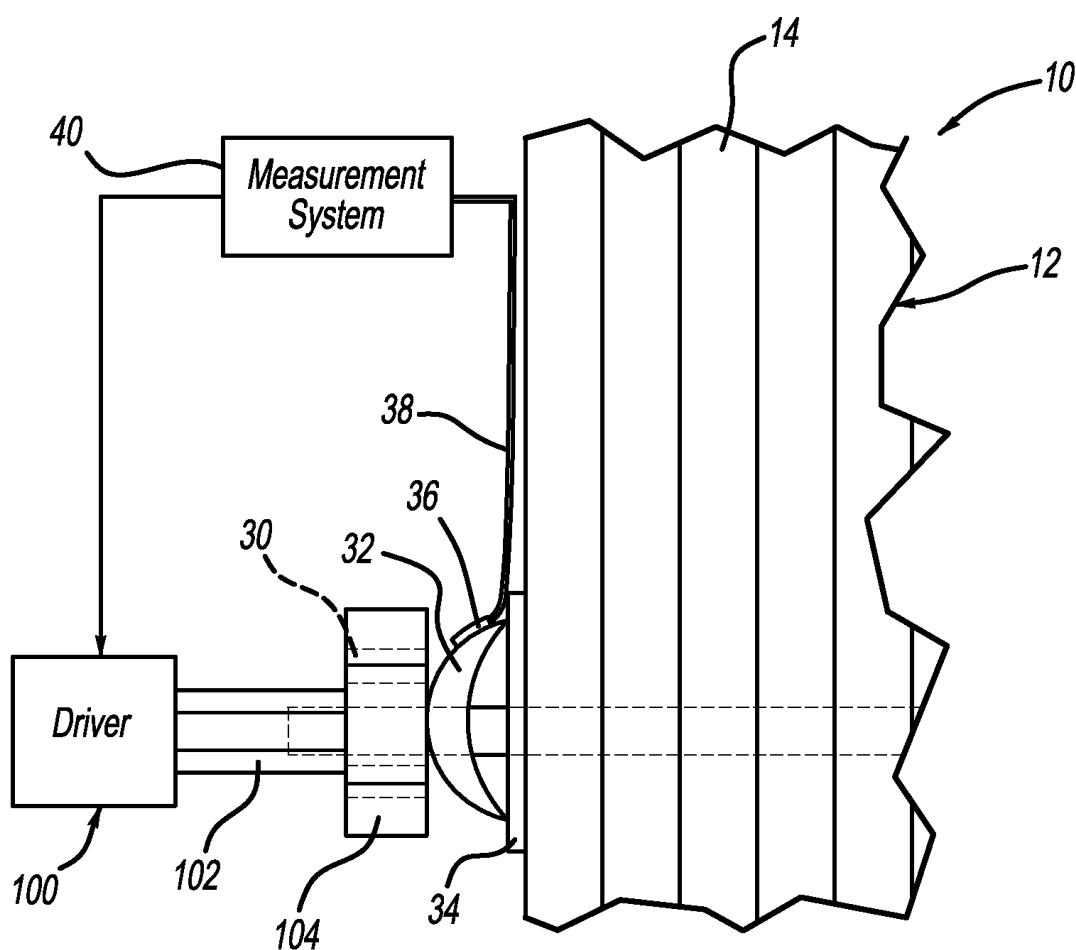
SCHAEFFLER TECHNOLOGIES

Family 100/100 - FAMPAT - ©Questel

Title

(WO2014172088)

Bolt tightener device for tightening a through-bolt in a generator core

Images**Publication numbers with kind code & date**

US9016991	B2	2015-04-28	US9016991
WO2014/172088	A1	2014-10-23	WO2014172088
US20140306574	A1	2014-10-16	US20140306574

**Abstract**

(WO2014/172088)

A generator stator core (10) through-bolt tensioning device that automatically tightens the nut (30) on the through-bolts (20) that hold together and compress laminate plates (14) of the stator core (10) in a high voltage generator. A controller receives a signal from a measuring device, such as a fiber Bragg grating (36) that measures the strain on the bolt, and

based on that signal determines whether the nut needs to be tightened. If the controller determines that tightening is necessary, it will cause the tensioning device to automatically tighten the nut while the generator is in service, and use the measuring device to provide feedback of the tensioning of the through-bolt to know when to stop the device from tightening the nut.

Inventors

TWERDOCHLIB MICHAEL

THOMPSON EDWARD DAVID

DIATZIKIS EVANGELOS V

Latest standardized assignees - inventors removed

SIEMENS ENERGY