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D. R. JOHNSON

2,044,699

LIFTING JACK

Filed April 25, 1933

Fig. 1.

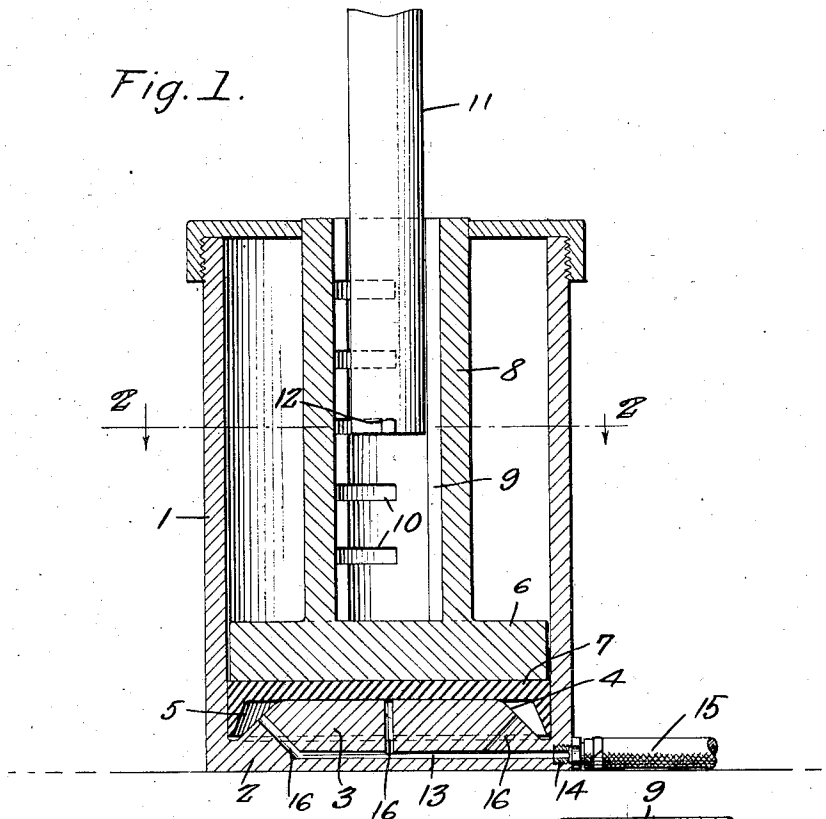


Fig. 2.

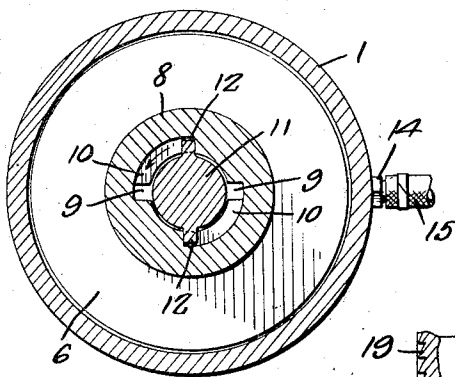


Fig. 3.

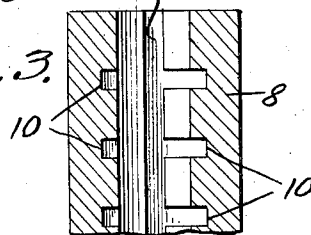


Fig. 4.

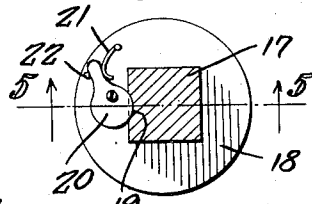
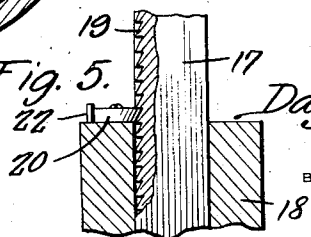


Fig. 5.



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WITNESS:

UNITED STATES PATENT OFFICE

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LIFTING JACK

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Application April 25, 1933, Serial No. 667,905

1 Claim. (Cl. 121-46)

This invention relates to lifting jacks, and its general object is to provide a jack of the pneumatic type that includes a lifting stem or rod which can be easily and expeditiously adjusted to various heights, and is held accordingly without fear of casual falling or displacement.

Another object of the invention is to provide a pneumatic lifting jack that is simple in construction, inexpensive to manufacture, and extremely efficient in operation and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claim.

In describing my invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a vertical sectional view taken through a jack which forms the subject matter of the present invention.

Figure 2 is a sectional view taken approximately on line 2-2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a fragmentary vertical longitudinal sectional view taken through the rod sleeve.

Figure 4 is a horizontal sectional view taken through a modified form of my invention.

Figure 5 is a sectional view taken approximately on line 5-5 of Figure 4, looking in the direction of the arrows.

Referring to the drawing in detail, the reference numeral 1 indicates the cylinder of my jack and which as shown is provided with a cover threaded thereon and a base 2 that has formed therewith and rising therefrom a circular portion 3, the latter having an inwardly flared or inclined circumferential wall 4 spaced from the circumferential wall of the cylinder 1 in order to provide an annular groove or chamber 5.

Mounted for reciprocation within the cylinder 1 is a one piece solid piston 6 that may have secured to its under surface a one piece solid rubber cup washer or gasket 7. However, the gasket is shown as being independent of and disposed between the piston 6 and the circular portion 3, and the annular depending portion or flange of the gasket is outwardly flared and received within the chamber 5, as clearly shown in Figure 1.

Secured to and rising from the piston 6 is a sleeve 8 which is provided with diametrically opposed longitudinally arranged grooves 9 on its inner surface and these grooves 9 are co-extensive

with the length of the sleeve as will be apparent. Arranged at equi-distantly spaced intervals in the inner surface of the sleeve and likewise disposed diametrically opposite each other is a plurality of circumferentially directed recesses 10 which are arranged in registering pairs for a purpose which will be presently apparent.

Mounted for vertical movement within the sleeve is a stem or rod 11 that has formed on or otherwise secured to its lower end and extending from opposite sides thereof lugs 12 which are receivable in the grooves 9 that act as guides or key-ways therefor, and the lugs are likewise receivable within opposed recesses 10 for fitting engagement with the walls thereof to hold the stem or rod in its adjusted positions at intervals throughout the height of the sleeve 8. It is of course to be understood that the stem or rod 11 has formed on or otherwise secured to its upper end, a head or saddle (not shown).

The base 2 of the cylinder 1 is provided with a passageway 13 that extends through the cylinder 1 and has secured in its outer end a nipple 14 for the purpose of receiving a hose 15, the latter being capable of connection with a suitable source of air supply, and communicating with the passageway 13 are branch passages 16, two of which communicate with the chamber 5 and may be termed end passages, while the other passage is centrally arranged with respect to the circular portion as clearly shown in Figure 1.

In Figures 4 and 5 I have illustrated a slightly modified form of latching means for the stem which in these figures are indicated by the reference numeral 17, and is shown as being square in cross section to be received in a similar shape bore of what may be termed a hollow sleeve 18, that is secured to and rises from a piston of the same type as the piston 6.

The stem 17 is provided with a plurality of ratchet teeth 19 which are formed on one side and extend longitudinally thereof.

It will be apparent that the stem 17 is mounted for vertical movement within the sleeve 18 and in order to hold the stem in adjusted positions, I provide a pawl 20 which cooperates with the teeth 19 for that purpose. The pawl is pivotally secured to the upper end of the sleeve 18 and is eccentrically mounted so as to be disposed into and out of the path of the teeth upon moving the same on its pivot. The pawl is spring pressed and is urged to operative position through the instrumentality of a leaf spring 21 and I likewise provide a stop to limit the movement of the pawl in one direction, and the stop is shown as being a

pin 22 that is arranged in the path of the small or handle end of the pawl as best shown in Figure 4.

The remaining structure of the modified form of the invention is identical to that of the preferred form, and while the operation of both forms may be obvious, it might be stated that in the operation of the preferred form, the stem 11 is elevated to the desired height and is then rotated for disposing the lugs 12 in one of the pairs of recesses 10. Air is then introduced within the cylinder 1 and of course below the cup washer or gasket 7 so as to cause the annular depending portion thereof to expand against the cylinder wall to prevent the passage of air about the gasket, therefore the piston will be elevated by the air pressure, and carry the stem 11 accordingly through the medium of the lugs and sleeve 8. When the desired height is reached, the air pressure is then shut off and when it is desired to lower the piston, the air is exhausted in any well known manner.

In the preferred form, the stem 17 is likewise raised to the desired height before applying the air pressure, then the pawl which is received by one of the teeth will hold the stem accordingly.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may make

changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claim.

What I claim is:

A pneumatic lifting jack comprising a hollow cylinder provided with a base having a horizontally disposed air passage extending through the major portion thereof, a one piece solid piston in said cylinder, a circular portion rising from the base and being circumferentially inwardly flared at an inclination to provide with the vertical wall of the cylinder an annular chamber, said circular portion provided with diverging air passages opening into the chamber and a vertical air passage opening centrally of the cylinder and all communicating with the horizontal air passage, means for introducing air within the cylinder through the air passages, a gasket between the piston and circular portion, an annular flange depending from the periphery of the gasket for normal disposal within the chamber to be acted upon by the air from the passages to cause the flange to expand against the cylinder to provide an air tight connection between the latter and the gasket, and adjustable lifting means carried by the piston.

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