

July 2, 1946.

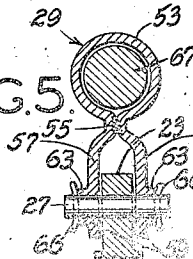
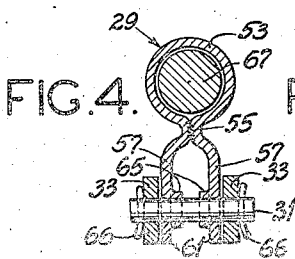
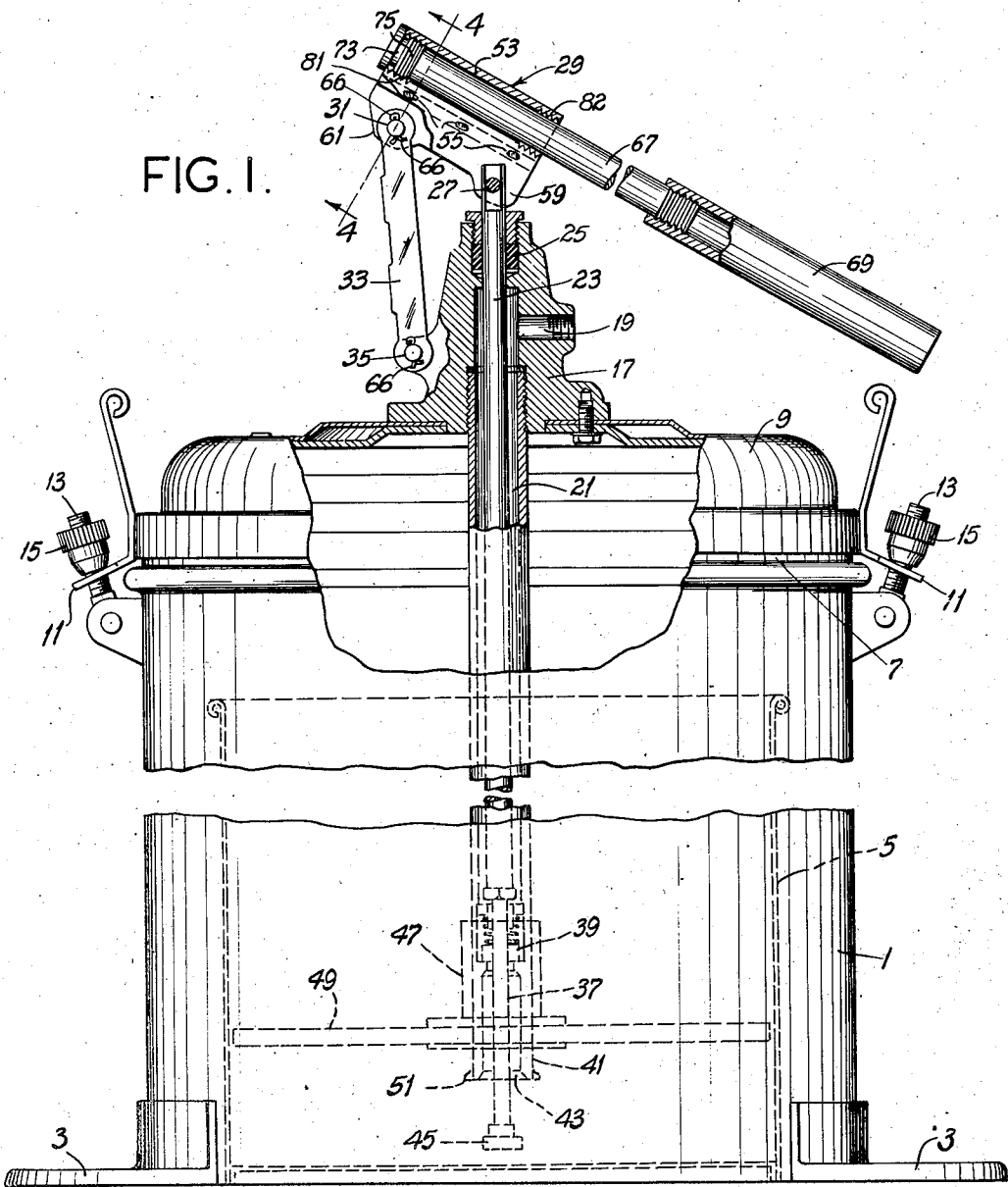
A. D. REISERT ET AL

2,403,122

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2 Sheets-Sheet 1



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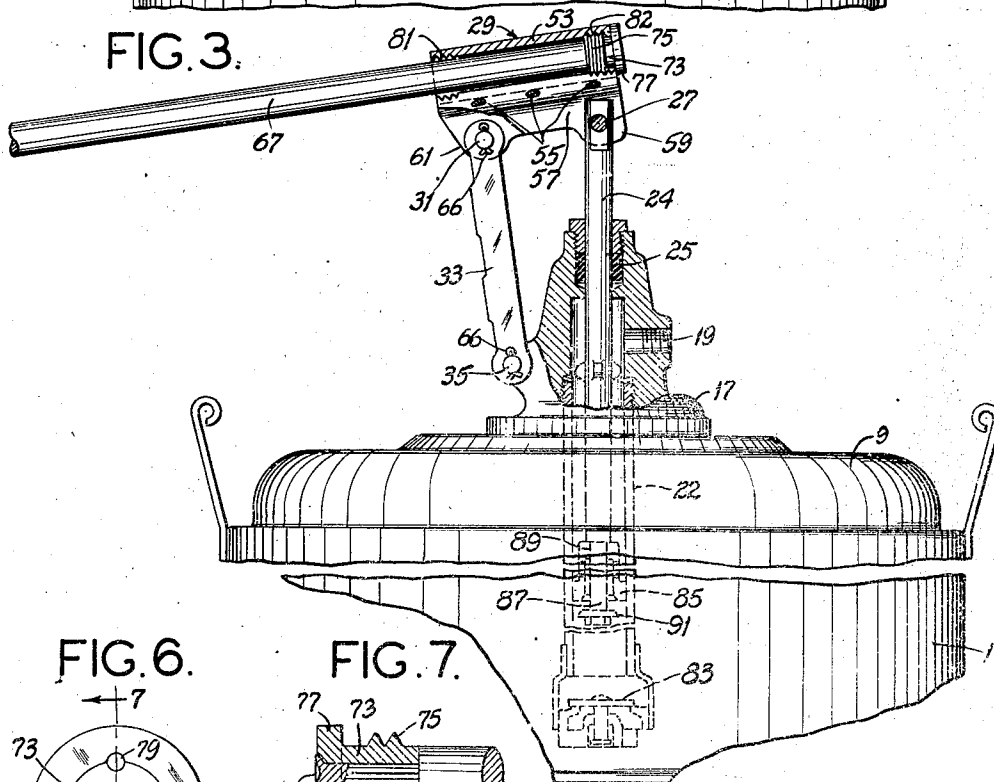
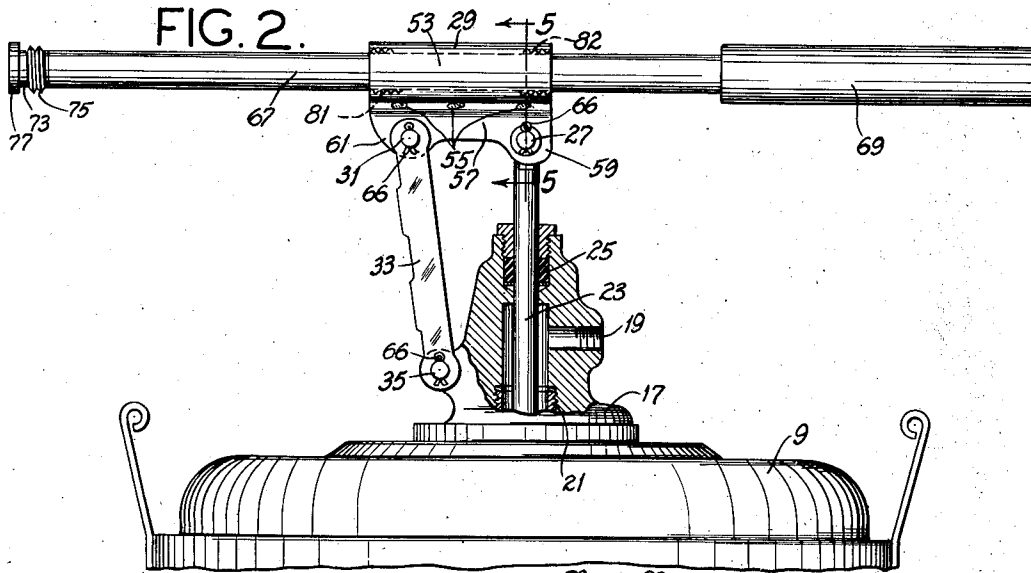
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UNITED STATES PATENT OFFICE

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PUMP

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This invention relates to pumps, and with regard to certain more specific features, to portable pumps for pumping lubricants and the like.

The invention is an improvement upon the general types of pumps shown for example in U. S. Patents 2,083,591 and 2,179,621.

Among the several objects of the invention may be noted the provision of a manually operable portable pump which, without specialized additional lugging equipment, may be carried by two persons; the provision of a pump of the class described which pumps directly from shipping or other containers of substantial capacities and which protects the contents of shipping containers when once opened; the provision of a pump of this class in which the mechanism which provides the leverage for pumping also acts as the lugging equipment, said mechanism being useful on various pump models and thus economical to make. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which are illustrated several of various possible embodiments of the invention,

Fig. 1 is an elevation of one form of the invention, parts being broken away to show a section;

Fig. 2 is a fragmentary view of upper portions of Fig. 1 showing an alternative position of parts for lugging;

Fig. 3 is a fragmentary view similar to Fig. 1 but showing an alternative form of the invention, parts being broken away;

Figs. 4 and 5 are sections taken respectively on line 4—4 of Fig. 1, and 5—5 of Fig. 2;

Fig. 6 is an end view of a combined pump handle and lugging bar; and,

Fig. 7 is a longitudinal section taken on line 7—7 of Fig. 6.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now more particularly to Fig. 1, there is shown at numeral 1 a cylindric housing having two foot steps 3. This housing is adapted to receive an open, commercial shipping lubricant container 5. The container 5 sets in the housing and is ordinarily one of the sizes which require more than one man conveniently to lift it along

with the other parts to be described. It is desirable to have such enclosed containers as portable as possible in the field, particularly in military operations. Thus containers of the type specified, when housed as specified ordinarily require two men for quickly transporting them from point to point. Ordinarily to make a device adaptable to handling by two men, special lugging equipment is necessary which it is desirable to avoid in order to reduce structural complications and cost. The present invention provides the solution for this problem.

The top of the housing 1 is formed as shown at 7 to receive a cover 9 which carries slotted lugs 11 for engagement with pivoted lug bolts 13 and thumb nuts 15. When the bolts 13 are swung up and the nuts 15 screwed down, the cover 9 is held to the housing 1. By unscrewing the nut 15 and swinging down the bolts 13, the cover is released for removal. The cover 9 forms the protection for the open lubricant container 5 in the housing 1.

Bolted to the top of the cover 9 is a pump frame casting 17 having a lubricant outlet 19 leading from a pump cylinder 21 the latter being screwed upward into the bottom of the casting 17. A piston rod 23 passes through the cylinder 21 and out of the casting 17 through a packing gland 25. At its upper end it is pinned (at 27) to a pump rocker lever 29. The lever 29, which also constitutes a handle bushing is pivoted at 31 to a bridle or coupler link 33. Link 33 in turn is pivoted at 35 to the casting 17. The lever 29 is of special form to provide a dual function which will later be described.

Referring to the piston rod 23, it passes through the cylinder 21 and at its lower end carries an extension member 37. Member 37 passes through a check valve 39 in the cylinder 21. It also passes through an auxiliary pump cylinder 41 having an open lower end 43.

At the lower end of the extension 37 is a piston 45 which during reciprocation of the rod 23 moves into and out of the cylinder 41. When the piston 45 is down as shown in Fig. 1, lubricant flows into the cylinder 41, and as the piston 45 rises a charge is trapped in this cylinder 41 and compressed up into the cylinder 21 through the check valve 39. Upon descent of the rod 23, the intrusion thereof into the space in the cylinder 21 results in extrusion of lubricant from the outlet 19. This is because the diameter of the rod 23 is greater than that of the extension 37. The pumping elements have been described primarily for completeness, similar ones being known in

the art. Pumping assemblies of this class built in connection with downwardly extending tubes such as 21 are ordinarily known as lance pumps adapted to be inserted into a mass of fluid to be pumped. This pump of Fig. 1 is single-acting in the sense that fluid is forced out at 19 on the downstroke only.

Outside of the cylinder 21 is a sliding bushing 47 which carries a follower plate 49 for preventing air craters in heavier lubricants. This follower plate simply rests upon the descending lubricant surface and settles down with it as lubricant is abstracted by the pumping elements.

A stop 51 prevents the follower plate 49 from falling away from the cylinder 21 when upon removal of the cover 9 the cylinder is withdrawn from the container 5.

A primary feature of the invention has to do with the handle bushing lever 29. This lever is constituted by a stamping formed as a hollow cylinder or bushing 53 (Figs. 4 and 5) welded along one side as at 55 and having downwardly extending parallel walls 57. These walls 57 carry lugs 59 and 61 in which are formed flanged openings 63 and 65 respectively for carrying the pins 27 and 31 respectively. The pins are held by suitable cotter keys 66 as indicated.

Through bushing 53 slides a handle 67 having threaded thereto at one end a grip 69. It is knurled at its other end as indicated at 71 in Fig. 7. Forced onto the knurled part 71 is a thimble 73 having threads 75, raised with respect to the surface of the handle 67. This thimble is also flanged as indicated at 77 to a diameter greater than the inside diameter of the bushing 53. After the thimble is knurled the part 71 is pressed on and staked as indicated at 79 to hold it permanently in position. The assembly of the thimble on the handle 67 is done after the handle 67 has been inserted through the bushing 53.

The bushing 53 is threaded at its opposite ends as indicated at 81 and 82, the crests of the threads being flush with, or outside of, the inside diameter of the cylinder 53. Thus the handle 67 may telescope freely through the cylinder 53, as may be seen by comparing Figs. 1 and 2. By placing the handle in the position shown in Fig. 1 and rotating it counterclockwise, the lock-nut threads or member 75 may be engaged with the threads 81 at one end of the cylinder 53. This lock member organizes or locks the handle 67 rigidly with the lever 29. Hence by oscillating at the handle grip 69, the lever 29 is oscillated to reciprocate the pump rod 23.

By rotating the handle 67 clockwise, the threads 75 and 81 are disengaged and the handle may then be telescoped to the position shown in Fig. 2 and two men then can use it as a beam for lifting the housing 1 along with the attached and contained parts. It is of course assumed that the cover 9 is at this time locked to the housing 1 by the parts 11, 13 and 15.

The described telescopic arrangement for the handle 67 (Fig. 2) manually facilitates transportation in the field. Also, during shipment in vehicles, the handle may be released and shifted to its centralized position as shown in Fig. 2 where it is not in such a protruding position as it would be were it permanently affixed to the handle lever bushing 29. Also, it is in the plane of the two foot steps 3.

It will be noted from Fig. 1 that there is a second class lever arrangement. In Fig. 3 is shown a use of the same bushing 29 in a first

class lever arrangement obtained by reversing the position of the telescopic handle 67, then introducing threads 75 into the threads 82. While it is clear that this difference in leverage may be accomplished upon a given container by simply unscrewing the grip 69, reversing 67, and reapplying the grip 69, this is not the primary intention. The primary intention is to make the reversal at the factory, when the handle bushing 29 is to be used on a pump of lower pressure.

In Fig. 3 corresponding parts have corresponding reference numerals so far as they apply, but this is a low-pressure, double-acting pump. At the bottom it carries an inlet valve 83. The loose hollow piston 85 on the bottom of the rod 24 works directly in the cylinder 22 and itself forms a check valve 87. Thus by reciprocating the rod 24 liquid flows through the inlet valve 83 and the piston check valve 87. In this case, the hollow piston 85 floats on a short extension 89 from the rod 24 and seats upon a head 91 on the end of said extension 89. This low-pressure pump is not new itself but it is shown to indicate the reason for using a first class lever in Fig. 3. Thus it will be seen that the handle bushing 29 is interchangeable on various pumps for first and second class leverage, and that the telescopic handle is reversible therein for producing the first and second class lever functions as desired.

It is of course understood that in both forms of the invention a suitable lubricant outlet check valve and hose or line are attached to the outlet 19.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

We claim:

1. A manually portable mechanism of the class described comprising a manually portable body, a reciprocating plunger member associated with the portable body, an oscillating member pivoted to the reciprocating plunger member, an operating handle telescoping said oscillating member, and means for removably fastening one end of the oscillating member by means forming a quick-detachable connection between an end of the telescopic handle and said oscillating member, whereby said handle may rigidly be attached to the oscillating member to apply leverage thereto to operate the plunger or to be disconnected and telescoped to form a supporting beam for the portable body.

2. A manually portable mechanism of the class described comprising a manually portable body, a reciprocating plunger member associated with the body, an oscillating member pivoted to the reciprocating plunger member, a link connecting said oscillating member and the body, an operating handle telescoping said oscillating member, and means for removably fastening one end of the oscillating member by means forming a quick-detachable connection between an end of the telescopic handle and said oscillating member, whereby said handle may rigidly be attached to the oscillating member to apply leverage thereto to operate the plunger or to be disconnected to form a supporting beam for the portable body.

3. A portable unit comprising a portable housing adapted to receive a loaded and open con-

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tainer, a removable cover attachable to said housing and adapted to support it, a cylinder attached to said cover and forming an extension insertable into said open container, a plunger reciprocating in said cylinder and extending upwardly and outwardly therefrom, a rocking bushing pivoted to said plunger, a link pivoted to said bushing and to said cylinder, a telescoping handle passing through said bushing, a quick-detachable means at one end of said handle for attachment to the bushing and being releasable for positioning the handle so that the bushing is intermediate and whereby the handle may be used as a means to support said cylinder and attached parts, including the housing and the container.

4. A rocker handle assembly for use as a first or second class lever in a reciprocating pump mechanism having a frame and a plunger reciprocating means therein, comprising a link formed as a cylindric bushing having two spaced pivot means, a movable coupler link extending from one pivot means to the frame, said reciprocating means being attached to the other pivot means, an operating handle having a part telescoping the bushing, a grip at one end of said handle and a lock member at the other end, and means at one end of said bushing engageable with said lock member.

5. A rocker handle assembly for use as a first or second class lever in a reciprocating pump mechanism having a frame and a plunger reciprocating means therein, comprising a link formed as a cylindric bushing having two spaced pivots, a movable coupler link extending from one pivot

means to the frame, said reciprocating means being attached to the other pivot means, an operating handle having a part telescoping the bushing, a removable handle grip at one end of said handle and a lock member at the other end, and means at both ends of said bushing selectively engageable with said lock member.

6. A rocker handle assembly for use as a first or second class lever in a reciprocating pump mechanism, comprising a link formed as a cylindric bushing part having two spaced pivot points arranged along the side of the cylindric bushing part, an operating handle having a part telescoping the bushing, a removable handle grip at one end of said handle and a lock member at the other end, means at both ends of the bushing arranged for releasable locking engagement with said lock member, the lock member and the grip being larger than the inside of the bushing normally to prevent separation of the handle and bushing.

7. A rocker member for a pump mechanism comprising a cylindric bushing, spaced pivot points thereon arranged on a line beside the axis of said bushing, said bushing having internal threads at one end, a telescopic handle passing through the bushing and the threads, and a threaded lock means at one end of the handle engageable and disengageable with said threads in the bushing, whereby the handle may at one end be rigidly attached to the bushing or telescoped to locate the handle at another point in the bushing.

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