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## EUROPEAN PATENT APPLICATION

21 Application number: 81830192.1

51 Int. Cl.<sup>3</sup>: B 25 B 13/52  
 F 16 L 55/00

22 Date of filing: 12.10.81

30 Priority: 05.12.80 IT 2906480 U

43 Date of publication of application:  
 16.06.82 Bulletin 82/24

84 Designated Contracting States:  
 AT CH DE FR GB LI SE

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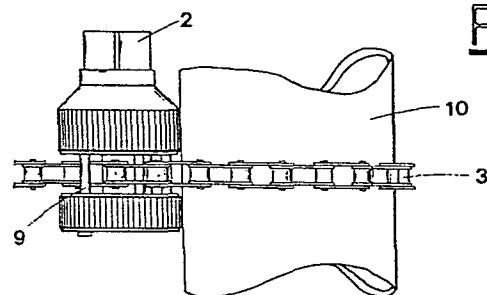
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54 A tool for tightening and slackening large threaded parts such as tubes and the like.

57 The invention relates to a tool for tightening and slackening of threaded parts or components, especially those of larger dimensions such as tubes, pipes etc., The tool basically comprises a cylindrical body (1), provided with a shank (2) serving to impart rotation thereto when paired with a conventional wrench or spanner; the cylindrical body shows an annular recess (6) within which one extremity of a chain (3) is permanently fixed, the other extremity remaining free.

The chain (3) is wrapped around the part or component to be tightened or slackened and its free extremity fastened to the cylindrical body at a point within the annular recess commensurate with the same's ability to grip the part/component to be slackened.

By rotating the cylindrical body, torque is imparted through the chain to the component thus achieving the desired slackening off of the latter.



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A tool for tightening and slackening large threaded parts such as tubes and the like

5 The invention described herein is a tool for tightening and slackening threaded parts, -especially those having larger dimensions such as tubes, pipes etc.

The need for tightening or slackening of large threaded components such as wide-diameter tube, hydraulic reservoirs and so forth, is encountered not infrequently; 10 furthermore these parts or components are invariably apt to be located in positions with little ease of access. Whether for the difficulty in laying hold of the part, or the difficulty in reaching it, the need arises for special kinds of tool.

15 Conventional tools in current use make use of flexible or articulated elements which wind around the part or component to be screwed tight or slackened; like tools are furnished with any one of a variety of devices which produce drag in the articulated or flexible 20 element wound round the workpiece; the articulated or flexible element thus transmits torque to the part to be tightened or slackened, producing the desired screwing tight or unscrewing of the part or component itself.

25 It is often the case that such tools are unwieldy or

awkward to use as a result of difficulty experienced in reaching the work.

One object of the invention herein is that of providing a tool for tightening or slackening large threaded parts which enables working on components out of easy reach or awkward to lay hold on.

A further object of the invention is that of providing a simple, inexpensive and compact tool.

A further object of the invention is that of creating a tool which may be used in conjunction with others normally utilised by fitters/maintenance men.

These and other objects are attained to by the tool described herein which is characterised by the fact that it comprises: a cylindrical body provided with a shank which, paired with a conventional wrench/spanner of the appropriate size, allows for rotation of the cylindrical body around its own axis, to which the extremity of a chain is permanently attached in such a way that the axis of rotation relative to each link thereof lies parallel with the said cylindrical body's axis; locking means designed for making the said chain fast to the said cylindrical body by any one of the individual links thereof.

Further features and advantages of the invention will emerge more clearly from the detailed description

which follows of a preferred, though not exclusive form of embodiment of the tool described herein, illustrated as a strictly unlimited example with the aid of the accompanying drawings, in which:-

5 Fig 1 shows a vertical elevation of the tool to which the invention refers, in that position wherein one extremity only of the chain is attached to the cylindrical body of same;

10 Fig 2 shows a vertical elevation of the tool described herein, in that position wherein the chain thereof is wrapped around the work to be tightened or slackened, the latter illustrated only in part;

15 Fig 3 shows a cross-section according to III-III in fig 2, illustrating the tool to which the invention refers engaging a part or component to be tightened or slackened.

The tool described herein comprises a cylindrical body 1 provided with a shank 2; the shank 2 may be  
20 any one of a variety of types viz.-prismatic with square./ hexagonal cross-section, or splined or similar, and, paired with a conventional spanner/wrench of correct size -which needless to say must be of corresponding cross-section to the shank- furnishes the means for  
25 causing the cylindrical body 1 to rotate around its

own axis. The wrench in question clearly could be a box-spanner, socket wrench or any other kind. The lateral surface of the cylindrical body is given axially-disposed knurling, for reasons which will become apparent hereafter.

The cylindrical body 1 comprises a cylindrical mid-section 5 of a lesser diameter than that of the body 1 as a whole, being defined by an annular recess 6 located in the cylindrical body 1 itself.

One extremity of a chain 3 is permanently attached to the cylindrical body 1 and disposed in such a way that the axis of rotation of each link thereof lies parallel with the cylindrical body 1 axis; provision is made for attachment of the chain extremity to the cylindrical body by means of a first pin 7 threaded through the end-link of the said chain itself and fixed permanently to the cylindrical body; a second pin 8 fixed likewise to the cylindrical body 1 holds the end-link afore-mentioned hard against the cylindrical mid-section 5.

Pins 7 & 8 are disposed internally of annular recess 6 with axes parallel to that of cylindrical body 1; the extremities of pins 7 & 8 being bedded into the flank-walls of annular recess 6.

The tool described herein further comprises locking

means designed for locking the chain 3 to the cylindrical body 1 by any one of its several links.

The locking means comprises a third pin 9 which may be inserted into or withdrawn from cylindrical body 1;

5 to this end there is a hole 12 located in the lower section of the cylindrical body 1 which admits the introduction of the said third pin 9. The extremity of the pin 9 is threaded in order to be screwed into a further, second hole 13 located in the upper section  
10 of the cylindrical body 1.

As per pins 7 & 8, pin 9 is disposed with axis parallel to that of cylindrical body 1, being likewise positioned internally of annular recess 6; said pin 9 is disposed all but diametrically opposite to second pin 8.

15 The function of the tool thus described is as follows:

Chain 3, having one extremity permanently fixed to cylindrical body 1 and one extremity free, is wrapped around the part or component to be tightened or slackened, for instance around a tube 10 as illustrated in

20 Figs 2 & 3; chain 3 is then fastened to cylindrical body 1 in such a way as to maintain contact -to all intents and purposes- between cylindrical body and part/component; to this end one of the chain links is introduced into annular recess 6, whereupon pin 9

25 is inserted into holes 12 & 13 in such a way that

the chain link introduced into annular recess 6 is lodged between pin 9 itself and cylindrical mid-section 5. In this manner pin 9 holds said chain link fast against cylindrical mid-section 5 thereby  
5 fastening chain 3 itself to cylindrical body 1.

It will be clear that, according to the size of the part or component to be tightened or slackened, links correspondingly nearer to or farther from that permanently fixed must be fastened to the cylindrical  
10 body 1; the surplus stretch of chain remains free, offering no hindrance to the tool's normal function.

Cylindrical body 1 is then caused to rotate—in either direction—by means of an appropriate implement engaging shank 2; in response to said rotation chain 3 is  
15 obliged to wrap around cylindrical body 1 thus gripping tube 10 tightly and imparting torque thereto causing tightening up or slackening off of same.

Once pressure exerted upon the wrench is relaxed following the rotation of cylindrical body 1, the  
20 body itself remains anchored to tube 10 by virtue of the afore-mentioned knurling on its lateral surface, thereby disallowing any sudden loosening of chain 3.

Provision may therefore be made for the implement used in rotating cylindrical body 1 to engage shank 2 in  
25 such a way as to prevent its sudden withdrawal therefrom;

this may be achieved by a spring-loaded ball-catch,  
for instance, located on shank 2 which seeks out a  
countersink made in spanner or wrench, or by any  
arrangement of grooves, splines etc located either  
5 on shank 2 or corresponding implement. In any event  
such means of engaging wrench and socket would be  
of the conventional kind:

Should a wrench be used of the kind which remains  
united to the tool, it will be possible -once the  
10 latter is safely anchored to the tube 10- to position  
(if assembling) or extract (if dismantling) the tube  
without needing to lay hold thereon.

The special shape of the tool described thus allows  
its being used for tightening or slackening threaded  
15 parts or components in the most inaccessible of  
locations; in fact, dimensions of the tool are such  
that , being small, the tool may be applied to the  
workpiece in practically any position whatever, a  
fact which makes for ease of access with a wrench or  
20 spanner to the shank 2.

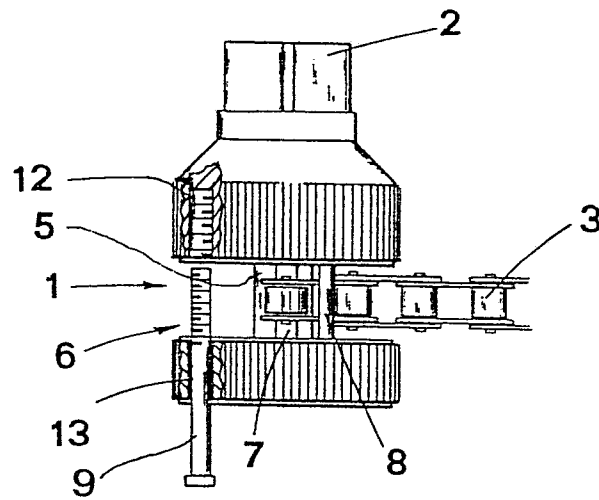
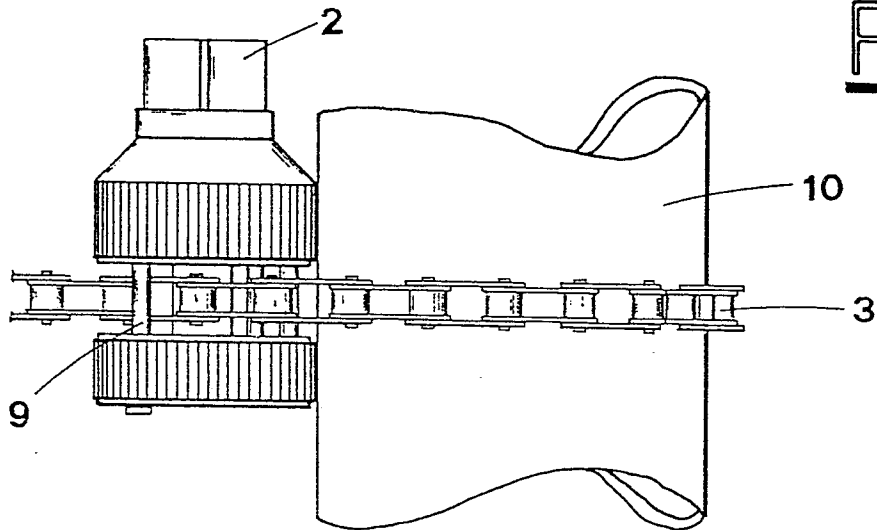
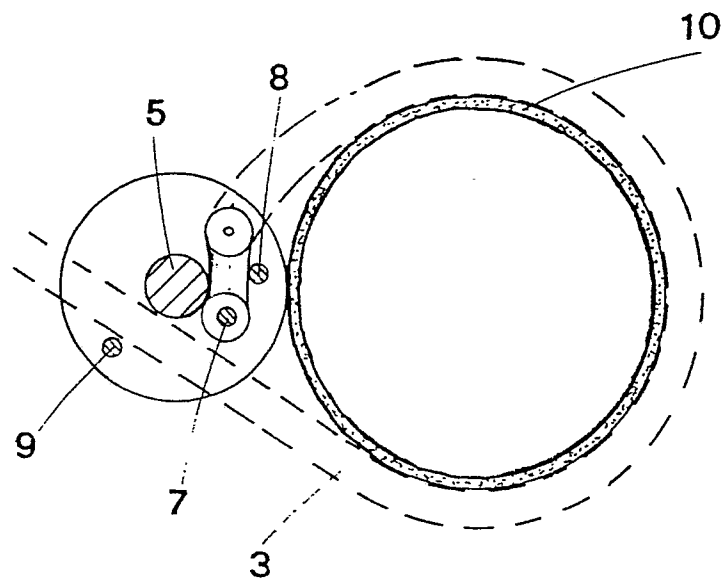
Numerous modifications of a practical nature may be  
applied to the tool design, -for instance the shank  
may be male or female to accommodate whatever kind of  
wrench, spanner or extension bar etc.- without straying  
25 from within the bounds of protection afforded to the  
basic concept as described above, and as claimed below.



Claims

- 1) Tool for tightening and slackening large threaded parts such as tubes etc., characterised by the fact that it comprises: a cylindrical body (1) provided with a shank (2) which, paired with a conventional spanner/wrench of appropriate size, allows for rotation of said cylindrical body around its own axis, to which the extremity of a chain (3) is permanently fixed in such a way that the axis of rotation of each individual link thereof lies parallel with said cylindrical body axis; locking means designed for locking said chain to said cylindrical body by any one of the links thereof.
- 2) Tool according to claim 1 characterised by the fact that the lateral surface of said cylindrical body is provided with axially disposed knurling.
- 3) Tool according to claim 1 characterised by the fact that said cylindrical body comprises a cylindrical mid-section (5) of lesser diameter than that of said body as a whole, and defined by an annular recess (6) located in said cylindrical body itself.
- 4) Tool according to previous claims characterised by the fact that one extremity of said chain is fixed

permanently to said cylindrical body by means of a first pin (7) threaded through the end-link of the chain itself, and a second pin (8) which holds said end-link fast against said cylindrical mid-section; provision being made for a third pin (9) capable of withdrawal from said cylindrical body, designed to hold any single chain link fast against said cylindrical mid-section; said third pin and said cylindrical mid-section constituting the aforesaid locking means; said first, second and third pins being disposed internally of said annular recess with axes parallel to that of said cylindrical body; said third pin being all but diametrically opposed with respect to the disposition of said second pin.

FIG 1FIG 2FIG 3



European Patent  
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# EUROPEAN SEARCH REPORT

0054007

Application number

EP 81830192.1

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>US - A - 4 138 910</u> (LAIRD) * Fig. 1-5 * --	1,4	B 25 B 13/52 F 16 L 55/00
	<u>US - A - 3 505 914</u> (OCKINGA) * Fig. 1-3 * --	1,4	
	<u>US - A - 3 314 317</u> (ASHLEY) * Totality * --	1,4	
	<u>US - A - 2 825 253</u> (BRENNER) * Totality * --	1,3,4	TECHNICAL FIELDS SEARCHED (Int. Cl.) B 25 B 13/00 B 25 B 27/00 F 16 L 55/00 B 66 C 1/00
	<u>US - A - 1 456 126</u> (FRIDAY) * Totality * ----	1,4	
			CATEGORY OF CITED DOCUMENTS X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
X The present search report has been drawn up for all claims			&: member of the same patent family. corresponding document
Place of search		Date of completion of the search	Examiner
VIENNA		18-02-1982	SCHUGANICH