March 10, 1931. J. C. WARREN 1,796,173

TELESCOPIC JACK

Filed July 9, 1929

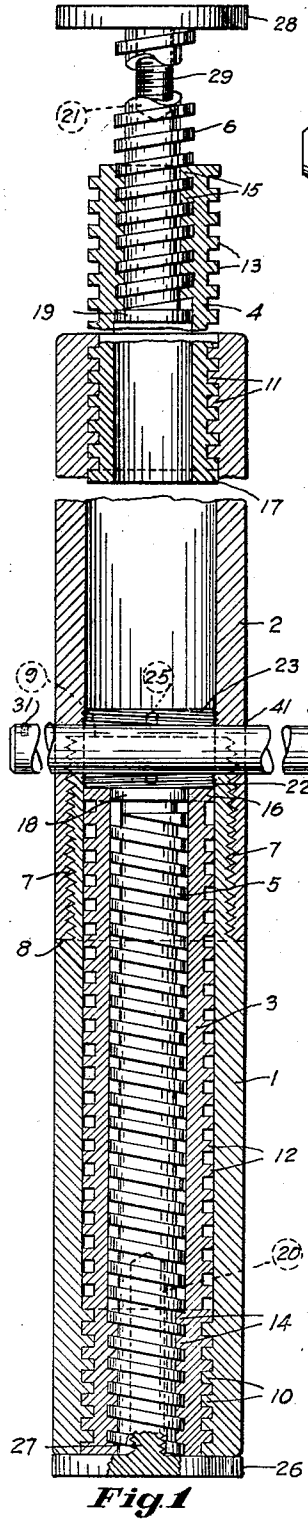


Fig. 1

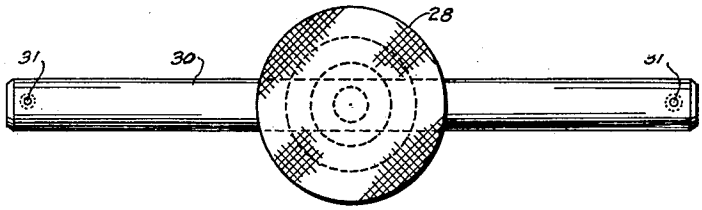


Fig. 2

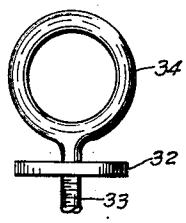


Fig. 3

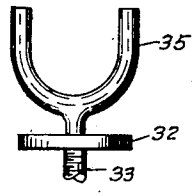


Fig. 4

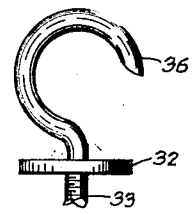


Fig. 5

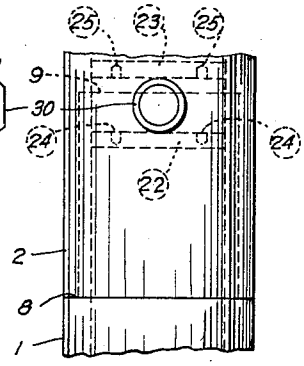


Fig. 6

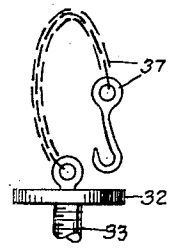


Fig. 7

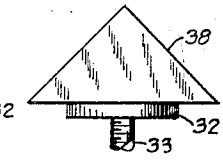


Fig. 8

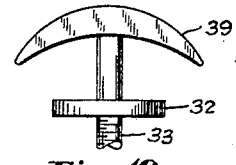


Fig. 10

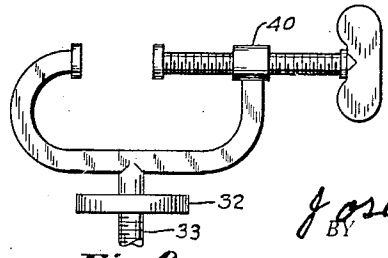


Fig. 9

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UNITED STATES PATENT OFFICE

JOSEPH C. WARREN, OF OKLAHOMA CITY, OKLAHOMA

TELESCOPIC JACK

Application filed July 9, 1929. Serial No. 376,872.

My invention relates to improvements in telescopic jacks.

The principal objects of my invention are to provide a device of this class which is new, novel, practical, useful and of evident utility; which is strong, positive in action, durable and reliable; which consists of but few sturdy parts, is easily operated, cannot easily get out of order and is efficient for the purposes for which it is intended; to provide a device which will not only operate on the principle of a double screw or twin lift jack but will operate twice as fast; a device which will function as a lifting or expanding jack and also as a pulling or retrieving tool; a device which will be of particular use in automobile repair shops and garages as a body jack for straightening fenders, removing dents in car bodies and rebuilding car chassis which have been in accidents; to provide a telescopic jack consisting of a coupled outer sleeve rotated by a handle removably inserted diametrically through its center and adapted to operate the jack either expandingly or contractingly in very close or cramped places where the ordinary jack can not be used; a jack having an inner sleeve and jack screw at both ends of said outer sleeve, being threaded right hand at one end and left hand at the other and capable of expanding the jack to several times its closed length; a jack with removable caps or heads, provided with a plurality of variously shaped attachments for special purposes to be used in place of the ordinary caps; a telescopic jack having a handle which securely locks the working parts in place but which can be removed and used for giving the outer sleeve a half turn at a time when working in close quarters; a jack which can be made in various lengths and is capable of being expanded to several feet, thus eliminating the necessity of wood blocks, iron pipes and other makeshifts as now used with jacks having a few inches of lift when operating through a distance of several feet.

With these and other objects in view as will more fully appear, my invention consists in the construction, novel features, and combination of parts hereinafter more fully described, pointed out in the claims hereto appended, and illustrated in the accompanying one sheet drawing, of which,

Figure 1 is a broken, longitudinal sectional view of my telescopic jack; Fig. 2 is a top or end view; Figs. 3, 4, 5, 7, 8, 9, and 10 are views of various attachments which may be used in place of the caps or heads; and Fig. 6 is a fragmentary side view.

Like characters of reference designate like parts in all the figures.

It is understood that various changes in the form, proportion, size, shape, weight and other details of construction, within the scope of my invention may be resorted to without departing from the spirit or broad principle of my invention and without sacrificing any of the advantages thereof, and it is further understood that the drawings are to be interpreted as being illustrative and not restrictive.

The preferred embodiment of my invention is shown as follows:—The enclosing or outer coupled rotary sleeve consists of the parts 1 and 2. Sleeve 1 encloses and contains inner sleeve 3 which in turn contains left hand threaded jack screw 5. In like manner sleeve 2 encloses inner sleeve 4 containing right hand threaded jack screw 6. Sleeves 1 and 2 are coupled by means of threads 7 forming an external joint at 8 and an internal joint at 9. Outer sleeve 1 is provided with internal threads 10 at its outer end only, said threads 10 co-acting with corresponding external threads 12 on inner sleeve 3 throughout its length. The said inner sleeve 3 is also provided with a set of internal threads 14 at its outer end only, said threads 14 are adapted to co-act with the external threads on the jack screw 5, all of the threads on the said members 1, 3, and 5 being left hand. The unthreaded inner portions of sleeves 1 and 3 provide hollow cylinders for telescoping members 3 and 5 respectively. In like manner outer sleeve 2 has internal threads 11 at its outer end only, said threads 11 co-acting with external threads 13 upon sleeve 4, said sleeve 4 having internal threads 15 at its outer end only which co-act with the threads on jack screw 6, all of said threads 11, 13,

and 15 being right hand. Inner sleeve 3 has a flange 16 at its inner end and inner sleeve 4 has a flange 17 at its inner end, said flanges 16 and 17 forming stops for seating against threads 10 and 11 respectively, when said inner sleeves 3 and 4 are in extended position. Jack screw 5 is provided with a flange 18 and jack screw 6 with flange 19 which form stops for seating against internal threads 14 and 15 respectively, when said screws 5 and 6 are in extended position. Said screws 5 and 6 have threaded sockets 20 and 21 respectively at their outer ends, said sockets being of sufficient depth to securely anchor the various fittings to be used with my telescopic jack.

Right hand disk 22 is screwed into outer sleeve 1 as a stop for left hand threaded members 3 and 5 when in telescoped position and left hand disk 23 screwed into outer sleeve 2, functions in like manner for right hand threaded members 4 and 6, said disks 22 and 23 being provided with drill holes 24 and 25 respectively, for use with a bit wrench. Jack screws 5 and 6 are respectively provided with knurled caps or heads 26 and 28 having threaded shanks 27 and 29 inserted into sockets 20 and 21 when my device is to be used as an ordinary jack exerting an upward or outward force. Handle 30 is inserted diametrically through hole 41 in sleeves 1 and 2 and between disks 22 and 23. Hole 41 is drilled through sleeves 1 and 2 after said sleeves have been screwed to a tight fit at joints 8 and 9, and handle 30 is made to slidably fit snugly into said hole 41, thus securely locking sleeves 1 and 2, and disks 22 and 23 in place when my telescopic jack has been assembled. Handle 30 is provided with handle locks or quick snap-in features 31 to prevent said handle 30 from being slipped out of hole 41 too easily. The handle 30 may be of any convenient length and may be used in any suitable position to obtain the proper leverage. When my device is being used as a body jack in very close or inaccessible quarters, the handle 30 may be given a half turn, withdrawn from hole 41 from one side, inserted in said hole from the other side and given another half turn and so on, thus making my jack of service where the ordinary jack would be of no use.

It can readily be seen by studying Fig. 1, that my telescopic jack operates in a very decidedly different manner from the ordinary ratchet jack. The latter consists of a stationary base and body out of which a rack is raised by means of a handle operating a pawl. The force is exerted in only one direction, either upward or outward, depending upon the position in which the jack is placed, but there is no means of reversing this force and causing the force to pull two bodies or parts toward one another. When my telescopic jack is to be used as an ordinary jack for lifting, it is placed in position with member 26 forming the base and member 28 the cap. When handle 30 is moved, it turns locked outer sleeves 1 and 2, while threads 10 and 11 acting through external threads 12 and 13 on inner sleeves 3 and 4 act to force said sleeves 3 and 4 outward, without rotation, from their telescoped positions in sleeves 1 and 2 until flanges 16 and 17 reach and stop against threads 10 and 11. When this point of outward movement is reached both sets of sleeves 1 and 2 together with 3 and 4 will rotate with handle 30 as one unit and internal threads 14 and 15 will operate with jack screws 5 and 6 in further outward movement until flanges 18 and 19 upon said screws 5 and 6 seat against threads 14 and 15 when the limit of outward travel has been reached. The length or distance through which my telescopic jack will act can be controlled by properly regulating the dimensions of the moving parts and it can be made approximately three times as long when extended as when telescoped. Attention is called to the fact that instead of acting upward or outward from one point or base as would a double screw jack my device constitutes what might be called a twin double screw jack as it acts outward in two opposite directions from the handle 30 and the action is obviously at twice the speed of the ordinary double screw jack.

When used as an automobile body jack it can be made in such length as to extend several feet and entirely eliminate the use of wood blocks and iron pipes as extensions as is the practice with jacks now in use. This use of loose blocks and pipe is a source of danger to workmen for when the force is applied at a slight angle, the blocks "kick out" and cause more or less injury as well as annoyance and loss of time. This cannot happen with my telescopic jack regardless of the length to which it is extended as all the parts are rigidly connected.

It is frequently desirable to pull parts together instead of forcing them apart as with a common jack. My improved device is especially designed with this idea in mind and for this purpose I have illustrated in Figs. 3, 5, 7 and 9 some of the attachments suitable for this purpose. Each attachment is provided with a cap or cover plate 32 and a threaded shank 33, the said shanks 33 being adapted to be screwed into sockets 20 and 21. The ring or eye 34, the hook 36, the chain and hook 37 and the clamp 40 provide means for attaching my jack to various parts and in different places when the jack is extended. By using the handle 30 in the reverse direction to that just described, the jack will exert a pull and draw said parts together. In Figs. 4, 8 and 10 I illustrate other attachments to be used in places where the caps 26 and 28 would not fit or where they might slip and cause damage. Each of the attachments in Figs. 4, 8 and 10 has a cover plate 32 and

shank 33 for use as just explained. If my device is used as a body jack, U-fork 35 may be used to slip over a hub, rod or axle, angular head 38 into a square corner and crescent or segment head 39 for removing a body dent. It is to be understood that other attachments may be devised for special purposes and that I do not confine myself to those here illustrated,

From the foregoing description it can be readily understood that I have provided a compact, double and quick acting telescopic jack which will serve to exert outward force as an ordinary jack and in addition can be used to exert an inward force or pull not possible with a common jack.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A device of the class described, comprising coupled rotatable outer sleeves, right and left hand disks internally threaded into the inner ends of the said outer sleeves adjacent the inner joint formed by the coupling of the said outer sleeves, and a handle passing diametrically through the coupled ends of the said outer sleeves and between the said internal disks, the said handle being adapted to rotate said sleeves and lock said disks and said sleeves in position when the device is assembled.

2. In a telescopic jack, the combination of rotatable, coupled outer sleeves; externally threaded disks adjacent the inner ends of the said outer sleeves; a handle rotatable and locking means for rotating said disks and said outer sleeves; the outer sleeves each having a set of oppositely inclined internal threads at their outer ends only; inner sleeves externally threaded in opposite directions for co-acting with the said internal threads of the said outer sleeves; flange stop means on the inner ends of the said inner sleeves for seating against the internal threads on the said outer sleeves and limiting the outward movement of the said inner sleeves; the inner sleeves each having a set of oppositely inclined internal threads at their outer ends only; oppositely threaded jack screws positioned within the said inner sleeves for co-acting with the said internal threads at the outer ends of the said inner sleeves; stop means on the inner ends of the said jack screws for limiting the outward movement of the said jack screws; said jack screws having threaded sockets in their outer ends; and caps having threaded shanks to engage in the said sockets for attaching the said jack screws thereto.

3. In a telescopic jack, coupled rotatable outer sleeves, right and left hand disks internally threaded into the said outer sleeves adjacent their inner ends, a handle passing diametrically through the said outer sleeves and between said disks for rotating said outer sleeves and locking said sleeves and said disks in assembling said jack, the outer sleeves having right and left hand internal threads adjacent their outer ends only, the inner sleeves having right hand and left hand external threads substantially throughout their entire length, said external threads being adapted to co-act with said internal threads on said outer sleeves in extending and retrieving said inner sleeves, and flanges at the inner ends of the said inner sleeves adapted to form stops against the said internal threads of the said outer sleeves and limit the outward movement of the said inner sleeves.

4. In a telescopic jack, coupled rotatable outer sleeves, right and left hand disks internally threaded into the said outer sleeves adjacent their inner ends, a handle passing diametrically through said outer sleeves and between said disks for rotating said outer sleeves and locking said internal disks and said outer sleeves in assembling said jack, the outer sleeves having right and left hand internal threads adjacent their outer ends only, the inner sleeves having right and left hand external threads substantially throughout their entire length, said external threads being adapted to co-act with said internal threads on the said outer sleeves in extending and retrieving said inner sleeves, flanges at the inner ends of the said inner sleeves adapted to form stops against the said internal threads of the said outer sleeves and limit the outward movement of the said inner sleeves, the inner sleeves having right and left hand internal threads adjacent their outer ends only, right and left hand externally threaded jack screws adapted to co-act with the internal threads adjacent the outer ends of the said inner sleeves, and flanges at the inner ends of the said jack screws for forming stops against the said internal threads in the outer ends of the said inner sleeves and limit the outward movement of the said jack screws.

5. In a telescopic jack, the combination of rotatable coupled outer sleeves; externally threaded disks adjacent the inner ends of the said outer sleeves; a handle rotating and locking means for said disks and said outer sleeves; the outer sleeves each having a set of oppositely inclined internal threads at their outer ends only; inner sleeves externally threaded in opposite directions for co-acting with the said internal threads of the said outer sleeves; flange stop means on the inner ends of the said inner sleeves for seating against the internal threads on the said outer sleeves and limiting the outward movement of the said inner sleeves; the inner sleeves each having a set of oppositely inclined internal threads at their outer ends only; oppositely threaded jack screws positioned within the said inner sleeves for co-acting with the said internal threads at the outer ends of the said

inner sleeves; stop means on the inner ends of the said jack screws for limiting the outward movement of the said jack screws; the said jack screws having threaded sockets in their outer ends; and caps or heads with knurled surfaces and threaded shanks for positioning in the said sockets and receiving and transmitting the outward force of the said jack.

In testimony whereof I affix my signature.

JOSEPH C. WARREN.