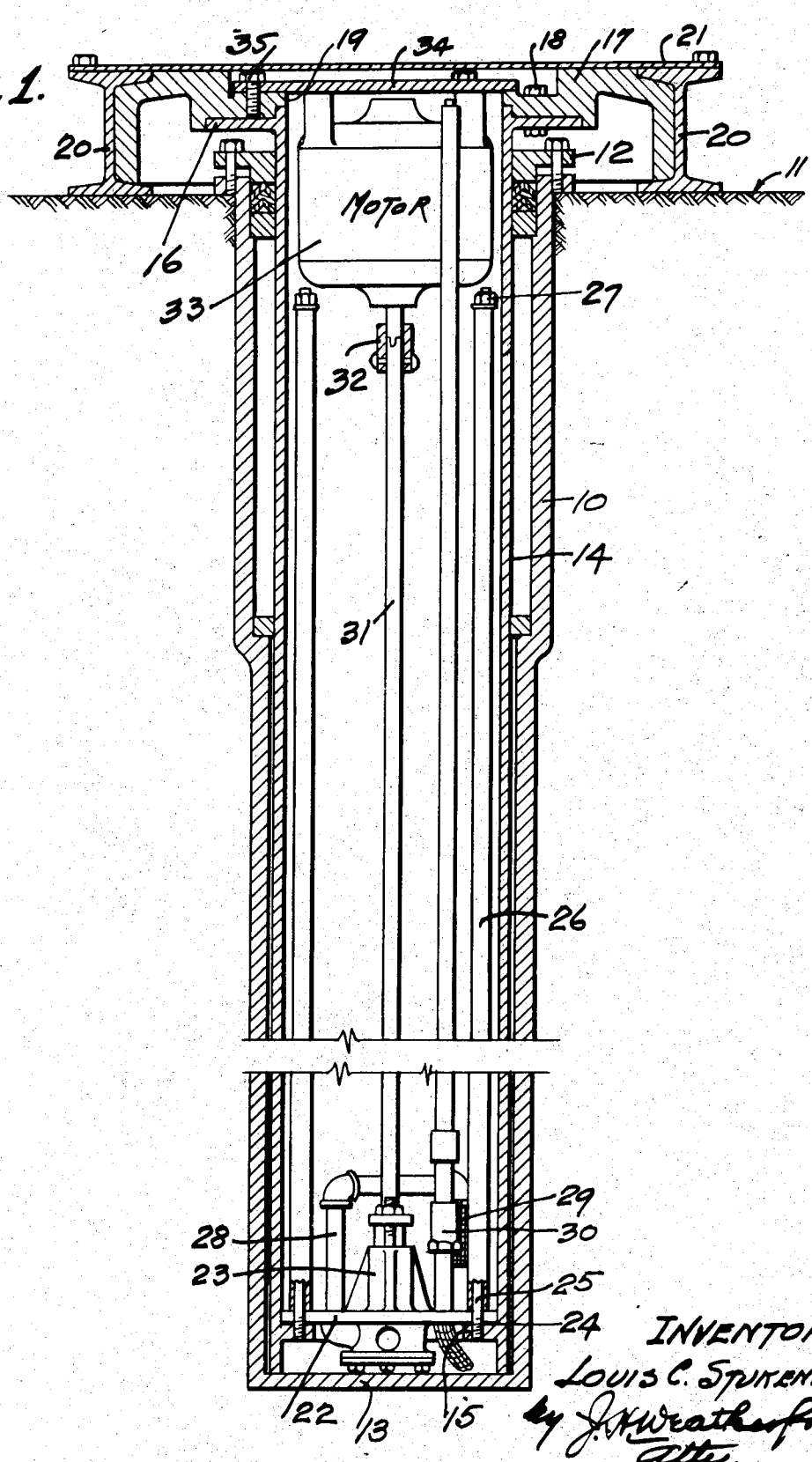
Aug. 15, 1933. L. C. STUKENBORG 1,922,406

PLUNGER FOR VEHICLE LIFTS

Original Filed June 9, 1930 2 Sheets-Sheet 1

Fig. 1.



INVENTOR
LOUIS C. STUKENBORG
by J. H. Weatherford
Atty.

Aug. 15, 1933. L. C. STUKENBORG 1,922,406

PLUNGER FOR VEHICLE LIFTS

Original Filed June 9, 1930 2 Sheets-Sheet 2

Fig. 3.

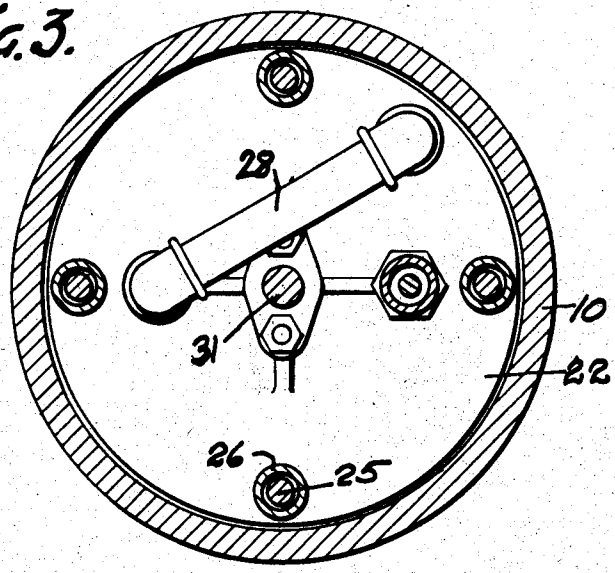
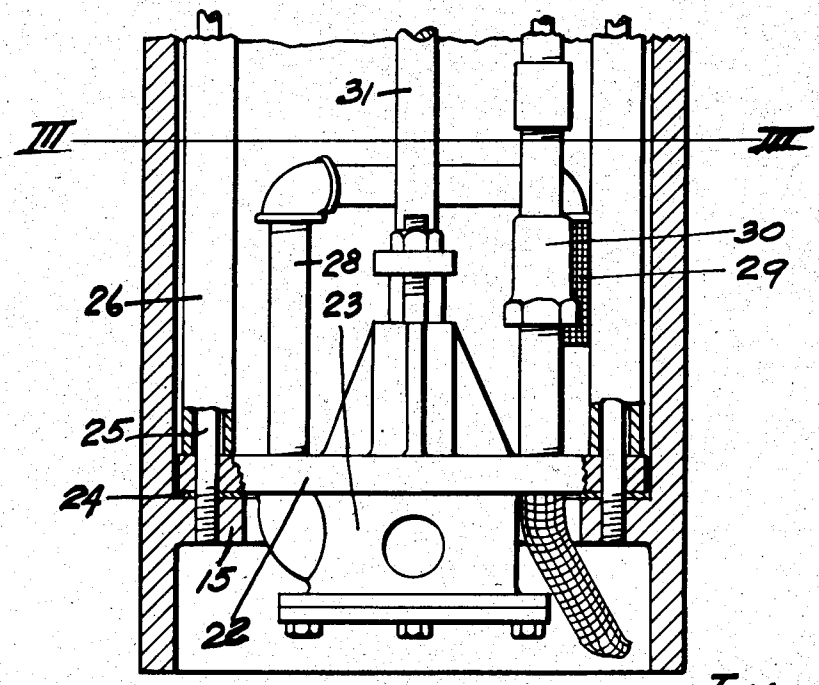


Fig. 2.



INVENTOR

LOUIS C. STUKENBORG

by J. H. Wrathford

ATTY.

Patented Aug. 15, 1933 1,922,406

UNITED STATES PATENT OFFICE

1,922,406

PLUNGER FOR VEHICLE LIFTS

Louis C. Stukenborg, Memphis, Tenn.

Refiled for abandoned application Serial No. 459,986, filed June 9, 1930. This application October 5, 1932. Serial No. 636,293

7 Claims. (Cl. 138—9)

This invention relates to the construction of the plungers for hydraulic jacks and especially to the construction of the plungers for hydraulic jacks used for vehicle lifts. The present application is a refiling of applicant's forfeited and later abandoned application Serial No. 459,986, filed June 9, 1930.

In vehicle lifts a cylinder and plunger are largely employed. On the upper end of the plunger a head is fastened, which head carries a pair of rails which engage the axles, or wheels as the case may be, of an automobile for the purpose of raising them for servicing. The cylinder is vertically disposed in a hole in the ground with its upper end substantially flush with the surface and its lower end inaccessible. It follows therefore, that to obtain access to the lower part of the cylinder for cleaning, or to the lower end of the plunger that the plunger must be entirely removed from the cylinder, which necessarily means removing the head and rails carried thereby as well as the plunger.

Such structures are necessarily heavy and in addition are of awkward shape for handling. Also there are few devices, suitable for the purpose, available at the plants where these lifts are installed, so that removal of the plunger and structure carried thereby is an extremely difficult proposition. In an endeavor to minimize this trouble, the plunger head has been made detachable so that the head and rails carried thereby may first be removed and thereafter the plunger be removed. Even when this is done it it still extremely difficult to remove the plunger, yet it is absolutely necessary that access be had to the bottom of the cylinder and/or to the plunger parts for cleaning and other purposes.

The objects of the present invention are:

To so improve the plunger construction that all the associated parts including the lower head thereof may be removed without removing the plunger proper from the cylinder or without removing the head and rails carried thereby and thereby to provide access to the bottom of the cylinder.

The means by which the foregoing and other objects are accomplished and the manner of their accomplishment will readily be understood from the following specification on reference to the accompanying drawings, in which:—

Fig. 1 is a sectional elevation taken as on the center line of a typical vehicle lift jack showing the construction of the plunger together with the parts associated therewith;

Fig. 2 is an enlarged sectional elevation of the lower end of the plunger; and

Fig. 3 is a sectional plan taken as on the line III—III of Fig. 2.

Referring now to the drawings in which the various parts are indicated by numerals, 10 is a vertical cylinder having its upper end substantially flush with the surface 11 of the ground and 12 is a stuffing box flange defining the upper end of this cylinder. The lower end of the cylinder is closed by a head 13 ordinarily integral therewith.

In the present form of the device the plunger comprises a hollow cylinder 14, entirely open at its upper end and having an interior annular flange 15, at or adjacent its lower end, forming a partial closure only. At the upper end an exterior annular flange 16, surrounds the plunger and forms a seat on which a head 17 forming part of the lift table, is supported. This head may be secured to the flange 16 as by bolts 18 or it may be, and preferably is, welded thereto. A circular opening 19 preferably identical in bore with the interior diameter of the plunger is provided through the head. Secured to the head are rails 20 which are used to engage with the understructure of an automobile to raise the same. Completing this head is a removable cover plate 21.

The lower head of the plunger is completed by an annular flange 22 which extends outward from a pump assembly 23. The flange 22 rests on the upper surface of the flange 15, a gasket 24 being disposed therebetween if it be so desired. Studs 25 screwed into the annular flange 15 extend upward, to a point adjacent the top of the plunger, passing through bolt holes in the flange 22. Disposed on these studs are elongated sleeves 26 which extend upward adjacent the top of the studs and are secured thereon by nuts 27. The nuts 27 clamp the sleeves 26 against the upper surface of the flange 22 and secure that flange to the flange 15 to effect a closure and complete the desired structure. The studs 25 serve not only to bring the nuts 27 into accessible position adjacent the upper end of the plunger but also act as guides for directing the flange 22 into its proper place on the flange 15.

The flange 22 also carries the intake pipe 28 and strainer 29, and a release valve 30 the detail of which not being pertinent to this case need not here be disclosed. 31 is the pump shaft which extends upward from the pump 23 and is connected by a slip coupling 32 with the shaft of a motor 33. 34 is a plate forming part of this motor, which plate is supported by the head 17 and is secured thereto by bolts 35.

To disassemble, the plate 21 is removed, bolts 35 loosened and the motor likewise removed, leaving the nuts 27 accessible from above. These nuts are unscrewed, the sleeves 26 taken off, and the pump, carrying with it the flange 22 and the associated parts mounted thereon, is lifted bodily out of the plunger, the pump shaft providing a convenient means for accomplishing this. The pump thus removed is thus accessible for cleaning and repairs, and access is had to the lower part of the jack cylinder. It will be seen that in order to remove this pump it is not necessary to remove the oil from the plunger.

After the pump has been overhauled, when it is again replaced, the studs 25 serve as guides to direct the flange 22 into proper position and maintain the bolt holes thereof in proper alignment. After it is so replaced, the sleeves 26 are dropped into place and the nuts 27 replaced and screwed down. The motor 33 may then be replaced, and fastened down, the cover plate 21 be put on, and the device is again ready for use.

Having described my invention, what I claim is:

1. A hydraulic jack including a hollow cylinder and a plunger unit disposed in said cylinder, said unit including an elongated hollow cylinder open at both ends and having an integral, internal, annular flange adjacent an end thereof, a closure member including a pump assembly insertable from the opposite end of said cylinder, means, secured to and extending from said annular flange, terminating adjacent and accessible to the opposite end of the cylinder, co-operable with said closure member for guiding said closure member into place against said flange, whereby said member may be engaged with the accessible portion of the guiding means and be thereafter guided to seating position, and means co-operating with said guiding means for securing said closure member in place.

2. A hydraulic jack including a hollow cylinder and a plunger unit disposed in said cylinder, said unit including an elongated hollow cylinder open at both ends and having an interior closure-part adjacent an end thereof, a closure member insertable from the opposite end of said cylinder, means, secured to and extending from said closure-part, terminating adjacent and accessible to the opposite end of the cylinder, co-operable with said closure member for guiding said closure member into place against said closure-part, whereby said member may be engaged with the accessible portion of the guiding means and be thereafter guided to seating position, and means co-operating with said guiding means for securing said closure member in place.

3. A hydraulic jack including a hollow cylinder, and a plunger therein, said plunger including an elongated hollow cylinder open at both ends, having an internal closure-part adjacent one end thereof, a complementary closure element for completing the closure of said end, and means for positioning and securing said closure element, comprising studs within said elongated cylinder, secured to and extending from the closure-part and terminating adjacent and accessible to the opposite end of said cylinder, said closure element having holes therethrough engageable with said studs whereby said element may be engaged with the accessible ends of said studs and be guided to place by said studs, nuts engageable on said accessible ends of said studs, and sleeves interposable between said closure element and said nuts.

4. In a hydraulic jack, a plunger comprising a hollow cylinder, open at both ends, an internal annular flange adjacent one end thereof and forming a partial closure therefor, a plurality of studs secured in and extending from said flange, and terminating adjacent and accessible to the opposite end of said cylinder, a closure member adapted to pass within said cylinder and seat against said flange, said closure member having holes therethrough conforming to said stud spacing, whereby said closure member may be engaged with the accessible ends of said studs and be guided to place thereby, said studs acting as guiding means to said flange from the opposite end, sleeves placeable one on each of said studs and extending from said closure member, adjacent the free ends of said studs, and nuts, one on each of said studs clamping, through said sleeves, said closure against said flange.

5. In a hydraulic jack, a plunger including a hollow cylinder having an internal closure-part adjacent one end thereof and forming a partial closure therefor, a plurality of studs secured to and extending from said closure-part, terminating adjacent and accessible to the opposite end of said plunger, a closure member adapted to pass within said cylinder and seat against said closure-part, said closure member having holes therethrough conforming to said stud spacing, whereby said closure member may be engaged with the accessible ends of said studs and be guided to place thereby, said studs acting as guiding means from the top to bottom of said plunger, sleeves placeable one on each of said studs and extending from said closure member, adjacent the free ends of said studs, and nuts, one on each of said studs clamping, through said sleeves, said closure member against said closure-part.

6. In a plunger for a hydraulic jack, an elongated hollow cylinder open at both ends and having an internal, annular flange adjacent an end thereof, a closure member insertable from the opposite end of said cylinder, means secured to and extending from said annular flange and terminating adjacent and accessible to the opposite end of the cylinder, co-operable with said closure-member for guiding said closure member into place against said flange, whereby said member may be engaged with the accessible portion of the guiding means and be thereafter guided to seating position, and means co-operating with said guiding means for securing said closure member in place.

7. In an hydraulic jack, a plunger comprising an elongated hollow cylinder open at both ends and having an interior closure-part adjacent an end thereof, a closure member insertable from the opposite end of said cylinder, means extending from said closure-part, terminating adjacent and accessible to the opposite end of the cylinder, co-operable with said closure member for guiding said closure member into place, whereby said member may be engaged with the accessible portion of the guiding means and be thereafter guided to seating position, and means co-operating with said guiding means for securing said closure member in place.

LOUIS C. STUKENBORG.