Nov. 23, 1948. L. C. ROTTER ET AL 2,454,343

PUMP FOR REMOVAL OF LUBRICANTS FROM CONTAINERS

Filed Sept. 8, 1944 2 Sheets-Sheet 1

FIG. 1.

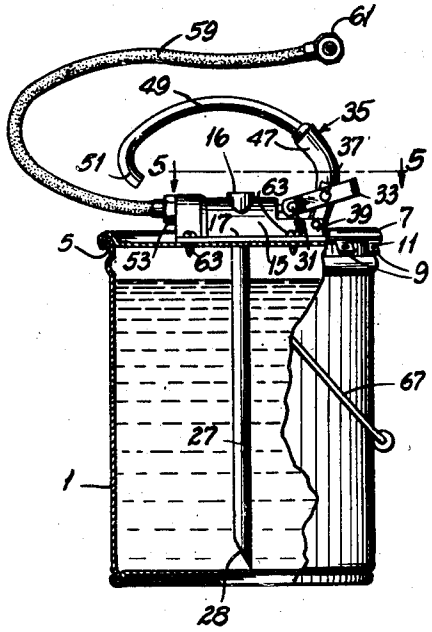


FIG. 2.

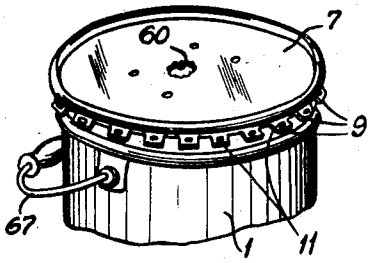


FIG. 3.

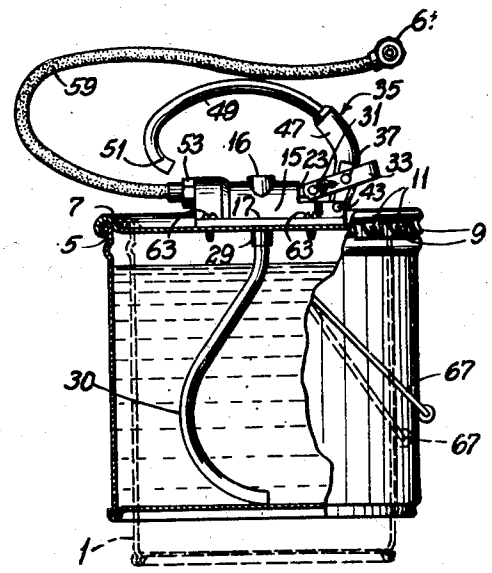
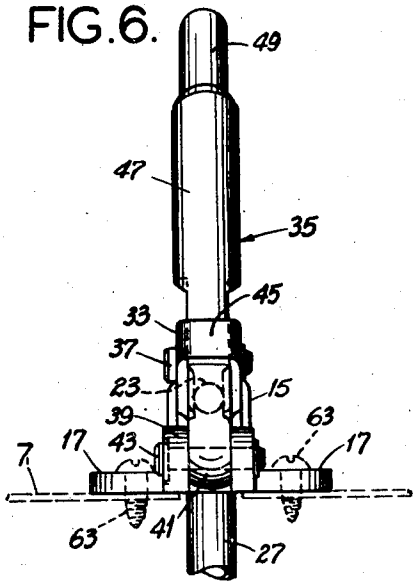


FIG. 6.



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FIG.5.

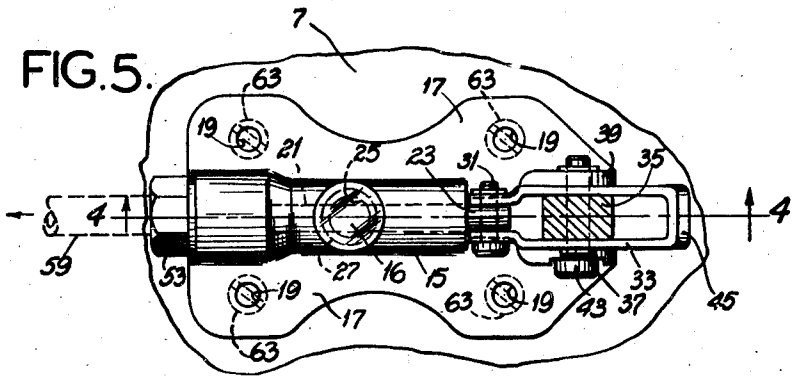
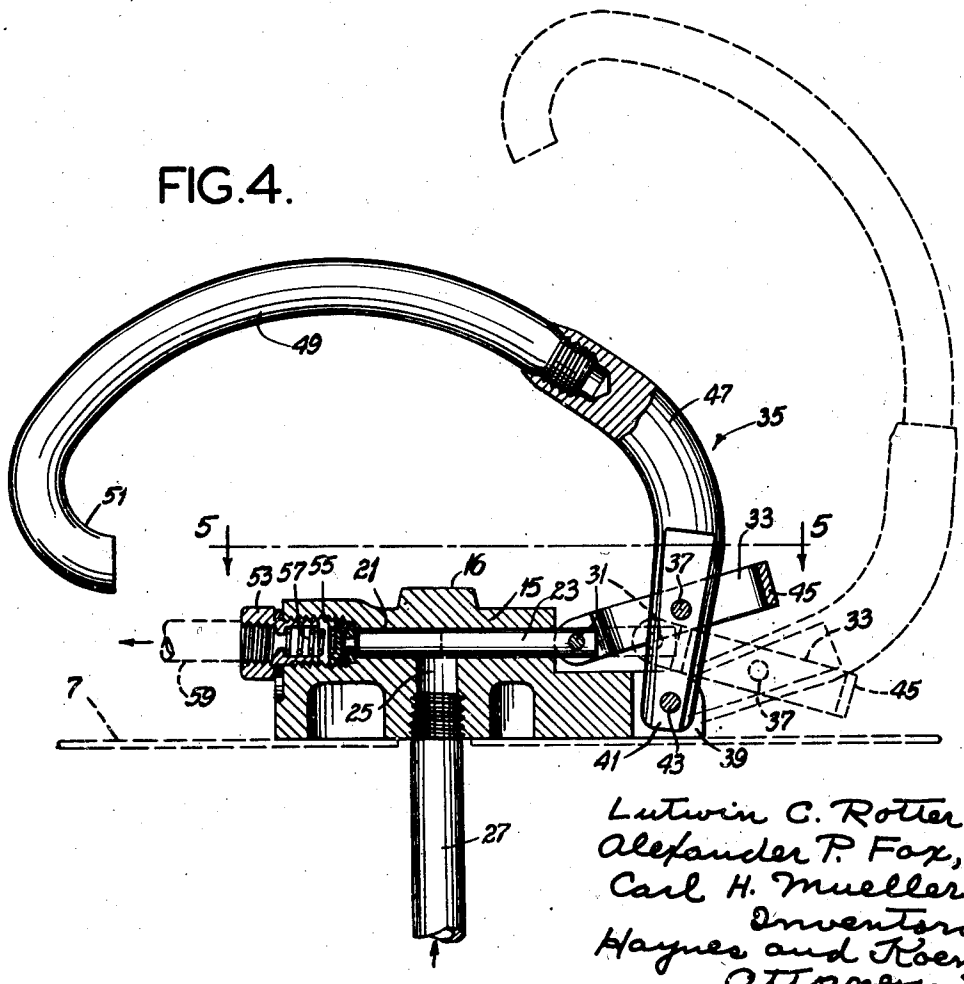


FIG.4.



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PUMP FOR REMOVAL OF LUBRICANTS FROM CONTAINERS

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Application September 8, 1944, Serial No. 553,224

7 Claims. (Cl. 222—82)

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This invention relates to lubricator pumps, and with regard to certain more specific features, to portable pumps of this type.

Among the several objects of the invention may be noted the provision of an improved, lightweight lubricator pump adapted for easy successive attachments to the lids of portable commercial lubricant containers; the provision of a pump of the class described having an improved operating handle and linkage whereby during pumping operation no substantial forces are applied toward separation of the lids from the containers; the provision of a pump of the class described which does not require an extra lid in addition to the one supplied with each commercial container used; the provision of a pump of this class which may easily be attached to the lids of successive new commercial containers without removing the lids, thus to preserve the contents of the containers against contamination during emptying of them; and the provision of a pump of the class described which in connection with the respective containers is compact and well balanced so that the assemblies may easily be carried about by the usual container bails. 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 is illustrated one of various possible embodiments of the invention,

Fig. 1 is a side elevation showing a pump attached to one form of lubricant container, parts being broken away and showing a section;

Fig. 2 is an isometric view of the container of Fig. 1 prepared for attachment of the pump;

Fig. 3 is a view similar to Fig. 1 but showing the use of another form of suction tube on a differently shaped container, the dotted lines showing the relationship between the shape of the container of Fig. 1 and that shown solid in Fig. 3;

Fig. 4 is an enlarged longitudinal section of parts of the pump per se being taken on line 4—4 of Fig. 5;

Fig. 5 is a horizontal section taken on lines 5—5 of Figs. 1 and 4; and

Fig. 6 is a right-end elevation of Fig. 5.

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 portable commercial container for lubricant, for example the twenty-five pound size. A carrying bail is shown at 67.

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Such containers are ordinarily made of light gage stock. The top edge is rolled as indicated at 5 for cooperation with a groove rolled into the edge of an even lighter gage cover 7. A popular gage for such covers is number 26 which, obviously, is not very stiff. This requires especial care in mounting any pump thereon.

From the grooved edges of the covers extend tongues 9 which upon application of the covers to filled containers are bent in under the rolled portion 5 to hold the covers in place. These tongues carry openings 11 for the insertion of a screw driver which is fulcrumed on the edge of the lid in order to open the container. Sometimes the containers are shorter and of greater diameter than shown in Fig. 1 (see the solid lines in Fig. 3 and compare the dotted lines in Fig. 3).

Referring more particularly to Figs. 4–6, numeral 15 indicates the body of our new pump which includes a supporting pad portion 17 wherein are openings 19 for the reception of suitable fastenings which will be discussed hereafter.

A horizontal bore 21 carries a sliding plunger 23, the front face of which traverses a lower inlet opening 25. The opening 25 is threaded to receive a rigid suction tube 27, such as shown in Figs. 1, 4 and 6. Or, this threaded opening 25 may have threaded into it a nipple 29 formed on the end of a short length of flexible, oil-resistant tubing 30 made of synthetic rubber, plastic or the like. In the latter case of the flexible inlet, the bottoms of various lengths of containers may be reached. In the former case of the rigid inlet pipe, it is cut with a sharp bevel 28 so that if desired it may be forced through the thin-gage material of the head 7, the length being such as finally to place the bevel near the bottoms of the containers for which the pipe is adapted.

The outside rear end of the plunger 23 is pivoted at 31 between the ends of a generally U-shaped, one-piece clevis member 33. In its central region the clevis member 33 is pivoted to a handle 35 (see pivot pin 37). One end of the pad 17 is formed as a clevis 39 in which is pivoted the lower end 41 of the handle 35 (see pivot pin 43). It will be noted that the rear end of the clevis 33 is closed in solid as indicated at 45, which when the linkage is in the dotted-line position shown in Fig. 4, functions in connection with the handle 35 as a linkage stop, without depending upon some extending part of the pad 17 or the lid to which the pump is to be applied.

The shape of the handle 35 is of particular interest, both as to appearance and utility. It will be noted that it has an angled butt 47 which carries the openings for the pivot pins 37 and 43. This butt of the handle also serves as a link in the mechanism for actuating the plunger. Attached to the butt is a curved grip member 49.

On the end of the grip member 49 is a hook 51. The general shape of the grip is semi-elliptical.

The outlet of the bore 21 is provided with a nipple 53 between which and the bore 21 is a check valve 55 held in place by a spring 57. A flexible lubricant line 59 is attached to the nipple 53 and at its end carries a suitable coupler 61 for temporary attachments to lubricant fittings such as are carried on various classes of machinery, for example farm machinery. Reciprocation of the plunger 23 by oscillation of the handle 35 abstracts lubricant from the suction tube 27 (or 30, as the case may be) and forces it out over the line 59. Oscillation of the handle 35 is limited between the solid- and dotted-line positions shown in Fig. 4. It will be noted that these limits with respect to the pad 17 are independent of the apparatus to which the pump is attached. Cooperation of the clevis 33 with the butt controls the dotted-line position limit and cooperation of the left end of the clevis 33 with body 15 controls the solid-line position.

The preferred form of attachment of the pump to the lid 7 is without removal of the lid. To do this either of two procedures may be followed. First, the purchaser of the lubricant container may knock a rough hole 60 through its center (Fig. 2). This is easily accomplished by any handy tool because of the light gage of the lid. For instance, the blade of a hatchet, cold chisel, or the like will do. This hole 60 is for the insertion of either the tube 27 or 30. This brings the pad 17 against the lid, whereupon pointed self-tapping drive screws such as shown at 63 may be lightly tapped with a hammer to start holes and then screwed in to make the desired fastenings. When the pad is secured to the lid, the broad flat lower surface thereof surrounding the suction tube engages the upper surface of the lid to provide a seal to prevent entry of contaminating matter into the container through the hole 60 in the lid.

On the other hand, the hole 60 may be formed simply by pushing down the pump from above, using the bevel 28 as a former for the hole 60, in which event, as the hole is formed, the tube 27 is driven down to the desired position shown in Fig. 1. The screws are then applied as before. To aid in forcing the beveled pipe 27 through the lid 7, an anvil 16 is cast on the body 15 over the pipe 27 so that some additional force may be brought to bear to puncture the lid. This may be done by striking the anvil 16 with a hammer, thus driving down the pipe 27.

Or, if the user prefers to remove the lid before puncturing it, this may be done by means of a screw driver as a pry in the openings 11. More precise openings may then be made and the attachment made by the use of bolts with nuts. The lid may then be replaced and the ears 9 turned down. In this case, and in the one where hole 60 is battered in, no bevel 28 is needed.

It is preferred that the user use one of the methods requiring no removal of the lid, because then danger of contamination of the lubricant 67 is almost entirely eliminated.

The degree of fastening effected by the screws, as described, is enough, in view of the particular placement of the pump and the form of its operating handle and linkage. That is to say, the handle 35 which bends over the parts of the pump which are fastened to the lid places the operator's hand and directs the force of the hand which operates the handle 35 directly against the area within the periphery of the lid 7. Also, when most thrust is applied, this is applied practically perpendicular to the lid in a direction which tends to seat it better on the container 1, instead of having any prying or loosening action. Also, when the suction stroke is brought about, the pull on the handle 35 is through the area of the lid within its periphery with only a very small amount of tilting action in the effective parts of the stroke. The result is that although the lid 7 is only fastened to the container 1 with the bent-in tongues 9, and although the pump is fastened to the relatively light lid by means of the light fastener 63, the lid is not pried from the container by the pumping action, nor is the pump body pried from the lid. All thrusts are applied as simple tension or compression. Thus the preferred, light form of fastening of the pump to head 7 by means of screws (which does not require removal of the lid 7) may be resorted to without fear that the pump will come off. Nor need concern be shown for the relatively weak fastening effected between the lid and the container by the ears 9.

Another feature of the curved handle is that when it is in the solid-line position shown in Figs. 1, 3 and 4 it permits of freely turning up the bail 67 of the container 1 so it may be carried about conveniently. It will also be noted that this is true regardless of the particular rotary position assumed by the handle 35 with respect to the vertical axis of the container 1. Thus the user needs not to make careful measurements for attachment purposes. Rough centering is all that is necessary. Such placement also automatically brings about, in connection with the curved handle, the more or less vertical stroking desired to bring about the desirable thrusts on the cover 7.

The purpose of the hook 51 is to prevent the hand which grips the handle extension 49 from slipping off the rounded portion of the handle in applying maximum leverage in making a compression stroke. A feature of the rounded handle is that the hand may easily slip around it from a position near the hooked end of the handle for powerful strokes, to obtain high pressure at a low volume rate, to a position near the fulcrum 43 for short, quick and less powerful strokes, for relatively large volume rate and low pressure, or for priming the pump.

It will be understood that the user may furnish the pipe 27, any piece of pipe having the proper threads being suitable, and that it may be cut off by a hacksaw so as to end near the bottom of the container to be used. In the case of the use of a flexible tube 30, this adjustment is not necessary as suggested by Fig. 3.

It will be understood that after a container has been emptied, the pump may be removed by loosening the fastening 63 and transferring it to another container purchased by the user.

One of the advantages of the invention is that the pump manufacturer does not need to furnish a special lid for mounting the pump on the container, the lid of the commercial container being sufficient to support the pump in view of the more or less vertical stroking action.

In addition, the pump is compact, light and of low cost. Its appearance is also good. The contents of the container are preserved from contamination. Even in the case where the lid is removed for application of the pump, contamination is prevented during use. It should be remembered in this connection that portable lubricant apparatus of this class is carried into locations where entry of all types of foreign mate-

rial such as dust, grit et cetera need to be guarded against.

Details of the check valve 55 have not been given because various types may be used, depending upon circumstances. The one shown is particularly advantageous for obtaining a quick prime of the pump. Details of this valve pointing out its particular advantages are supplied in the co-pending application of John R. Graef, Serial No. 550,956, filed August 24, 1944, for Check valve. Complying with rule 43, it should be noted that claims drawn to said check valve appear in said application.

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 lubricant pump adapted for attachment to the relatively light lid of a portable commercial lubricant container, comprising a body portion formed to provide a horizontal pad having a lower surface adapted to engage the upper surface of said lid and to be attached thereto, and also to provide a horizontal cylinder above said pad, a horizontally reciprocating plunger in said horizontal cylinder of said body portion, a linkage connecting the body portion and said plunger, said linkage including a pump handle, said handle being angled over the body portion for substantially vertical stroking in the plane of reciprocation of the plunger with operating thrusts being directed within the boundary of the lid, and a suction inlet extension on the underside of the body portion for extension through an opening in the lid and into the contents of the container.

2. In a pump of the class described, a body portion having a flat bottom pad for attachment to the lid of a commercial lubricant container, a horizontal bore in said body portion, an outlet check valve at one end of said bore, a reciprocating plunger in said bore and having one end extending therefrom, said body having an inlet connecting with the bore intermediate its ends and traversed by the end of the plunger which works adjacent to said outlet valve, said body including a clevis adjacent the point where the plunger extends from the body, an oscillating operating handle pivoted in said clevis and arched over the body portion, said handle and plunger moving in the same plane, a hook on the free end of the handle, a clevis pivoted to the exposed portion of the plunger and to the handle, and having its sides joined behind the handle at a distance adapted to form a stop in connection with the handle upon limited withdrawal of the plunger from the body portion.

3. A lubricant pump for attachment to the light lid of a portable commercial container, said pump comprising a body portion provided with openings for attachment to said lid, said body portion having a suction inlet on its bottom, a suction tube extending downward from the body portion and attached to said inlet, said suction tube being formed at its bottom with a beveled cutting face, an anvil on the upper side of the body portion above said tube for driving the tube through a lid, a reciprocating plunger in the body portion, an operating linkage connected between the body portion and the plunger, a driving portion of the linkage being formed as a curved handle over the body portion and oscillating substantially up and down over the same and movable to a limiting position to clear said anvil for striking to drive said tube through a lid, said curved handle allowing for reciprocation of the plunger by thrusts which are directed to intersect the lid within its line of peripheral attachment to the container.

4. A lubricant pump for attachment to the light lid of a portable commercial container, said pump comprising a body portion provided with openings for accommodating attaching means to said lid, said body portion having a suction inlet on its bottom, a suction tube extending downward from the body portion and attached to said inlet, a reciprocating plunger in the body portion, an operating linkage connected between the body portion and the plunger, a driving portion of the linkage being formed as a handle extending over the body portion and oscillating substantially up and down over the same and movable to limiting positions, said handle allowing for reciprocation of the plunger by thrusts which are directed to intersect the lid within its line of peripheral attachment to the container, said linkage including a U-shaped clevis pivoted at its open end to the plunger and limiting motion of the handle in one direction by contact with the body, said clevis at a mid-point being pivoted to the handle and being closed at its spaced opposite end to contact the handle to limit its motion in the other direction independently of the lid.

5. A lubricant pump for attachment to the light lid of a portable commercial container, said pump comprising a body portion provided with openings for accommodating attaching means, said body portion having a suction inlet on its bottom and an anvil on its top, a suction tube extending downward from the body portion and attached to said inlet, a reciprocating plunger in the body portion, an operating linkage connected between the body portion and the plunger, a driving portion of the linkage being formed as a handle curved over the body portion and oscillating substantially up and down over the same and movable to a limiting position to clear said anvil for striking blows to drive said tube through a lid, said arched or curved shape of the handle allowing for reciprocation of the plunger by thrusts which are directed to intersect the lid within its line of peripheral attachment to the container and in the other limiting position of the handle allowing movement of the bail to carrying position.

6. A lubricant pump for attachment to the light lid of a portable commercial container, said pump comprising a body portion provided with openings for attaching means, said body portion having a suction inlet on its bottom, a suction tube extending downward from the body portion and attached to said inlet, said suction tube being formed on its bottom with a beveled cutting face, said body portion being provided with an anvil on its upper side above said tube for driving the tube through a lid, a reciprocating plunger in the body portion, an operating linkage connected between the body portion and the plunger, a driving portion of said linkage being formed as a curved handle over the body portion and oscillating substantially up and down over the same and movable to an outer limiting position to clear said anvil for striking blows to drive said tube through a lid, said curved shape of the handle allowing for reciprocation of the plunger by thrusts which

are directed to intersect the lid within its line of peripheral attachment to the container.

7. A lubricant pump adapted to be removably attached to a lid of a lubricant container and to pump lubricant therefrom without removing the lid of the container, comprising a pump body formed to provide a horizontal supporting pad having a lower surface adapted to engage the upper surface of said lid and to provide a horizontal cylinder above said pad, a suction tube extending downward from the lower surface of the pad adapted to be inserted through an opening formed in said lid into the lubricant in the container to seat the lower surface of said pad against the upper surface of said lid, means for removably securing said pump body on said lid with said surfaces in engagement to provide a guard against entrance of contaminating matter into the lubricant in the container, said pump body having a suction inlet providing communication from said suction tube to said cylinder, a reciprocating plunger in said cylinder, handle means on said pump body for reciprocating said plunger, said pump body being provided with a horizontal outlet for said cylinder, said handle means oscillating in a plane including the axis of the plunger and being arched over the lid in a direction such that thrusts for oscillating the handle are directed to intersect the lid within its line of peripheral attachment to the container.

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