

March 13, 1951

E. P. SUNDHOLM
LUBRICANT DISPENSER

2,545,319

Filed April 17, 1945

3 Sheets-Sheet 1

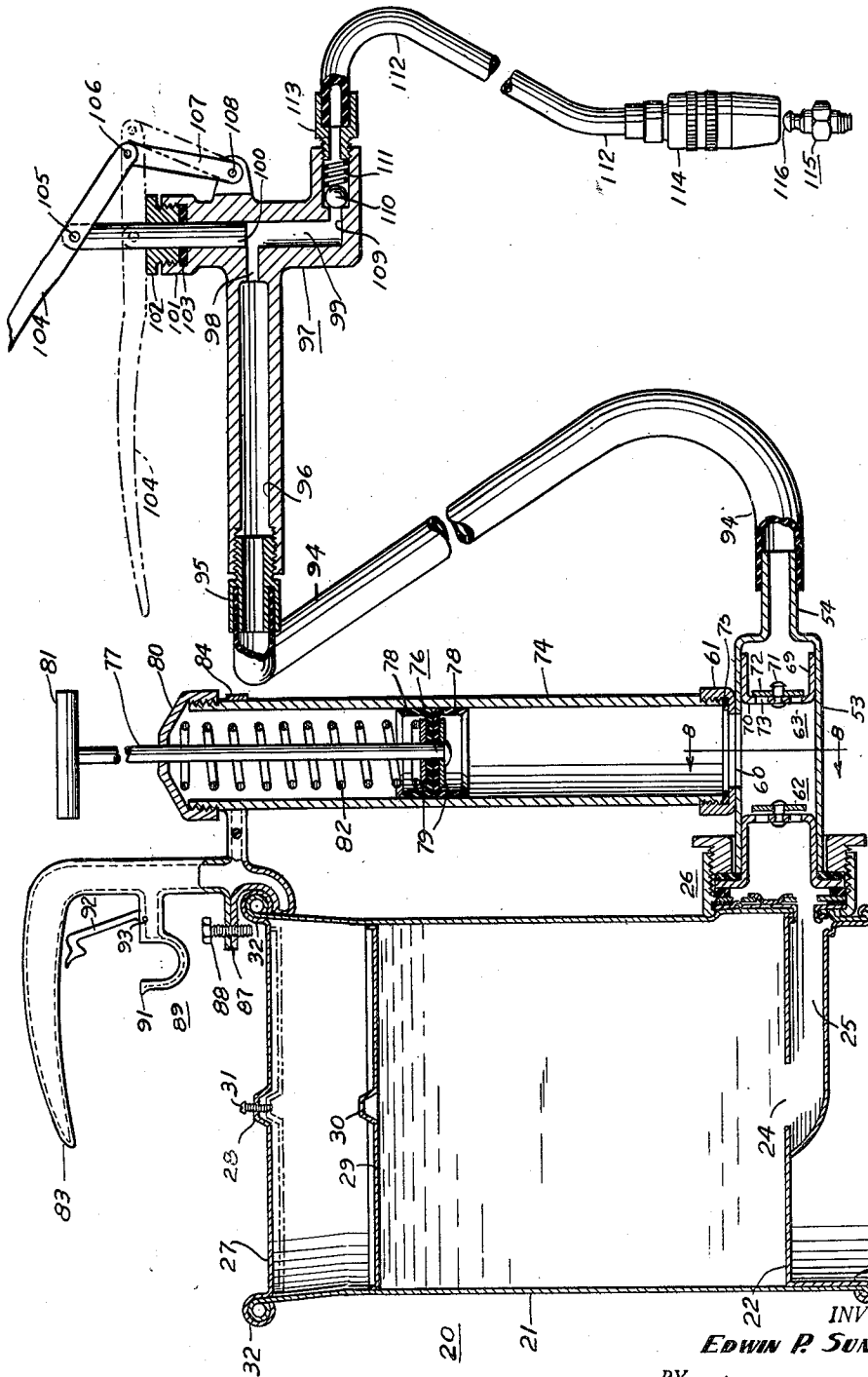


FIG. 1.

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3 Sheets-Sheet 2

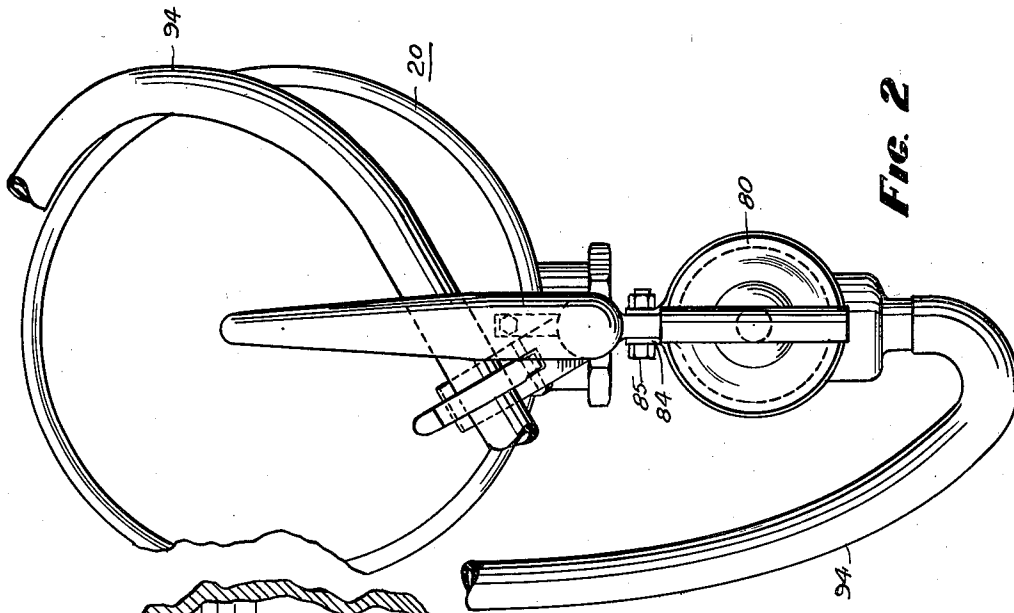


Fig. 2

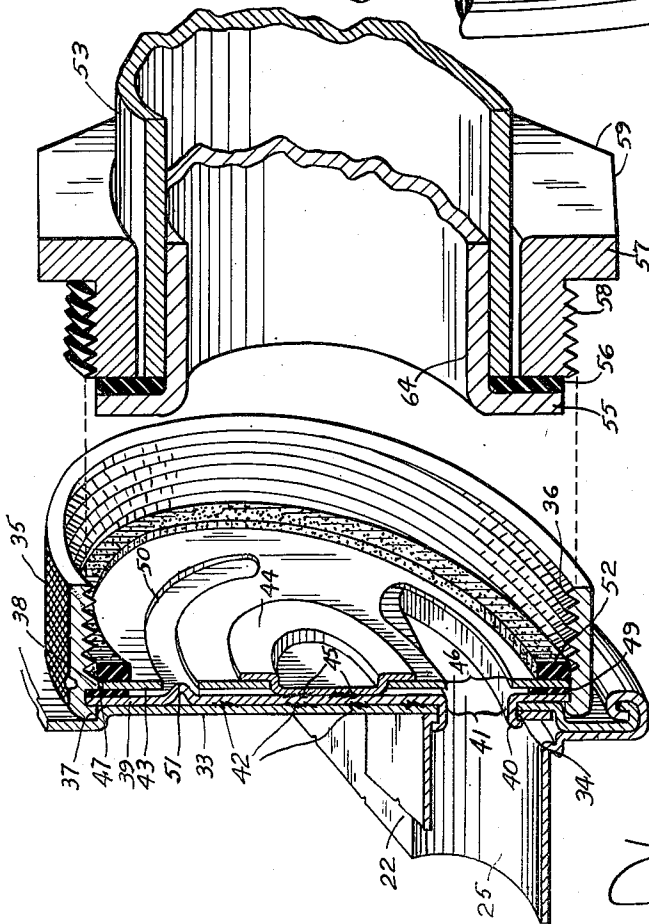


Fig. 3

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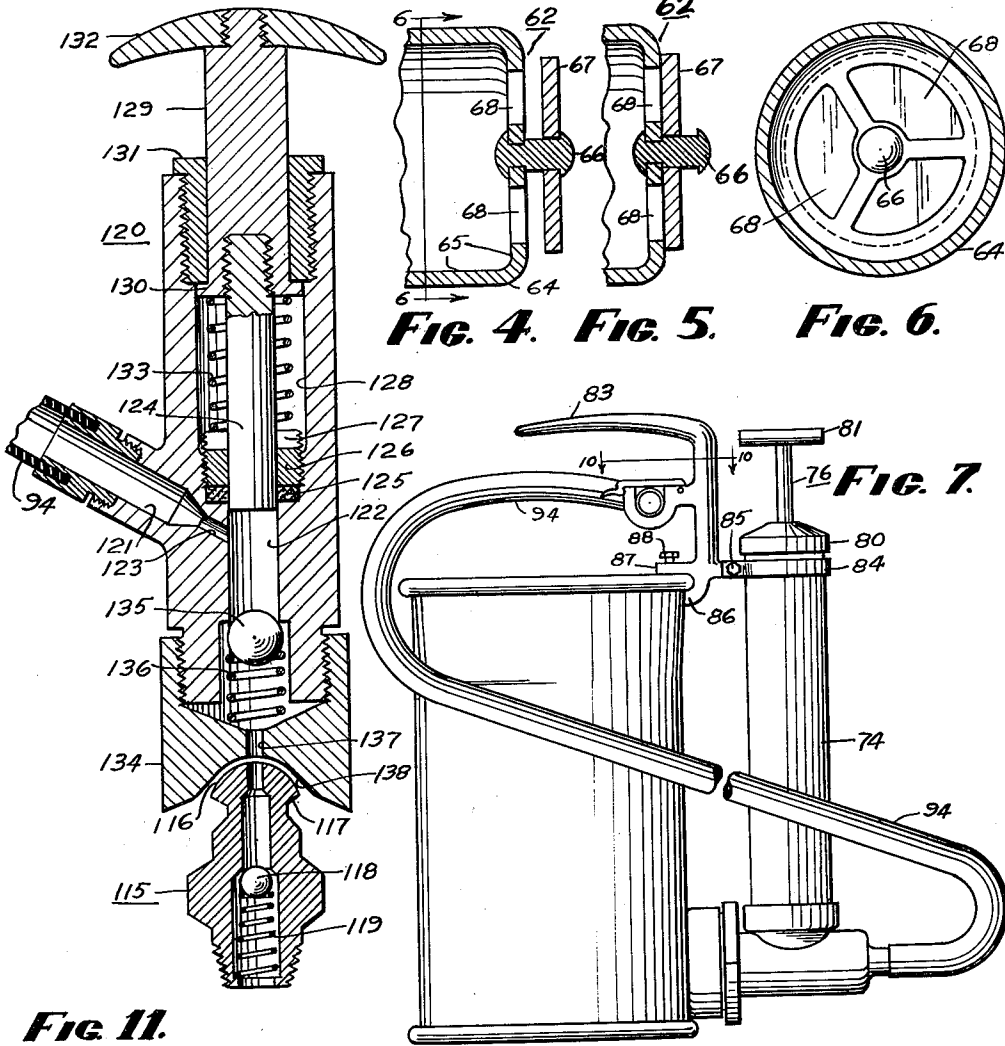


Fig. 11.

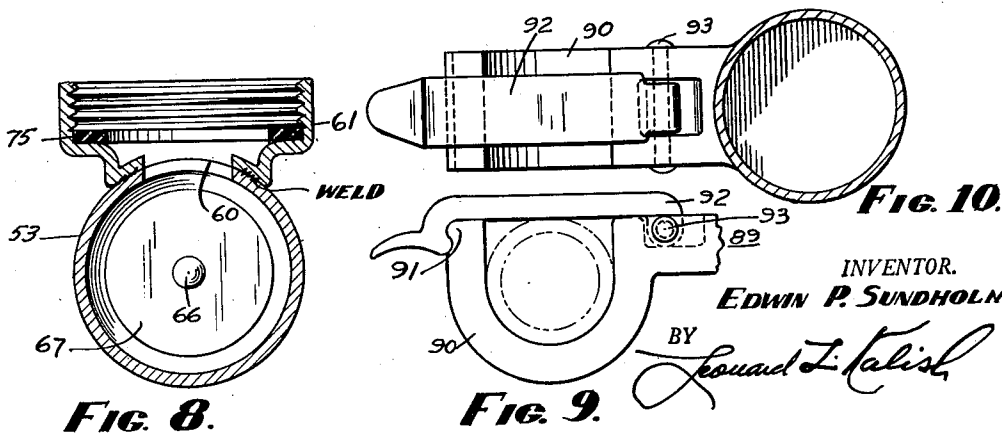


Fig. 8.

Fig. 9.

Fig. 10.

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2,545,319

LUBRICANT DISPENSER

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Application April 17, 1945, Serial No. 588,838

9 Claims. (Cl. 222-256)

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The present invention relates to apparatus for dispensing lubricant or other viscous fluid or semi-fluid and it relates more particularly to new and improved apparatus for delivering lubricant or the like directly from a standard lubricant container (as for example a 25 pound or 50 pound container) to a lubricant-receiving nipple or fitting or the like.

An object of the present invention is to provide new and improved apparatus for dispensing lubricant or other viscous fluid or semi-fluid. Another object of the present invention is to provide apparatus for delivering lubricant or the like directly from a standard dispensing container (as for example a 25 pound or 50 pound container) to a lubricant-receiving nipple or fitting or the like. Still another object of the present invention is to provide a novel dispensing attachment adapted for detachable connection to standard lubricant-dispensing containers or the like which will withdraw lubricant in predetermined amount and which will thereafter deliver small charges of the withdrawn lubricant or the like under high pressure to a lubricant-receiving nipple or fitting or the like. A further object of the present invention is to provide a simple and inexpensive dispensing attachment adapted for detachable connection to lubricant-dispensing containers or the like which will deliver lubricant or the like, at suitable pressure, directly to lubricant-receiving nipples or fittings or the like without the need for employing conventional refillable "grease-guns" and, which, at the same time permits more easy handling of the lubricant container or the like.

Other objects and advantages of the present invention are apparent in the following detailed description, appended claims and accompanying drawings.

It has been customary in the past, to provide lubricant or the like in standard dispensing containers (of 25 pound or 50 pound or other suitable capacity) from which conventional "grease-guns" can be filled; the grease-guns being manually operable thereafter to deliver the lubricant, under pressure, to lubricant-receiving nipples or fittings or the like. Various types of these standard lubricant-dispensing containers are shown in my United States Patents 2,214,779; 2,239,581; 2,266,827; 2,308,400; 2,313,845 and 2,328,363.

While these dispensing containers have proven of great value, especially on farms or in other places at which air compressors and other costly lubricating equipment are not available, they have heretofore been employed with conventional

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small-capacity grease-guns which required frequent refilling. These frequent refilling operations necessary with conventional small-capacity grease-guns have been time-consuming and have greatly added to the effort required in lubricating tractors, automobiles, trucks and other similar equipment. It has been suggested in the past to supply a lubricating unit having larger grease capacity than the conventional small grease-gun. These larger units have, however, not proven satisfactory since they are relatively expensive and cumbersome and since the process of filling them from standard grease containers has been a long, unpleasant and unsatisfactory operation.

Accordingly, the present invention contemplates the provision of a dispensing unit, of simple and inexpensive construction, which is adapted for quick attachable and detachable connection to a standard grease container or the like and which will withdraw a predetermined amount of grease from the container and will deliver it through a flexible hose or the like, under relatively low pressure, to a grease-gun head; the grease-gun head being manually operable to deliver small charges of grease, under high pressure, to a grease coupler adapted for quick attachable and detachable connection to a conventional grease-receiving nipple or fitting or the like. The present invention further contemplates the provision of means forming part of the dispensing unit, whereby the dispensing container can be quickly and easily picked up and carried to any convenient point.

For the purpose of illustrating the invention, there are shown in the accompanying drawings forms thereof which are at present preferred, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and that the invention is not limited to the precise arrangements and organizations of the instrumentalities as herein shown and described.

Referring to the accompanying drawings in which like reference characters indicate like parts throughout:

Figure 1 represents a vertical cross-sectional view of one embodiment of the present invention.

Figure 2 represents a fragmentary plan view of the embodiment of Figure 1, with the delivery hose in clamped position.

Figure 3 represents an enlarged view, partly in cross-section and partly in perspective, of the container dispensing opening and of the dispensing unit connector, shown in detached position.

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Figure 4 represents a cross-sectional view, on an enlarged scale, of the inlet check valve of the dispensing unit shown in open position.

Figure 5 represents a view generally similar to that of Figure 4 but showing the valve in closed position.

Figure 6 represents a cross-sectional view generally along the line 6—6 of Figure 4.

Figure 7 represents a side elevational view of the embodiment of Figure 1 showing the delivery hose in clamped position for transportation of the unit.

Figure 8 represents a vertical cross-sectional view generally along the line 8—8 of Figure 1.

Figure 9 represents an enlarged elevational view of the hose locking clamp shown in closed position.

Figure 10 represents a plan view of the hose locking clamp taken generally along the line 10—10 of Figure 7.

Figure 11 represents a cross-sectional view of another type of high pressure grease delivery element or booster pump which may be used in place of that shown in Figure 1, shown with a convex headed grease-receiving nipple.

In Figures 1 to 10, I have shown the novel dispensing apparatus of the present invention as used in conjunction with a grease dispensing container 20 which is the subject of my Patent 2,328,363. The container 20 is of sheet metal and includes a generally cylindrical upright body 21 having a raised bottom 22 and a lowermost flange 23; a generally central opening 24 being provided in the bottom 22 and a transverse conduit 25 extending beneath the bottom 22 from the opening 24 to a discharge opening indicated generally by the reference character 25 disposed on the outside of the body 21. The container 20 is provided with a lid 27 having an apertured raised portion 28. A follower plate 29 having an apertured raised portion 30 is adapted originally to be held in uppermost position by a screw 31 passing through the portions 28 and 30 as shown in dotted lines in Figure 1. When the container is ready for use in dispensing grease, the screw 31 is unscrewed to release the follower plate 29 whereupon it will rest on the surface of the grease as shown in solid lines in Figure 1 and will follow the level of grease downward as the grease is used up.

A peripheral bead 32 is formed at the upper end of the container 20; the edges of the body 21 and the lid 27 being crimped together after the container is filled to form the bead 32 and to more or less permanently secure the lid 27 to the body 21.

The discharge opening 26 includes a flat circular boss 33 pressed outwardly from the side wall of the body 21 partly above and partly below the level of the bottom 22; the boss 33 having an elongated off-center opening 34 therein communicating with the end of the conduit 25.

The discharge opening 26 also includes an annular ring 35 which is internally screw-threaded as at 36 detachably to receive the dispensing unit to be hereinafter described. In place of the screw threads 36, the ring 35 can be provided with any other quick attachment locking means (as for example a bayonet catch) to receive complementary locking means provided on the dispensing attachment.

The ring 35 is formed with an inturned annular flange 37 at one end. At a point spaced from the flange 37, an inwardly projecting lug 38 is provided.

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The discharge opening 26 also includes a circular base plate 39 having a generally tubular crimping flange 40 drawn therefrom; the flange fitting within the boss opening 34 and defining an elongated opening 41. The diameter of the base plate 39 is slightly greater than that of the boss 33 and is such as to fit within the inner clear diameter of the ring 35 with just sufficient clearance to permit rotation of the ring thereabout; the flange 37 of the ring 35 fitting over the periphery of the base plate 39 and anchoring the ring 35 thereto. The base plate 39 is secured to the boss 33 by spot-welding the two together at suitable points as shown at 42. Instead of spot-welding, rivets or other suitable attachable means may be used to secure the base plate to the boss.

It is apparent that the base plate 39 is immovably fastened to the boss 33 of the body 21 while the ring 35 is rotatably mounted upon the base plate.

A central apertured rotatable disc 43 is pivotally secured to the base plate 39 by a flanged sheet metal pivot member 44 which extends within the central aperture of the disc 43 and is spot-welded to the base plate 39 as at 45. The rotatable disc 43 is also provided with an elongated off-center port-hole 46 of generally the same shape as the opening 41 defined by the crimping flange 40. A notch 47 is provided at the periphery of the disc 43 and is adapted to receive the inwardly-extending keying lug 38 formed on the ring 35 so that rotation of the ring 35 will also cause rotation of the disc 43.

A thin annular sealing gasket 49 is provided between the base plate 39 and the disc 43.

An arcuate slot 50 is provided on the disc 43 generally diametrically opposite the port hole 46; the slot 50 being adapted to receive a stop 51 projecting outwardly from the base plate 39. The slot 50 and the stop 51 to serve to limit the rotation of the disc 43 relative to the base plate 39; the openings 46 and 41 being in full registration when the stop 51 is adjacent the left hand end wall of the slot 50 and being wholly out of registration when the stop is adjacent the right hand end wall of the slot 50.

A sealing gasket 52 is disposed within the ring 35 outside of the rotatable disc 43.

When the dispensing unit to be hereinafter described in detail is screw-threadedly connected within the ring 35, the last portion of the right hand locking rotation will produce frictional engagement with the gasket 52 and the disc 43 and will cause clockwise movement of the disc 43 to bring the port hole 46 into registration with the opening 45 so as to permit lubricant to flow from the conduit 25, through the aligned openings 46 and 41, and into the dispensing unit. When the dispensing unit is removed, the first portion of the left hand opening rotation will turn the disc 43 counter-clockwise to move the port hole 46 out of registration with the port hole 41 thereby automatically to close off the discharge opening 26 and to prevent loss of lubricant from the container 20.

If desired, the outer surface of the ring 35 may be knurled or provided with slight ribs (not shown) to permit manual gripping of the ring in order to facilitate locking and unlocking rotation of the disc 43.

While I prefer to employ the novel dispensing unit of the present invention with a dispensing container having the automatic discharge opening described above, it may be used with other types of containers (including those disclosed in

my patents enumerated hereinabove) to which the dispensing unit can be connected in fluid-tight relationship.

In the embodiment of Figures 1 to 10 the dispensing unit includes a generally cylindrical member 53 having a reduced neck 54 at one end and having a transversely extending annular flange 55 at its other end; the flange 55 being adapted to fit snugly within the ring 35 of the container 20.

A gasket 56 and a collar or gland nut 57 are disposed about the member 53 behind the flange 55; the collar or nut 57 being externally screw-threaded as at 58 for detachable connection within the ring 35. The collar 57 may be provided with a hexagonal portion 59 whereby it can be gripped by any suitable tightening tool. Instead of being made hexagonal, portion 59 on the collar 57 may be knurled or otherwise formed to permit its being tightened and untightened by hand or by any suitable tool.

A generally cylindrical opening 60 is provided in the side wall of the member 53 and an internally screw-threaded socket 61 is fastened to the member 53 in line with the opening 60, by welding or brazing or any other suitable means. The axis of the socket 61 extends generally at right angles to the axis of the member 53 so that, when the member 53 is fastened within the discharge opening 26 of the container 20 with its axis horizontal, the socket 61 can be disposed with its axis in vertical position.

It is obvious that, when the collar or gland nut 57 is screwed into the ring 35, the last part of the clockwise rotation will cause frictional engagement with the gasket 56, the flange 55, the gasket 52 and the disc 43 to move the openings 46 and 41 into alignment so as to permit flow of lubricant from the conduit 25 into the member 53. Conversely, the first part of the counter-clockwise unlocking rotation of the collar or gland nut 57 will move the openings 46 and 41 out of alignment to close the discharge opening 26.

The member 53 is provided with inlet and outlet check valves 62 and 63 respectively. The inlet check valve 62 may include a flanged cup-shaped body 64 fitted inside the left hand end of the cylindrical member 53; the flange of the body 64 extending outside of the member 53 and providing the flange 55 described hereinabove. The inner wall 65 of the body 64 is centrally apertured fixedly to receive a headed pin 66 on which a valve disc 67 is slidably mounted on the inner side of the wall 65. The wall 65 is also provided with a plurality of circumferentially spaced valve ports 68 which are opened to permit flow of lubricant therethrough when the disc is moved to its innermost position away from the wall 65 as shown in Figure 4 and which are closed when the disc 67 is moved to outermost position against the wall 65 as shown in Figure 5.

The outlet check valve 63 includes a cup-shaped body 69 disposed adjacent the right hand end thereof and having a centrally apertured end wall 70 wherein the headed pin 71 of a valve disc 72 is slidably mounted; the disc 72 being disposed on the outer side of the end wall 70. The end wall 70 is also provided with a plurality of circumferentially spaced valve ports 73 which are adapted to be closed when the disc 72 is in its innermost position against the wall 70 and which are adapted to be opened when the disc 72 is in its outermost position away from the wall 70.

The socket 61 is adapted detachably to receive the screw-threaded end of a cylinder 74 forming

part of a low-pressure hand pump; a sealing gasket 75 providing a fluid-tight seal therebetween.

Slidably disposed within the cylinder 74 is a piston indicated generally by the reference character 76 which includes a shaft 77 which carries, at its inner end, a pair of oppositely-disposed cup washers or gaskets 78 of leather or any other suitable material held between metal washers 79.

The shaft 77 of the piston 76 extends upward beyond the end of the cylinder 74 and through a centrally apertured cover 80 which is screw-threadedly connected at the upper end of the cylinder 74. A handle 81 is provided at the upper outer end of the shaft 77 while a helical spring 82 is disposed within the upper part of the cylinder 74 intermediate the cover 80 and the upper metal washer 79; the spring 82 urging the piston 76 downward within the cylinder 74.

When the novel dispensing unit of the present invention is connected to the container 20, the cylinder 74 extends in generally vertical position spaced somewhat apart from the wall of the body 21.

A carrying handle 83 is connected adjacent the upper end of the cylinder 74 by means of an adjustable strap 84 passing around said cylinder and held tightly thereabout by a fastening bolt 85.

The carrying handle 83 is also adapted rigidly to be connected to the bead 32 of the container 20 by means of a lower curved shoulder or jaw 86 (adapted to fit beneath the bead 32), an upper shoulder or jaw 87, and a bolt 88 screw-threadedly mounted in the shoulder 87 and adapted to be screwed downward therein so as to grip the upper portion of the bead 32.

The handle 83 is also provided with a hose clamp 89 adapted to hold a delivery hose (to be hereinafter described) when the unit is not being used. The hose clamp 89 includes a generally semi-circular yoke 90 having a slight projection or lip 91 formed at its outer end and also includes a locking collar 92 which is pivotally connected adjacent the top of the yoke 90 as at 93 and which is adapted releasably to engage with the projection 91 in the manner shown in Figure 9 so as to lock the hose within the yoke 90.

An elongated flexible delivery hose 94 has one end fitted about the reduced neck 54 of the cylindrical member 53. An apertured connector 95 is fitted to the other end of the delivery hose 94 and is screw-threadedly connected within the intake conduit 96 of a high-pressure or "booster" grease pump 97. A reduced opening 98 connects the inner end of the intake conduit 96 with the high pressure cylinder 99.

A piston 100 is adapted for reciprocation within the cylinder 99; a fluid-tight seal being provided for the piston by a stuffing-box 101, a stuffing-gland 102 screw-threadedly mounted therein and a sealing gasket 103 disposed within the stuffing-box and adapted to be compressed upon tightening of the stuffing-gland.

The upper end of the piston 100 is connected to a lever handle 104 by a pin 105; the near end of the handle 104 being connected, by a pin 106, to one end of a link 107, the other end of which is pivotally mounted to the outside of the body of the pump 97 as at 108.

When a downward manual pressure is exerted adjacent the free end of the lever handle 104, the mechanical advantage provided by the pivotation causes the piston 100 to exert extremely high pressure (several thousand pounds per square

inch) upon the lubricant contained in the cylinder 99.

The pump 97 also includes an outlet conduit 109 leading from the bottom of the cylinder 99 and provided with a check valve which includes a check ball 110 and a helical spring 111.

A relatively short length of flexible delivery hose 112 is connected to the pump 97 by an apertured coupling 113 screw-threadedly engaged within the outlet conduit 109. The hose 112 is preferably thicker-walled than the hose 94 to enable it withstanding the extremely high pressures of lubricant forced through it by the high pressure pump 97.

A quick attachable and detachable coupler 114 is connected to the other end of the high pressure hose 112. The coupler 114 may be any one of the many different types of couplers conventionally employed in lubricating systems. For example, the coupler 114 may be a multi-jawed hydraulic snap-on coupler (such as those shown in my U. S. Patents 2,274,753, 1,311,077 and 2,314,374) which is adapted for quick attachable and detachable connection to a conventional apertured lubricant-receiving nipple or fitting 115 having a generally rounded convex head 116, an undercut shoulder 117 below the head, and a check ball 118 urged to closed position by a helical spring 119, as shown in Figures 1 and 11.

The operation of the novel lubricant dispensing unit of the present invention will now be described.

Assuming that the follower plate 29 has been released and assuming that the cylindrical member 53 has been connected to the discharge opening 25 of the container 23 in the manner described above so as to open said discharge opening, the piston 76 of the low pressure pump is raised by manually pulling up on its handle 81. The suction thus created opens the inlet check valve 62 and closes the outlet check valve 63 and sucks lubricant from the container, through the conduit 25, and the member 53 up into the cylinder 74.

After the piston 76 has been raised to its uppermost position, it is pushed downward to close the inlet check valve 62 and open the outlet check valve 63 and to force the lubricant from the cylinder 74 into the hose 94.

This raising and lowering of the piston 76 is repeated several times until sufficient grease has been pumped into the hose 94 to fill it and to fill the intake conduit 96 of the high pressure pump 97.

When this occurs, the piston is left in the partially elevated position shown in Figure 1 where-in the coil spring 82 maintains a constant pressure upon the grease within the cylinder 74 tending to drive the grease into the intake conduit 96.

After the coupler 114 has been connected to a nipple 115 (which communicates with a bearing or other part requiring lubrication), the lever handle 104 is raised to its uppermost position as shown in solid lines in Figure 1 which lifts the piston 100 to uncover the opening 98 and to permit lubricant to be delivered therethrough from the intake conduit 96 to the cylinder 99.

Downward movement of the lever handle 104 drives the piston 100 to the bottom of the cylinder 99 and thereby delivers the lubricant, under high pressure, past the check ball 110 and into the high pressure hose 112.

When the lever handle 104 is again raised, another charge of lubricant will be delivered to

the cylinder 99 under pressure of the spring 82 in the low pressure pump and, upon downward movement of the lever handle, this new charge of lubricant will also be delivered to the high pressure hose 112.

This up-and-down movement of the lever handle 104 is repeated several times until the high pressure hose 112 is filled with lubricant.

Thereafter, each up-and-down movement of the lever handle will deliver lubricant, under high pressure, through the coupler 114 and into the apertured nipple 115 from which it passes past the check ball 118 to the bearing (not shown) or other part to be lubricated.

When the first bearing has received sufficient lubricant, the coupler 114 is simply snapped off the nipple 115 and attached to the next nipple or fitting 115, and so on.

When the lubricant within the cylinder 74 is depleted, due to continued lubrication of various bearings, etc., the handle 81 is again raised to its uppermost position to refill the cylinder 74 so that lubrication can be continued in the manner hereinabove described.

After all the lubricant-receiving nipples in one vicinity have been serviced, the hose 94 (or the hose 112) is inserted within the yoke 90 of the hose clamp 89 and is locked into position by closing the lock or collar 92 whereupon the entire unit (namely the container, the low pressure pump and the high pressure pump) is lifted by manually grasping the carrying handle 83 and is carried to a different place for servicing of additional lubricant-receiving nipples.

It is apparent that the only operations necessary to effect lubrication of many different bearings, etc. is the operation of the lever handle 104 and the occasional raising of the piston handle 81.

That is, no refilling operations whatever are required until the grease container is wholly emptied.

After the grease container has been emptied, the dispensing unit is disconnected therefrom by unscrewing the bolt 88 and the collar or gland nut 57 whereupon the container is discarded and the dispensing unit is connected to a new full container for further use.

Where the low-pressure pump assembly of the present invention is used with a container having an automatic valve discharge opening as described above, it may be preferable to first loosen the bolt 85 (and the bolt 86) before connecting or disconnecting the collar 57 so that the carrying handle 83 can be swung out of the way in order not to interfere with the locking and unlocking rotation of the member 53 and the cylinder 74.

The handle 83 may be inexpensively formed from sheet metal or the like by simple and well-known stamping and forming operations.

The booster pump 97 serves as a shut-off for the delivery hose 94. That is, if the piston 100 is left in its lowermost position, after the greasing operation has been completed, it will close off the opening 98 and will prevent the escape of grease (which is always under pressure of the spring 82).

In Figure 11 there is shown a direct push-type high pressure or "booster" pump 120 which may be used in place of the "booster" pump 97.

The pump 120 includes an intake conduit 121 to which the apertured connector 95 of the delivery hose 94 is adapted to be detachably connected. The conduit 121 communicates with a high pressure cylinder 122 through a reduced opening 123.

A piston plunger 124 is adapted for reciprocation within the cylinder 122; a fluid-tight seal being provided at the upper end of the cylinder by an apertured gasket 125 and an apertured gland nut 126 (which is slotted as at 127 to receive a screw driver or other suitable tool) screw-threadedly connected within the lower end of an enlarged cylindrical opening 128 extending above and in axial alignment with the cylinder 122.

As shown in Figure 11, the piston plunger 124 extends upward beyond the upper end of the cylinder 122 and through the gasket 125 and gland nut 126; its upper end being screw-threadedly connected to an operating shaft 129. The shaft 129 is provided with a lowermost enlarged flange 130 slidably mounted within the cylindrical opening 128. The body of the shaft 129 extends upward through an apertured collar 131 screw-threadedly mounted at the upper end of the pump 120 above the opening 128; a handle 132 being provided at the outer end of the shaft 129.

A helical spring 133 is disposed within the opening 128 intermediate the flange 130 and the gland nut 126; the spring 133 normally urging the shaft 129 and the piston plunger upwardly to the position shown in Figure 11.

A sealing cap or nose-piece 134 is screw-threadedly connected at the lower end of the pump 120; a check ball 135 being normally urged to closed position at the lower end of the cylinder 122 by a helical spring 136 seated against the nose-piece 134.

The nose-piece 134 is provided with a lubricant-delivery conduit 137 leading to a concave sealing face 138 adapted to make fluid-tight contact with the convex head 116 of the nipple 115 when the pump 120 is manually pushed against the nipple.

In operation, lubricant is delivered from the hose 94 through the intake conduit 96 and the opening 98 and into the cylinder 122 in the manner described hereinabove.

The pump 120 is then forced against a fitting or nipple 115 and the handle 132 is shoved downward whereupon the piston plunger 124 drives the lubricant at extremely high pressure past the check ball 135 and into the fitting 115. When the handle 132 is released, the spring 133 returns the piston plunger 124 to the uppermost position shown in Figure 11 whereupon additional grease is forced into the cylinder 122 from the hose 94, the intake conduit 121 and the opening 123.

The handle 132 is then again pushed downward to send another charge of the lubricant into the fitting 115. This procedure is repeated until sufficient lubricant has been delivered to the fitting whereupon the pump 120 is moved to the next nipple or fitting to be lubricated.

The novel dispensing unit of the present invention is simple and inexpensive to manufacture and can be sold for as little as a few dollars complete. Thus, the low pressure pump, the carrying handle and the member 53 can be constructed of relatively light weight sheet metal or the like by simple operations well known in the art. The high pressure pump can be of cast steel or the like and can be completed by simple conventional machining operations such as are well known and commonly employed in the art.

The carrying handle 83 can be adjusted to different-size containers by simply loosening the bolt 85 and sliding the strap 84 along the out-

side of the cylinder 14 to the proper height for connection to the bead 32.

Where the container is not provided with an upper bead sufficiently large to take the carrying handle 81, the handle may be provided with a suitable adjustable strap (not shown) similar to the strap 84 adapted to be passed around the body of the container and to be fastened thereto. Alternatively, any other suitable connecting means may be provided for attaching the handle 81 to the grease container.

As used in the appended claims, the term "standard grease container" refers to a 25 pound or 50 pound or other size container wherein grease or other lubricant or the like is commonly sold and which is provided with a delivery or discharge opening in its side wall (disposed near the bottom of the container with its axis either generally horizontal or upwardly inclined) and adapted detachably to be connected in fluid-tight relationship with the cylinder of an ordinary grease-gun or the like.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiments be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

Having thus described the invention, what I claim as new and desire to protect by Letters Patent is:

1. For use with a standard, original, vendable, merchandising fluid container having a generally cylindrical upright body provided with a peripheral bead along its upper edge and provided with a discharge opening extending through its side wall adjacent the bottom thereof, said discharge opening including a screw-threaded suction-receiving socket and a revoluble frictionally-operated shut-off valve disposed within said socket; a fluid withdrawal and delivery unit comprising a generally tubular member, screw-threaded means for detachably connecting one end of said tubular member within said suction-receiving socket and for frictionally operating said shut-off valve to move it to open position, said tubular member having inlet and outlet check-valves therein, a low-pressure pump connected to said tubular member intermediate said check-valves and extending upward therefrom generally alongside said container, said pump including a cylinder, a piston slidably mounted within said cylinder and manually operable therewithin, and a helical spring normally urging said piston downward within said cylinder, means for detachably connecting the upper end of said cylinder to said container, said connecting means including a strap axially adjustable along said cylinder and a clamp adapted releasably to grip the bead of said container, an elongated flexible hose leading from the other end of said tubular member, and a booster pump connected to the other end of said hose, said first-mentioned pump being adapted to withdraw a relatively large amount of grease from said container when said piston is manually raised and being adapted to urge the so-withdrawn grease through said hose under pressure of said spring, said booster pump being adapted to receive grease from said hose and being manually operable to deliver relatively small charges of grease under high pressure to a grease-receiving nipple or the like.

2. For use with a standard, original, vendable, merchandising fluid container having a generally cylindrical upright body provided with a peripheral bead along its upper edge and provided with a discharge opening extending through its side wall adjacent the bottom thereof, said discharge opening including a screw-threaded suction-receiving socket and a revoluble frictionally-operated shut-off valve disposed within said socket; a fluid withdrawal and delivery unit comprising a generally tubular member, screw-threaded means for detachably connecting one end of said tubular member within said suction-receiving socket and for frictionally operating said shut-off valve to move it to open position, said tubular member having inlet and outlet check-valves therein, a low-pressure pump connected to said tubular member intermediate said check-valves and extending upward therefrom generally alongside said container, said pump including a cylinder, a piston slidably mounted within said cylinder and manually operable therein, and a helical spring normally urging said piston downward within said cylinder, means for detachably connecting the upper end of said cylinder to said container, said connecting means including a strap axially adjustable along said cylinder and a clamp adapted releasably to grip the bead of said container, an elongated flexible hose leading from the other end of said tubular member, a booster pump connected to the other end of said hose, said first-mentioned pump being adapted to withdraw a relatively large amount of grease from said container when said piston is manually raised and being adapted to urge the so-withdrawn grease through said hose under pressure of said spring, said booster pump being adapted to receive grease from said hose and being manually operable to deliver relatively small charges of grease under high pressure to a grease-receiving nipple or the like, and a carrying handle forming part of said connecting means whereby said container and said low-pressure pump can be manually lifted and transported as a more or less unitary structure.

3. For use with a standard, original, vendable, merchandising fluid container having a generally cylindrical upright body provided with a peripheral bead along its upper edge and provided with a discharge opening extending through its side wall adjacent the bottom thereof, said discharge opening including a screw-threaded suction-receiving socket and a revoluble frictionally-operated shut-off valve disposed within said socket; a fluid withdrawal and delivery unit comprising a generally tubular member, screw-threaded means for detachably connecting one end of said tubular member within said suction-receiving socket and for frictionally operating said shut-off valve to move it to open position, said tubular member having inlet and outlet check-valves therein, a low-pressure pump connected to said tubular member intermediate said check-valves and extending upward therefrom generally alongside said container, said pump including a cylinder, a piston slidably mounted within said cylinder and manually operable therein, a helical spring normally urging said piston downward within said cylinder, means for detachably connecting the upper end of said cylinder to said container, said connecting means including a strap axially adjustable along said cylinder and a clamp adapted releasably to grip the bead of said container, an elongated flexible hose leading from the other end of said tubular

member, a booster pump connected to the other end of said hose, said first-mentioned pump being adapted to withdraw a relatively large amount of grease from said container when said piston is manually raised and being adapted to urge the so-withdrawn grease through said hose under pressure of said spring, said booster pump being adapted to receive grease from said hose and being manually operable to deliver relatively small charges of grease under high pressure to a grease-receiving nipple or the like, a carrying handle forming part of said connecting means, and a clamp adapted releasably to hold said hose whereby the container, the low-pressure pump and the booster pump can be manually lifted and transported as a more or less unitary structure.

4. For use in delivering grease directly from a standard, original, vendable, merchandising grease container to a grease-receiving nipple; means for withdrawing a relatively large amount of grease from said container and for transferring it through an elongated flexible hose, said means comprising a generally tubular member adapted to be detachably connected to the discharge opening of the container, said tubular member having inlet and outlet check-valves disposed generally adjacent the ends thereof, a low-pressure pump operatively connected to said tubular member generally intermediate said check-valves, said pump including a cylinder extending generally upwardly from said member, a piston slidably mounted within said cylinder, and a helical spring adapted to urge said piston downwardly within said cylinder, means for detachably connecting the upper end of said cylinder to said container in rigid spaced relationship therewith, a carrying handle forming part of said connecting means whereby said container and said low-pressure pump can be manually lifted and transported as a more or less unitary structure, said low-pressure pump being adapted to withdraw grease from said container upon upward movement of said piston and to force the so-withdrawn lubricant through said elongated hose upon downward movement of said piston, and a booster pump operatively connected at the other end of said elongated hose and adapted to deliver relatively small charges of grease to said nipple under relatively high pressure, said booster pump including a high-pressure cylinder, an intake conduit communicating at one end with said elongated hose and at the other end with said cylinder, and a manually operable high-pressure piston slidably mounted within said cylinder, said piston being adapted to close off said intake conduit when moved to its discharge position thereby to serve as a shut-off valve for said elongated hose.

5. For use with an original, vendable merchandising fluid-container having a generally cylindrical upright body provided with a lateral discharge opening extending through its side-wall adjacent the bottom thereof and a suction-receiving socket on the side of the container having a screw-threaded opening to the exterior of the container and in communication with said discharge opening, said socket having its axis disposed generally horizontally and transversely of the axis of said container, spring-loaded fluid withdrawal and delivery apparatus for detachable mounting on said container wholly exteriorly thereof including a generally horizontal valve chamber at its bottom, a generally upright cylinder extending upwardly from said chamber and in free communication therewith, a piston in said cylinder, a piston-rod connected with said piston

and extending upwardly beyond the upper end of said cylinder and having manual means at its upper end for moving said piston, a spring in said cylinder intermediate said piston and the upper end of said cylinder, an inlet check-valve in said chamber to one side of said cylinder, an outlet check-valve in said chamber to the other side of said cylinder, each of said valves being disposed exteriorly of said container, screw-threaded means detachably connecting said socket to the intake end of said chamber and having its axis generally at a right angle to the axis of said cylinder, and a quick-attachable and quick-detachable clamp carried by the upper end of said cylinder for clamping engagement over and attachment to the upper peripheral edge of said container.

6. For use with an original, vendable merchandising fluid-container having a generally cylindrical upright body provided with a lateral discharge opening extending through its side-wall adjacent the bottom thereof and a suction-receiving socket on the side of the container having a screw-threaded opening to the exterior of the container and in communication with said discharge opening, said socket having its axis disposed generally horizontally and transversely of the axis of said container and having a revoluble frictionally-operated shut-off valve therein, spring-loaded fluid withdrawal and delivery apparatus for detachable mounting on said container wholly exteriorly thereof, including a generally horizontal valve chamber at its bottom, a generally upright cylinder extending upwardly from said chamber and in free communication therewith, a piston in said cylinder, a piston-rod connected with said piston and extending upwardly beyond the upper end of said cylinder and having manual means at its upper end for moving said piston, a spring in said cylinder intermediate said piston and the upper end of said cylinder, an inlet check-valve in said chamber to one side of said cylinder, an outlet check-valve in said chamber to the other side of said cylinder, each of said valves being disposed exteriorly of said container, screw-threaded means detachably connecting said socket to the intake end of said chamber and frictionally operating said shut-off valve to move it to open position, said screw-threaded means having its axis generally at a right angle to the axis of said cylinder, and a quick-attachable and quick-detachable clamp carried by the upper end of said cylinder for clamping engagement over and for attachment to the upper peripheral edge of said container.

7. For use with an original, vendable merchandising fluid-container having a generally cylindrical upright body provided with a lateral discharge opening extending through its side-wall adjacent the bottom thereof and a suction-receiving socket on the side of the container having a screw-threaded opening to the exterior of the container and in communication with said discharge opening, said socket having its axis disposed generally horizontally and transversely of the axis of said container, spring-loaded fluid withdrawal and delivery apparatus for detachable mounting on said container wholly exteriorly thereof, including a generally horizontal valve chamber at its bottom, a generally upright cylinder extending upwardly from said chamber and in free communication therewith, a piston in said cylinder, a piston-rod connected with said piston and extending upwardly beyond the up-

per end of said cylinder and having manual means at its upper end for moving said piston, a spring in said cylinder intermediate said piston and the upper end of said cylinder, an inlet check-valve in said chamber to one side of said cylinder, an outlet check-valve in said chamber to the other side of said cylinder, each of said valves being disposed exteriorly of said container, screw-threaded means detachably connecting said socket to the intake end of said chamber and having its axis generally at a right angle to the axis of said cylinder, and a quick-attachable and quick-detachable clamp carried by the upper end of said cylinder for clamping engagement over and for attachment to the upper peripheral edge of said container, and a carrying handle forming a part of said clamp whereby said fluid-withdrawal and delivery unit and said container can be manually lifted and transported as a generally unitary structure when operatively interconnected by said clamp and said screw-threaded means.

8. For use with an original, vendable merchandising fluid-container having a generally cylindrical upright body provided with a lateral discharge opening extending through its side-wall adjacent the bottom thereof and a suction-receiving socket on the side of the container having a screw-threaded opening to the exterior of the container and in communication with said discharge opening, said socket having its axis disposed generally horizontally and transversely of the axis of said container, spring-loaded fluid withdrawal and delivery apparatus for detachable mounting on said container wholly exteriorly thereof, including a generally horizontal valve chamber at its bottom, a generally upright cylinder extending upwardly from said chamber and in free communication therewith, a piston in said cylinder, a piston-rod connected with said piston and extending upwardly beyond the upper end of said cylinder and having manual means at its upper end for moving said piston, a spring operatively engaging said piston within said cylinder, an inlet check-valve in said chamber to one side of said cylinder, an outlet check-valve in said chamber to the other side of said cylinder, each of said valves being disposed exteriorly of said container, screw-threaded means detachably connecting said socket to the intake end of said chamber and having its axis generally at a right angle to the axis of said cylinder, and a quick-attachable and quick-detachable clamp carried by the upper end of said cylinder for clamping engagement over and for attachment to the upper peripheral edge of said container.

9. For use with an original, vendable merchandising fluid-container having a generally cylindrical upright body provided with a lateral discharge opening extending through its side-wall adjacent the bottom thereof and a suction-receiving socket on the side of the container having a screw-threaded opening to the exterior of the container and in communication with said discharge opening, said socket having its axis disposed generally horizontally and transversely of the axis of said container, spring-loaded fluid withdrawal and delivery apparatus for detachable mounting on said container wholly exteriorly thereof, including a generally horizontal valve chamber at its bottom, a generally upright cylinder extending upwardly from said chamber and in free communication therewith, a piston in said cylinder, a piston-rod connected with said piston and extending upwardly beyond

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the upper end of said cylinder and having manual means at its upper end for moving said piston, a spring urging said piston downwardly in said cylinder, an inlet check-valve in said chamber to one side of said cylinder, an outlet check-valve in said chamber to the other side of said cylinder, each of said valves being disposed exteriorly of said container, screw-threaded means detachably connecting said socket to the intake end of said chamber and having its axis generally at a right angle to the axis of said cylinder, and a quick-attachable and quick-detachable clamp carried by the upper end of said cylinder for clamping engagement over and for attachment to the upper peripheral edge of said container.

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