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J. E. CARROLL

FLUID PRESSURE ACTUATED JACK

Filed June 21, 1923

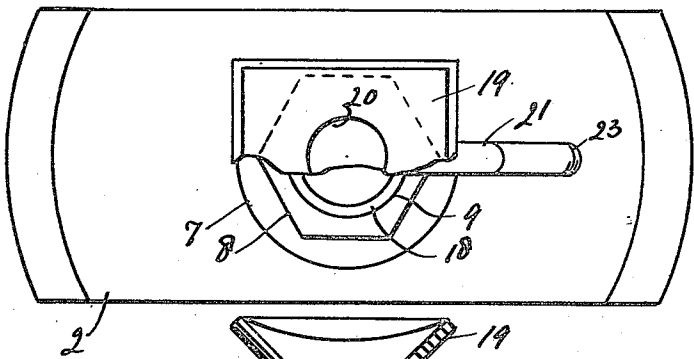


Fig. 1.

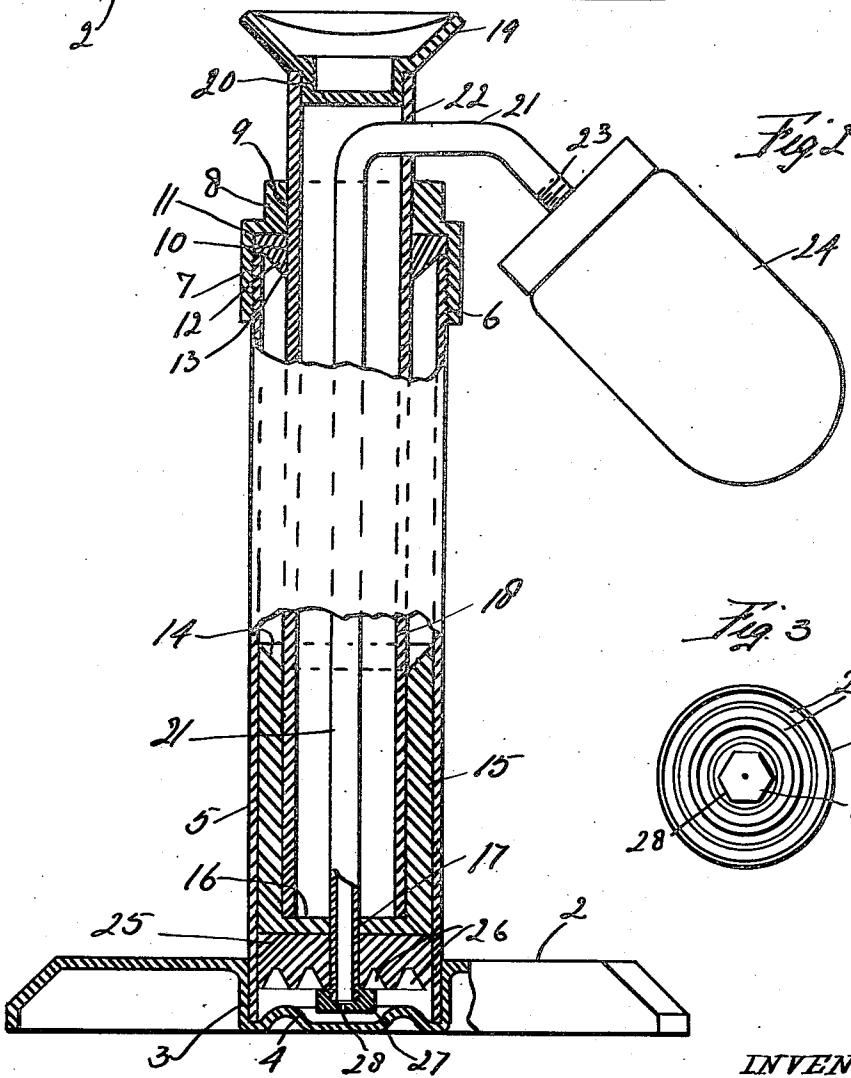


Fig. 2.

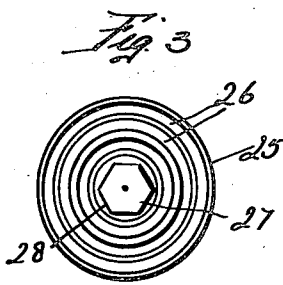


Fig. 3.

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JOHN E. CARROLL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO CO-2 PRODUCTS COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A COMPANY EXISTING UNDER A DECLARATION OF TRUST.

FLUID-PRESSURE-ACTUATED JACK.

Application filed June 21, 1923. Serial No. 648,807.

To all whom it may concern:

Be it known that I, JOHN E. CARROLL, a citizen of the United States, residing at 1919 North 11th Street, Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in a Fluid-Pressure-Actuated Jack, of which the following is a specification.

10 My invention relates to new and useful improvements in a fluid pressure actuated jack, and has for its primary object to provide a device of this character in which the actuating medium is compressed gas or other fluid under high pressure which is contained and dispensed in a container or casing and which may be discharged at will for operating the jack.

20 Another object of the invention is to generally improve the construction of such devices in order to be strong and durable although relatively light in weight, neat in appearance and compact.

25 A further object of the invention is to provide for packing the joints in order to prevent or reduce to a minimum the likelihood of leakage.

30 A still further object of the invention is to increase the surface of the inner face of the piston without increasing the diameter of said piston thereby providing a greater surface for the action of compressed gas or other fluid.

35 With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

40 In order that those skilled in the art to which this invention appertains, may understand how to make and use the same, I will describe its construction in detail, referring by numerals to the accompanying drawing forming a part of this application, in which:—

45 Fig. 1, is a plan view of a jack embodying my invention with a portion of the axle seat or cradle broken away.

50 Fig. 2, is a vertical sectional side elevation thereof with the actuating fluid container in position.

Fig. 3, is an inner end view of the piston.

In carrying out my invention as here embodied, 2 represents a suitable base having a depressed socket 3, the bottom wall of which is annularly corrugated as at 4 in order to strengthen the same to resist the pressure used in actuating the jack. In this socket is fixed one end of the outer casing 5 the other or upper end of which is threaded as at 6, preferably externally, to receive the cap 7 which is preferably internally threaded and has formed therewith a polygonal boss 8 to provide a wrench hold whereby the cap may be firmly screwed on to the upper or outer end of the outer casing 5. This cap also has a hole 9 therethrough with which aligns the hole 10 in the packing 11 said packing preferably resting between the upper end of the outer casing 5 and the top wall of the cap and said packing has a central depending frusto-conical portion 12 providing a bevel surface 13 for coaction with the inwardly beveled edge 14 at the upper end of the inner casing 15. Said inner casing 15 has a bottom wall 16 with a hole 17 therethrough for a purpose to be later described.

In the bore of the inner casing 15 is fixed a tubular body 18 the upper end of which projects through the hole 10 in the packing 12 and through the hole 9 in the cap 7. On the outer end of the tubular body 18 is mounted an axle seat or cradle 19 the boss 20 of which projects into said tubular body.

85 A pipe 21 is located within the tubular body and has its lower end projecting through the hole 17 in the bottom wall of the inner casing 15 while the front end passes out through an opening 22 in the tubular body at substantially right angles to the portion of said pipe within the tubular body while the extreme end of said pipe projects downwardly at a suitable angle and is threaded as indicated at 23 to receive a container or "bottle" which holds the compressed gas or other fluid under high pressure.

90 A relatively thick washer 25 surrounds the projecting lower end of the pipe 21 and rests against the bottom wall of the inner casing 15 and the working surface of said washer is annularly corrugated as at 26 so as to provide an increased working surface for

the gas or other fluid without increasing the diameter of the washer. This washer is held in place by the cap nut or burr 27 having threaded engagement with the end of the pipe 21 and this cap has a restricted opening 28 therethrough to form a communication between the pipe 21 and the interior of the outer casing for the admission of the fluid under pressure.

- 10 In practice when it is desired to use the jack the container 24 is attached to the outer free end of the pipe 21 and the gas or other fluid contained therein allowed to pass through the pipe 21 and the restricted opening 28 into the interior of the outer casing 5 where the expansion thereof will act upon the plunger or piston, which comprises the tubular body 18, inner casing 15 and washer 25, and raise said piston to elevate any object resting on the axle seat or cradle 19. As soon as the complete piston movement has taken place the inwardly beveled edge 14 will contact with the beveled surface 13 of the packing 11, thus effectually closing the joint between the inner casing 15 and said packing to prevent the escape of the fluid that by any chance might seep past the washer 25. Upon removal of the container 24 the gas or other fluid will escape through the pipe 21 and permit the plunger or piston to return to its normal telescoped position.

Of course I do not wish to be limited to the exact details of construction as herein shown as these may be varied within the limits of the appended claims without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is:—

- 40 1. A fluid pressure actuated jack comprising an outer casing, a plunger slidably mounted within said casing and a pipe located within the plunger and having one end projecting from the bottom of the plunger and the opposite end projecting through the side wall beyond the outer casing, said pipe adapted to receive a container of gas or other fluid under pressure.

- 50 2. A jack including a base, an outer casing rising therefrom, an inner casing having a bottom operable within said outer casing, a tubular body fixed in said inner casing and projecting beyond the upper end of the outer casing, a cap on said outer casing surrounding the tubular body, a seat or cradle carried on the upper end of the tubular body, a pipe within the tubular body and having one end projecting through the bottom wall of the inner casing and another end projecting through the wall of the tubular body above the cap, said last named end adapted to receive a container holding gas or other fluid under pressure whereby said gas or other fluid will be conveyed to the outer casing beyond the bottom wall of

the inner casing, and a washer surrounding the lower end of said pipe and coacting with the bottom wall of the inner casing.

3. A jack including a base having a depressed socket the bottom wall of which is corrugated, an outer casing fixed within said socket, a plunger operable within the outer casing, said plunger including an inner casing having a bottom wall, a tubular body fixed within said inner casing and projecting above the outer casing and a washer coacting with the inner casing, a pipe leading from the outside of the tubular body beyond the upper end of the outer casing and projecting downward through the tubular body and washer, the outer end of said pipe adapted to receive a container holding gas or other fluid under pressure, and a cap nut having a restricted opening therethrough threaded on the inner end of the pipe to hold the washer in place and regulate the stream of gas or other fluid passing from the pipe into the outer casing.

4. A jack including a base having a depressed socket the bottom wall of which is corrugated, an outer casing fixed within said socket, a plunger operable within the outer casing, said plunger including an inner casing having a bottom wall, a tubular body fixed within said casing and projecting above the outer casing and a washer having an annular corrugated working surface coacting with the inner casing, a pipe within the tubular body and passing through the bottom wall of the inner casing and said corrugated washer, means for threaded connection with the pipe to hold said washer in place, the upper end of said pipe passing through the wall of the tubular body and having its end threaded to receive a container holding gas or other fluid under pressure, and a cap on the upper end of the outer casing and surrounding said tubular body.

5. A fluid pressure actuated jack comprising a base, an outer casing rising therefrom, a packing having a frusto-conical portion located at the upper end of the outer casing, a cap mounted on the upper end of said outer casing and holding said packing in place, and a plunger including an inner casing having a beveled upper edge for coaction with said packing to prevent the leakage of gas or other fluid within the outer casing.

6. A fluid pressure actuated jack comprising a base, an outer casing rising therefrom, a packing having a frusto-conical portion located at the upper end of the outer casing, a cap mounted on the upper end of said outer casing and holding said packing in place, an inner casing having a bottom wall and provided with an inwardly beveled upper edge for coaction with the frusto-conical portion of the packing when raised, a tubular body fixed within the inner casing and projecting through the packing and cap, a seat

or cradle mounted upon the upper outer end of said tubular body, a pipe within the tubular body and movable therewith, the upper end of said pipe projecting through the wall of the body above the cap, said outer end being threaded to receive a container holding gas or other fluid under pressure, the lower end of said pipe projecting through the bottom wall of the inner casing and into the chamber formed by the outer casing, a washer mounted on the projecting lower end of said pipe and snugly fitting the outer casing, and means for holding said washer in place.

7. A fluid pressure actuated jack comprising a base, an outer casing rising therefrom, a packing having a frusto-conical portion located at the upper end of the outer casing, a cap mounted on the upper end of said outer casing and holding said packing in place, an inner casing having a bottom wall and provided with an inwardly beveled upper edge for coaction with the frusto-conical portion of the packing when raised, a tubular body fixed within the inner casing and projecting through the packing and cap, a seat or cradle mounted upon the upper outer end of said tubular body, a pipe within the tubular body and movable therewith, the upper end of said pipe projecting through the wall of the body above the cap, said outer end being threaded to receive a container holding gas or other fluid under pressure, the lower end of said pipe projecting through the bottom wall of

the inner casing and into the chamber formed by the outer casing, a washer mounted on the lower projecting end of said pipe, the outer or working face of said washer being corrugated to increase the working surface and a cap nut threaded on said pipe and coacting with the washer to hold the latter in place, said cap nut having a restricted opening therethrough to regulate the flow of gas or other fluid under pressure to the interior of the outer casing.

8. In a jack of the class described, a base having a depressed socket, an outer casing fixed in said socket, an inner casing snugly fitting the outer casing and operable therein, a tubular body fixed in said inner casing and projecting beyond the top of the outer casing, a cap surrounding the projecting end of the body and mounted on the upper end of the outer casing, a seat or cradle on the upper end of the body, a packing within the upper end of the outer casing for coaction with the upper end of the inner casing when the latter is elevated, a conduit within the tubular body and projecting outside thereof adjacent its upper end and also projecting below the bottom of the inner casing, a corrugated washer snugly fitting the outer casing and coacting with the inner casing, and means mounted on the conduit to hold said washer in place.

In testimony whereof, I have hereunto affixed my signature.

JOHN E. CARROLL.