Feb. 23, 1937. J. L. CREVELING 2,071,615

LUBRICATING DEVICE

Filed July 22, 1932 4 Sheets-Sheet 1

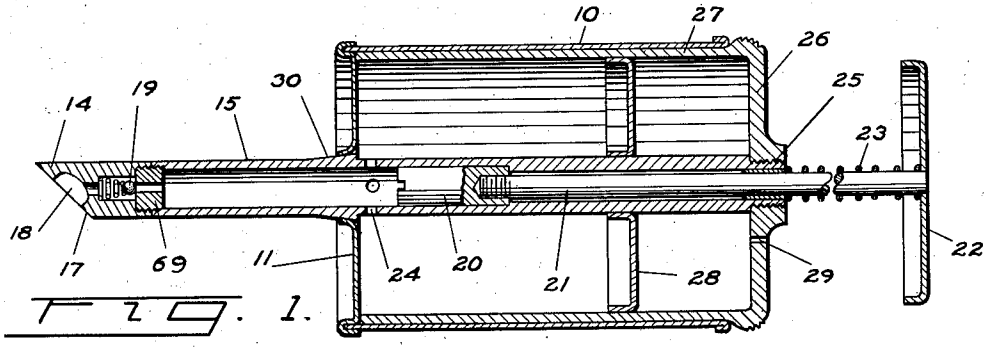


FIG. 1.

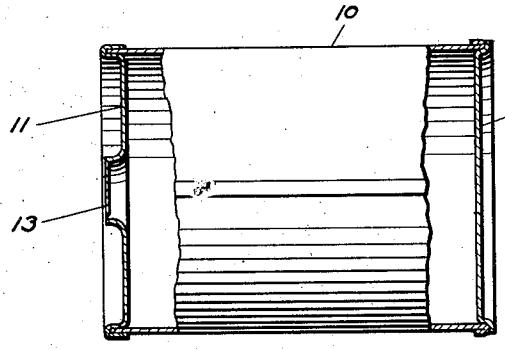


FIG. 2.

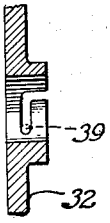


FIG. 3a

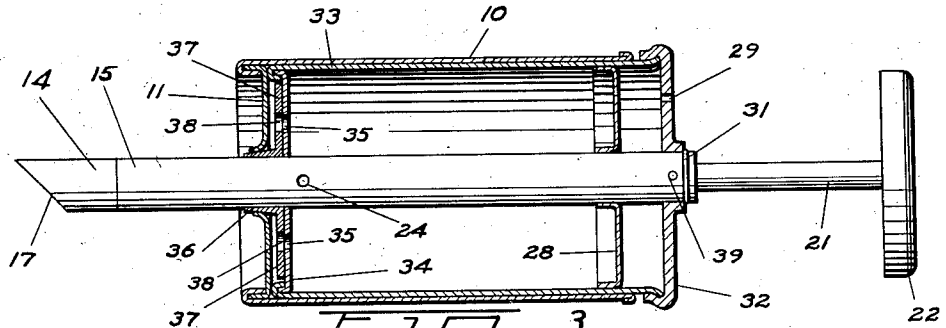


FIG. 3.

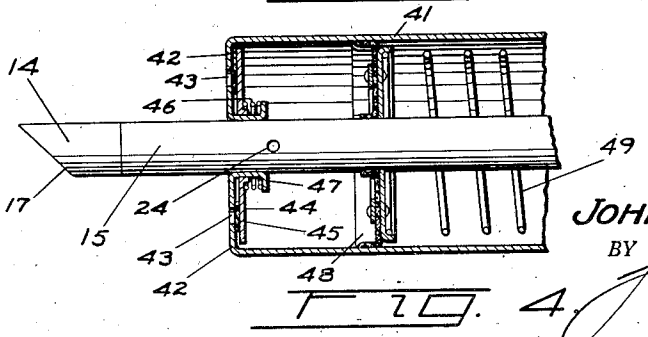


FIG. 4.

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LUBRICATING DEVICE

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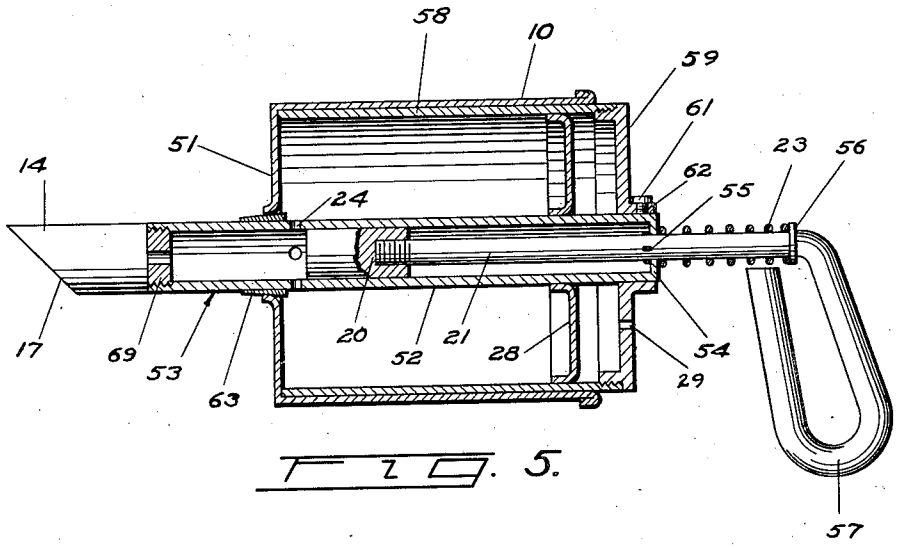


FIG. 5.

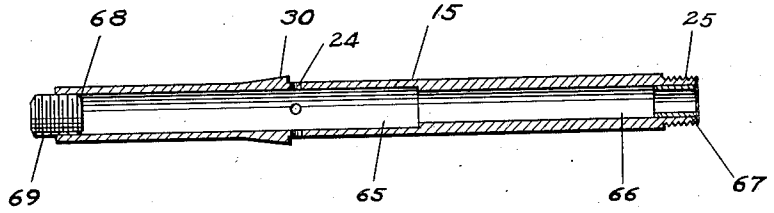


FIG. 6.

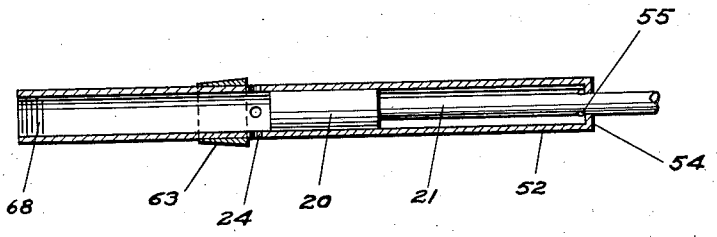


FIG. 7.

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LUBRICATING DEVICE

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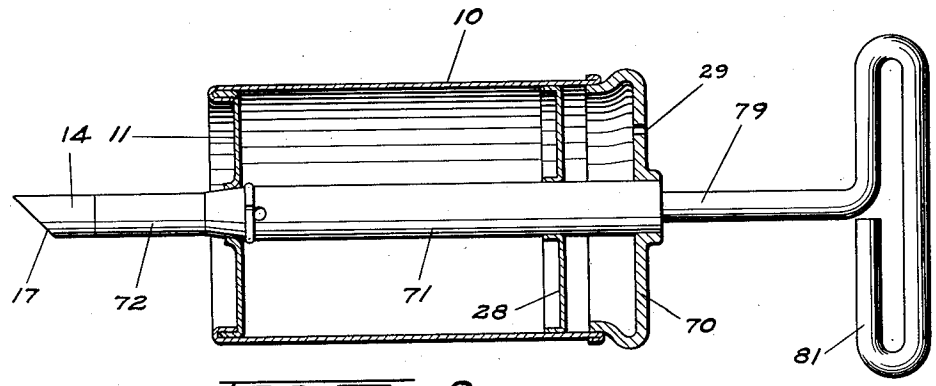


FIG. 8.

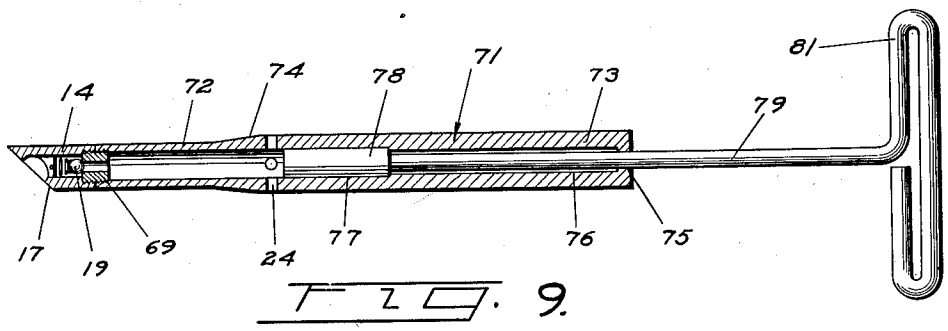


FIG. 9.

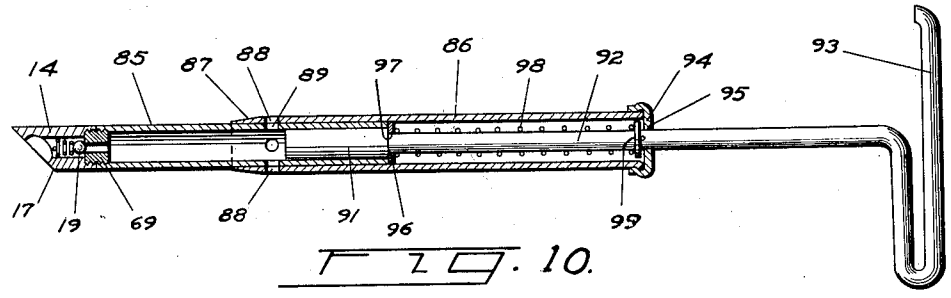


FIG. 10.

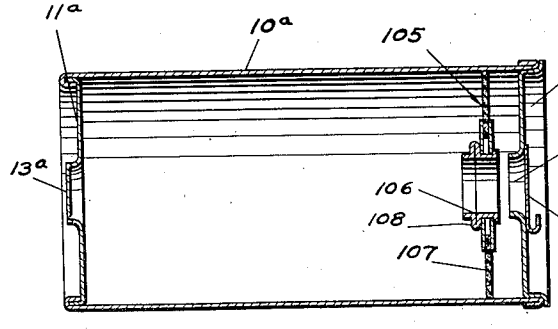


FIG. 11.

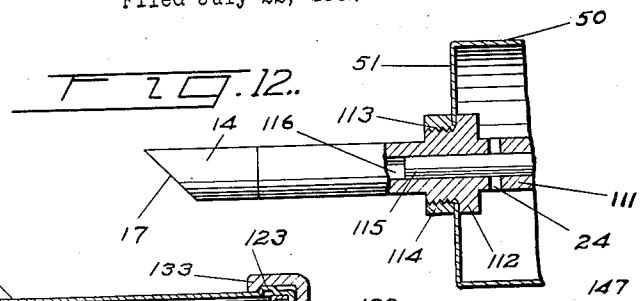
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LUBRICATING DEVICE

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FIG. 12.



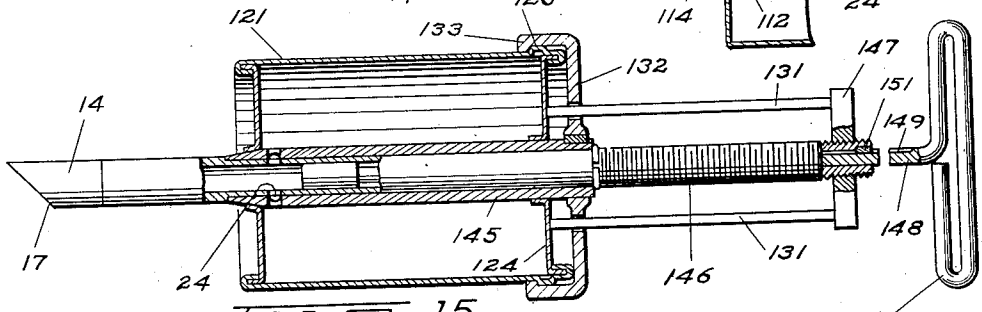


FIG. 15.

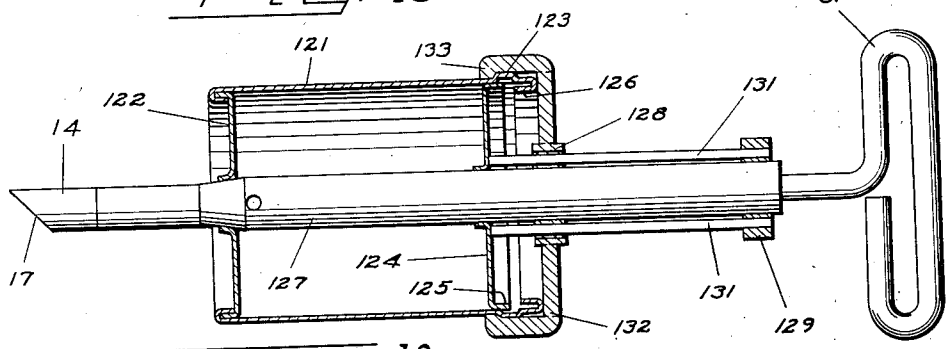


FIG. 13.

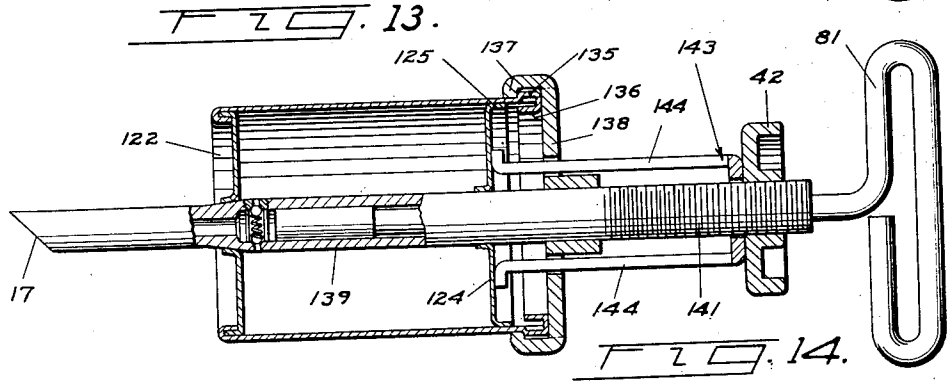


FIG. 14.

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Patented Feb. 23, 1937

2,071,615

UNITED STATES PATENT OFFICE

2,071,615

LUBRICATING DEVICE

John L. Creveling, near Tucson, Ariz., assignor to The Lubrication Corporation, South Bend, Ind., a corporation of Delaware

Application July 22, 1932, Serial No. 623,936

17 Claims. (Cl. 221—47.3)

This invention relates to lubricating devices and, more particularly, to lubricating pumps adapted, among other purposes, to service lubricant receiving nipples or fittings.

Heretofore, such lubricating pumps have usually been constructed with a lubricant container formed as a permanent part of the lubricating pump, the container being usually filled by hand from an open can or barrel of lubricant.

Among prior art lubricant pumps, it has been usual for those operating pump parts that may be associated with a lubricant container to be arranged at one side of the container or at an end thereof. No one has proposed to extend the gun parts as a unit through the detachable container. Moreover, so far as I am aware, no one has proposed, prior to my invention, to telescope a supporting cylinder through a lubricant container with which the pump parts are to be associated.

One of the objects of this invention, is to provide inexpensive yet effective pump parts adapted to be easily associated with a container of lubricant in a quick, clean manner, and adapted to cooperate with said container to form an efficient lubricating pump for servicing lubrication fittings.

A further object is to provide, in such a structure, a high pressure lubricating pump adapted to force lubricant under high pressure to lubrication fittings and to provide, in combination therewith, means for supplying lubricant from the container to the high pressure pump.

A further object is to provide, in combination with such structure, means for effectively supporting the sides of the lubricant container and for ironing out any dents or other deformations in the sides of the container.

One feature of the invention relates to an arrangement of the high pressure pump parts enabling them to extend through the container so that the nozzle which is adapted to contact with the fitting extends from one end thereof while the handle for the operation of the pump extends from the other. Furthermore, these parts are united with each other and may be pushed through the container and grease, as a unit, thus completely assembling the pump in a quick and easy manner.

Further objects and features of the invention will be apparent after reading the specification and claims and after consideration of the attached drawings.

In the forms here chosen for illustration, my invention comprises a cylindrical lubricant container having a pump extending concentrically and longitudinally therethrough, the pump having an operating handle extending rearwardly from the container, and a nozzle extending forwardly therefrom. The pump may include a tubular barrel having inlet ports formed therein, and a plunger and a suitable valve both positioned in the bore thereof. In the preferred forms of my invention, a supporting cylinder or sleeve (adapted to telescope through the container and support it) is secured to the pump barrel. Means are also provided for supplying lubricant to the inlet ports. In several modifications shown, atmospheric pressure acting upon an annular follower serves this purpose; but, in other modifications, positive means such as push rods acting upon a piston are provided. The push rods may be adapted for manual actuation by pushing effort, or by some apparatus furnishing a mechanical advantage such as a screw device.

I have shown several embodiments of the invention in the attached drawings, in which:

Fig. 1 is a view, in vertical section, of a lubricant pump formed according to the invention;

Fig. 2 is a view, partly in elevation and partly in section, of a lubricant container adapted to be used with the pump shown in Fig. 1;

Fig. 3 is a view, in vertical section, of a lubricant pump of a design similar to that shown in Fig. 1, but so formed and constructed that lubricant may be transferred cleanly from the original container to the telescoping cylinder, and the original container thereafter discarded;

Fig. 4 is a fragmentary view, in vertical section, of another modified form of pump somewhat similar in function and design to that shown in Fig. 3;

Fig. 5 is a view, in vertical section, of a form of lubricating pump very similar to the pump shown in Fig. 1, but differing in constructional details therefrom;

Fig. 6 is a view, in vertical section and on an enlarged scale, showing the pump barrel of Fig. 1;

Fig. 7 is a view, in vertical section, showing in detail the pump barrel of Fig. 5;

Fig. 8 is a view, in vertical section, of a lubricating pump similar to the pumps shown in Figs. 1 and 5, but differing therefrom in that there is provided no supporting cylinder or sleeve for the container;

Fig. 9 is a view, in vertical section, of a pump barrel and plunger for use with a container, such as shown in Fig. 11;

Fig. 10 is a view, in vertical section, of a modified form of similar pump barrel and plunger,

differing in constructional details from that shown in Fig. 9;

Fig. 11 is a view, in vertical section, of a modified form of container adapted to be used with lubricating pumps of the types shown in Figs. 9 and 10;

Fig. 12 is a view, partly in elevation and partly in section, showing a modified form of pump similar to that shown in Fig. 8 but differing in constructional details therefrom;

Fig. 13 is a view, in vertical section, of a pump equipped with positive means for moving a piston within the container to supply lubricant under pressure to the high pressure portion of the pump;

Fig. 14 is a view, in vertical section, of a pump similar to that shown in Fig. 13, but equipped with a screw device for aiding in moving the piston; and

Fig. 15 is a view, in vertical section, of a pump adapted to be operated somewhat similarly to that shown in Fig. 14.

Referring in detail to the pump shown in Figs. 1 and 2, a container 10 is initially provided with a forward closure 11 and a rearward closure 12, the forward closure being formed with a knock-out portion 13 which is adapted to be displaced by the relatively sharp front end of a nozzle 14 which is attached to a barrel 15 of the high pressure lubricant pump. In order to aid in displacing the portion 13, said portion 13 may be formed of relatively soft material or may be integral with the container 10 but provided with a scored outline so that when the sharpened end of the nozzle 14 contacts therewith and the pump barrel 15 rotated, the portion 13 is easily cut and pushed out.

As stated, the front end of the nozzle 14 is relatively sharp, this being easily done inasmuch as the contact face 17 is preferably inclined to the longitudinal axis of the nozzle and pump barrel. This inclination is not only for the purpose of aiding in cutting out the portion 13, but is also for the purpose of increasing the range of angles through which the lubricating pump may be applied to a lubrication fitting.

The nozzle 14 is formed with a lubricant pocket 18, and the pump barrel 15 is provided, adjacent to the nozzle 14, with a check valve 19. The barrel 15 has, slidably mounted in the bore thereof, a plunger 20 to which is secured a plunger rod 21 extending rearwardly from the barrel and provided at its rear end with a "mushroom type" handle 22. The handle 22 is formed of a substantially circular flanged disc and is arranged with its general plane substantially at right angles to the longitudinal axis of the rod 21. Interposed between the rear end of the barrel 15 and the handle 22 is a spring 23, adapted to cause the rod 21 and the plunger 20 to move rearwardly (toward the right) when pressure upon the handle 22 is released. The barrel 15 is shown more in detail in Fig. 6, and will be further described hereafter.

Adjacent to the front end of the cylindrical container 10, the barrel 15 is formed with a plurality of transverse ports 24 through which lubricant may pass to the interior of the pump barrel 15. The rear end of the barrel 15 is formed with threads 25, onto which there is secured the rear end 26 of a supporting cylinder or sleeve 27 which is adapted to telescope within the container 10, and thus to form a support for the container.

Positioned within the cylinder 27 and surrounding the barrel 15 is an annular follower 28, adapted to rest upon the surface of the lubricant in the cylinder and prevent air from piercing the lubricant, the end 26 being formed with a port 29 through which air may enter the cylinder 27 under atmospheric pressure to cause the follower 28 to move forwardly (toward the left) and to remain always in contact with the lubricant. The barrel 15 is formed with an enlarged external taper 30 which is forced into the opening formed by the knock-out of the portion 13, and forms a tight fit in said opening.

In assembling the container 10 with the other pump parts, the follower 28 is positioned adjacent to the taper 30. Then the cover 12 is removed from the filled container 10 and the nozzle end of the pump barrel is forced through the lubricant and through the knock-out portion 13. Rotation of the barrel 15 may aid in cutting out the portion 13. The cylinder 27 is then telescoped within the container 10, and the lubricant forces the follower 28 toward the end 26, the trapped air escaping through the opening 29. The taper 30 enters the opening formed by the removal of portion 13 and, when pressed firmly therein, the pump is ready for servicing operation. In practice, I prefer to make the opening, closed by the knock-out 13, of the same diameter as the forward portion of the barrel 15, and form the side walls of the opening with outwardly converging tapers. Then, as the barrel is pushed through the opening, it is not covered with a thick layer of grease; and, when the side walls contact with the taper upon the barrel, they may be expanded slightly to take the form of the tapered portion and insure a tight joint.

By pushing upon and releasing the handle 22, the operator reciprocates the plunger 20, and on the forward stroke traps air and/or lubricant ahead of the ports 24 and forces the same out past the check valve 19. On the return stroke, the lubricant is drawn from the cylinder 27 into the barrel 15, atmospheric pressure causing the follower to be continuously maintained in contact with the lubricant and thus maintaining a continuous supply thereof at the ports 24.

In the pump shown in Fig. 3, a spring ring 31, on the rear end of the barrel 15, rotatably secures thereto a rear cover 32. The cover 32 is tightly secured to the rear end of the cylinder 33 in any suitable manner as, for example, by flanges as shown. The front end of the cylinder 33 is partly closed by a disc 34, formed with a plurality of spaced openings 35.

Positioned adjacent to the disc 34 and secured to the barrel 15, as by a pressed fit, is a tapered sleeve 36, formed integrally with a disc 37 and having spaced openings 38 adapted to cooperate with openings 35. The disc 37 is adapted to contact normally with the disc 34, and the openings 35 and 38 are adapted at times to register with each other and at other times not to register. The disc 34 is rotatable relatively to the disc 37 for moving the openings 35 to register and not to register with the openings 38. The barrel 15 is provided, adjacent to the cover 32, with a pin 39 cooperating with a slot (not shown) in the cover 32 to limit rotation of the barrel 15 relative to the cover 32. At one limit of rotation, the holes are in register and, at the other limit, they are out of register.

In preparing this type of pump for servicing operations, assuming that it is empty and that the follower 28 is adjacent to the forward (left hand) end of the pump, a container 10 filled

with lubricant is telescoped over the barrel 15 and over the cylinder 33. Thus, lubricant is forced into the interior of the cylinder 33 through the registering openings 35 and 38. The follower 28 is moved rearwardly of the pump by pressure of lubricant, the trapped air escaping past the flanged connection between the cylinder 33 and the cover 32 or through the central opening in the cover 32. If desired, a port similar to port 29 shown in Fig. 1 may be provided.

When the container 10 is telscoped to the position shown and the lubricant has all moved into the cylinder 33, the barrel 15 and the container 10 (which is secured to the barrel by friction between the tapered sleeve 36 and the closure 11) are rotated relatively to the disc 34, and this rotation causes the holes 38 to move so as to be out of register with the holes 35. The container 10 is then withdrawn from the cylinder 33 and the lubricant which is trapped within the cylinder 33 obviously remains in the cylinder, while the empty container 10 may be discarded. The pump may then be operated as described above in reference to the form shown in Fig. 1

In Fig. 4, there is shown a part of a pump similar in function to that shown in Fig. 3. However, the cylinder 41, which corresponds to the cylinder 33, has formed integrally therewith an end closure 42 which is, itself, formed with openings 43 through which lubricant may be forced into the cylinder. These openings are normally closed by means of an annular disc 44, provided with an annular packing member 45 and urged toward the openings 43 by the spring 46 which bears at one end upon the disc and at the other end upon a flange 47, formed by an inturned portion of the closure 42. Instead of a follower such as 28, there is provided a lubricant tight piston 48, normally urged forwardly (to the left) by a spring 49. During operation, the lubricant which may be trapped in the cylinder 41 is therefore forced to the ports 24.

In filling this form of pump, the container of lubricant is telescoped over the pump parts, in a manner similar to that described above in connection with Fig. 1, and the pressure of the lubricant raises the disc 44 against the pressure of the spring 46 so that lubricant may flow in through the openings 43, filling the cylinder 41 and compressing the spring 49. The container may then be withdrawn, whereupon the spring 46 causes the disc 44 to close the openings 43. Thereafter, lubricant may be pumped out by the operation of the handle, in a manner similar to that described above in connection with Fig. 1. However, the spring 49, operating through the piston 48, continuously tends to urge a supply of lubricant to the ports 24.

The pump shown in Fig. 5 is similar in all material points to that shown in Fig. 1, but differs in details of construction. The container 10 is formed with an integral forward end closure 51, and the barrel 52 of the pump 53 may be turned in, as at 54, to provide a guide for the plunger rod 21. The rod 21 may be provided with projections 55 adapted to limit the rearward movement of the plunger and plunger rod. A spring 23 may be interposed between the portion 54, and a collar 56 secured to the rod 21 in any suitable manner. The handle, instead of being of the "mushroom type" shown in Fig. 1, may be formed as shown at 57. The cylinder 53 may be originally formed with both ends wholly open and may have the rear end closed by a cover 59 screw threaded into the cylinder. The cover 59 may be secured to the rear end of the barrel 52 by means of a screw 61, threaded through a tapped opening 62.

The barrel 52 may be formed of a tubular member and, as stated, the member may have the rear end in-struck, as at 54. A small tapered collar 63 may be secured to the barrel 52 by a press or drive fit and may thus form a shoulder for securing the barrel to the closure 51 of the container 50. In assembling the parts, the plunger 20 is inserted in the barrel from the left hand end and the handle from the right hand end, the latter being screwed into the former.

On the other hand, the barrel may be formed similarly to the barrel 15 shown in Fig. 1 and as shown more in detail in Fig. 6. Therein a tubular member or pipe, originally having walls of greater thickness than the tubular member shown in Fig. 6, has the exterior surface turned down to form a tubular member with a uniform outer diameter, except for the shoulder 30 and the threaded portion 25. Interiorly, the pipe is drilled to form an enlarged bore 65, concentric with the original bore 66 of the pipe. A bushing 67, driven in the rear end of bore 66, provides a guide for the plunger rod. The interior of the tube is threaded as at 68, adjacent to the front end of the bore 65, so that a bushing 69 may be screwed therein, the latter serving to secure the nozzle 14 to the barrel 15.

The operation of the form of the invention shown in Fig. 5 is the same as that shown in Fig. 1 and the "mushroom type" handle shown in Fig. 1 may be preferable for most uses. With a single type of lubrication fitting standing at varying angles, the "mushroom" handle makes the pump very easy to apply and assures a straight thrust for the fitting so as always to make a tight joint. Moreover, regardless of the manner in which the pump approaches the fitting, the "mushroom type" handle does not present an awkward grip to the operator.

In Fig. 8 there is shown a pump in which no telescopic supporting sleeve is provided for the lubricant container. In assembling the pump for use, the closure 12 is removed from the container 10 and the pump inverted in the manner as described with respect to Fig. 1 until the cap or cover 70 is in the position shown. In Figs. 9 and 10 there are shown two forms of high pressure pump for use with containers of the type shown in Fig. 11. In Fig. 9, the barrel 71 has the front portion turned down, as at 72, to a smaller exterior diameter than the rear portion 73, and intermediate the portions 72 and 73, there is formed a tapered shoulder 74 corresponding in function to the shoulders 30 and 63. The interior of the barrel is provided with three concentric bores 75, 76 and 77, and positioned within the barrel is the plunger 78, to which the handle 81 is connected through the plunger rod 79.

In Fig. 10, there is illustrated a high pressure pump which, though differing in details, is similar to the high pressure pump shown in Fig. 9. Therein, the barrel is formed of two separate tubes, one being the tube 85 having a relatively small diameter and the other being the tube 86 having its interior diameter corresponding substantially to the exterior diameter of the tube 85 and having its front end telescoped over the rear end of the tube 85. The two tubes are held in fixed relation to each other by a press or drive fit. The extreme front end of the tube 86 is tapered, as at 87, and transverse bores 88 and 89 are formed through the tubes 86 and 85, respective-

ly, and are held by friction in alignment with each other. The plunger 91 is positioned within the tube 85 and has secured to the rear end thereof a plunger rod 92, the latter having its rear end formed as a handle 93, of a slightly different design from that of the handle shown in Fig. 9. The rear end of the tube 86 is closed by a cover 94 having a concentric opening 95 through which the rod 92 passes. Contacting with the rear end of the tube 85 is an annular member or washer 96 having a circular opening 97 through which the rod 92 passes. Interposed between the washer 96 and a washer 99, secured in any suitable manner to the rod 92, is a spring 98 which has the incidental function of holding the washer 96 against the rear end of the tube 85, but is provided mainly for the purpose of maintaining the plunger 91 and the plunger rod 92 normally in the rearward position shown.

The operation of the pumps shown in Figs. 9 and 10 is the same as that described above in connection with Figs. 1 and 2. However, as there is provided no supporting cylinder for the lubricant container, it is necessary that the container be of sufficient strength and thickness to prevent deformation or that greater care be exercised in handling the container and pump.

In Fig. 11 there is shown one form of container especially adapted to be used with pumps similar to those illustrated in Figs. 9 and 10. The container has a cylindrical portion 10*a* and a front closure 11*a*. The rear closure 102 thereof differs from the closure 12 in that it is provided with a central opening 103, adapted to be closed during the shipment and storage of the container by a tab 104. The tab 104 may be pulled off when it is desired to insert a pump, such as one of the pumps shown in Figs. 9 and 10, through the container. There is also provided a follower 105, formed with a central opening 106 through which the pump is adapted to extend. The follower may be like 28 or, if desired, formed of a washer 107, of leather or other suitable material, and a crimped metallic clamp 108 therefor.

The pump shown in Fig. 12 corresponds substantially to that shown in Fig. 8, but differs in certain constructional details therefrom. The container 50 is similar to that shown in Fig. 2 but has a flat front end provided with a larger knock-out. The high pressure pump 111 is formed with a right angled shoulder 112, instead of a tapered shoulder, and is provided with a threaded portion 113 on which there is threaded a nut 114, the latter being adapted to coact with the shoulder 112 to clamp the closure 51. No separate plunger is provided, but the plunger rod 115, itself, serves as a plunger, the bore 116 of the barrel being uniform throughout. The rear end of the container 50 is closed by a cover which may be secured in any suitable manner to the rear end of the barrel 111.

The operation of this embodiment is substantially the same as that described above in connection with the embodiment shown in Fig. 1.

In Figs. 13, 14 and 15, pumps are shown in which means are provided for positively urging the follower or piston outwardly in the container, so as to positively force lubricant to the ports of the high pressure gun. In Fig. 13 there is shown a container 121 having a front closure 122 and formed adjacent to the rear end with a plurality of outwardly extending projections or bosses 123. Within the container 121 there is positioned a follower or piston 124 having a flange 125 which, during shipment or storage of the container, is adapted to be maintained within a cooperating flange 126, formed on the rear end of the container 121.

The pump barrel 127 is provided with a pair of spaced collars 128 and 129, and two or more push rods 131 extend through both of the collars and have their inner ends bearing upon the plunger 124, thus serving to urge the plunger 124 inwardly. The collar 129 is secured to the outer end of the rods 131 but is slidably mounted on the barrel 127, while the collar 128 is secured to the barrel 127 but allows the rods 131 to slide through openings therein. Thus, it is possible for the operator to push the collar 129 inwardly along the barrel 127 from time to time while operating the pump, and thus, by means of the rods 131, force the plunger 124 inwardly.

Secured to the collar 128 are a plurality of arms 132 which form a spider contacting as a whole with the rear of the container 121. Each arm is provided with an inwardly extending projection 133, adapted to coact with a cooperating projection 123 for locking the barrel 127 within the container 121.

In Fig. 14, the locking projections 135 are positioned in alignment with a flange 136 into which the flange 125 fits. Thus, the locking projections 137 of the spider 138 need not be as long as those shown in Fig. 13. The rear end of the barrel 139 is threaded, as at 141, and a nut 42 is screwed upon the threads. The nut 42 is adapted to bear upon the rear end of a frame structure 143, provided with inwardly extending fingers 144 which serve in place of the rods 131 shown in Fig. 13.

In Fig. 15, the rear end of the pump barrel is threaded, and the rear ends of the rods 131 are secured to a nut 147, screwed onto the threads 146. The barrel is rotatably mounted in the sleeve 145, which sleeve is otherwise similar to 86 of Fig. 10. The plunger rod 148 is formed with a key-way 149 cooperating with a key 151, secured within the rear end of the barrel 146. Thus, rotation of the plunger rod 148 causes rotation of the barrel 146 and a consequent translational movement of the nut 147 together with rods 131, to urge the follower 124 inwardly, for purposes previously described.

Several embodiments of my invention have been illustrated, disclosed and described. In each there is provided a lubricating pump in which a filled lubricant container is associated with cooperating pump parts, the pump parts being arranged to extend through the container. The pump includes a barrel extending through the container, a plunger in the barrel, a nozzle secured to the front end of the barrel and extending in advance of the container, and a plunger rod secured to the plunger and extending rearwardly from the container for operating the pump. In each embodiment, the pump parts to be associated with the container may be assembled as a complete unit and pushed through the container, and the complete pump thus assembled quickly and easily.

Thus, I have designed several types of inexpensive and efficient pumps in each of which a part is formed by a detachable lubricant container which may be filled in the factory and which may be easily assembled with the other parts of the pump without smearing the operator with lubricant. The pump, thus assembled, is capable of supplying lubricant under high pressure to fittings to be lubricated; and I have provided means, not only for protecting the contain-

er against dents or deformations after the gun is assembled, but also for ironing out any dents which may previously have been formed therein.

It is to be understood that the above described embodiments of the invention are for the purpose of illustration only, and various changes may be made therein without departing from the spirit and scope of the invention.

I claim:

1. An original lubricating device comprising, a container, a supporting element telescoped within said container and extending substantially throughout the length thereof, and a plunger pump extending through and supported by said supporting element and extending into said container.

2. A lubricating device comprising a cylindrical original container of lubricant, a supporting cylinder telescoped within said container and extending substantially throughout the length thereof, and a pump associated with and extending concentrically through said cylinder, one end of said pump extending through a wall of said container and the other end of the pump extending through a wall of the supporting cylinder.

3. A lubricating device comprising, a container, and a pump extending through said container, said pump comprising a tubular member formed with a tapered shoulder by which is is frictionally secured to said container and with an inlet opening communicating with the container, a plunger slidably mounted in said tubular member, and a plunger rod secured to said plunger.

4. A lubricating device comprising, a container, and a pump extending through said container, said pump comprising a tubular member formed with a container contact face inclined to the longitudinal axis thereof sealingly to engage said container and with an inlet opening communicating with the container, a plunger slidably mounted in said tubular member, and a plunger rod secured to said plunger.

5. A lubricating device comprising, a cylindrical container, a supporting cylinder telescoped within said container, a pump secured to and extending through said supporting cylinder said pump having an inlet opening within the cylinder, and a follower slidably mounted upon said pump with its periphery slidably engaging said supporting cylinder.

6. A lubricating device comprising, a cylindrical container, a supporting cylinder telescoped within said container, a pump, including a tubular member, extending through said supporting cylinder and having an inlet opening therein, and a pair of discs formed with spaced openings and mounted on said tubular member within said container at one side of said inlet opening, one of said discs being rotatable relative to the other in order to selectively align said spaced openings to provide a passage through the disks.

7. A lubricating device comprising, a container, and a tubular member extending through and having an opening in said container, a plunger slidably mounted in said tubular member, a plunger rod secured to said plunger, a piston positioned within said container and slidably engaging said tubular member, and means comprising a plurality of rods contacting with said piston, screw threads formed upon said member, and a nut threaded on said threads and contacting with said rods, for forcing said piston longitudinally of said container.

8. A lubricating device comprising, a container formed with projections on the outside thereof, a tubular member extending through and having an opening in said container, a plunger slidably mounted in said tubular member, a plunger rod secured to said plunger, a piston slidably mounted in said container and slidably engaging said tubular member, means for forcing said piston longitudinally of said container, and a clamp associated with said tubular member for contacting with the projections formed on the container for preventing relative movement of said container and said tubular member.

9. A lubricating device comprising, an interchangeable container, a tubular member extending through and having an opening in said container, means providing detachable sealing engagement between the tubular member and the container, a plunger slidably mounted in said tubular member, a plunger rod secured to said plunger, and a spring positioned in said tubular member and having one end bearing upon said plunger to urge the plunger toward one end of the tubular member.

10. A lubricating device comprising, a container, and a tubular member extending through and having an opening in said container, a plunger slidably mounted in said tubular member, a plunger rod secured to said plunger, and a second tubular member formed with a taper telescoped over said first named tubular member and secured to said first named tubular member and to said container by friction.

11. A lubricating device comprising, a container, and a tubular member extending through and having an opening in said container, a plunger slidably mounted in said tubular member, a plunger rod secured to said plunger, a pair of discs within the container surrounding said tubular member at one side of said opening and formed with spaced openings, one of said discs being rotatable relative to the other to align said openings selectively to provide a passage through the discs and means secured to said tubular member for limiting the rotation thereof.

12. A lubricating device comprising, a container, and a tubular member extending through and having an opening in said container, a plunger slidably mounted in said tubular member, a plunger rod secured to said plunger, an annular piston positioned in said container and surrounding said tubular member, and means comprising a plurality of rods contacting with said piston and extending outside of said container for moving said piston longitudinally of said container.

13. A lubricating device comprising, a container, and a pump extending through and having an opening in said container, said pump comprising a tubular member, a plunger slidably mounted in said tubular member, a plunger rod secured to said plunger, and a tapered sleeve on said tubular member for engagement with the container.

14. A lubricating device comprising, a container, and a pump extending through and having an opening in said container, said pump including a tubular member formed with a container contact face inclined to the longitudinal axis thereof to provide sealing engagement between the tubular member and the container by wedging action, a plunger slidably mounted in said tubular member, a plunger rod secured to said plunger, and a handle comprising a relatively large flat disc secured to said plunger rod and

arranged in a plane substantially at right angles to the longitudinal axis of said rod.

15. A lubricating device comprising, a lubricant container having a fixed closure at one end and a removable and temporary closure at its other end, and a lubricant pump and nozzle assembly, including a pump cylinder, a plunger, and a nozzle secured to said cylinder, said cylinder extending through and so constructed and arranged as to engage frictionally with said fixed and temporary closures, said pump assembly being insertable into and removable from said container at one end only of the container.

16. A lubricating device comprising, a lubricant container having a fixed closure at one end and a movable closure at the other end, and a lubricant pump and nozzle assembly including, a supporting member, a pump cylinder connected to said supporting member to be at least partially supported thereby, a pump plunger and a nozzle secured to said cylinder, said cylinder extending longitudinally through the container and having sealing engagement with said fixed and movable closures respectively, said supporting member of said pump assembly being engageable with a side wall of said lubricant container.

17. A lubricating device comprising a lubricant container having one wall formed with a frangible portion, a pump extending through said container and adapted to sever said frangible portion, said pump being formed with a tapered portion to engage frictionally and to form a seal with the container wall adjacent said frangible portion, and means to hold the pump in the container.

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