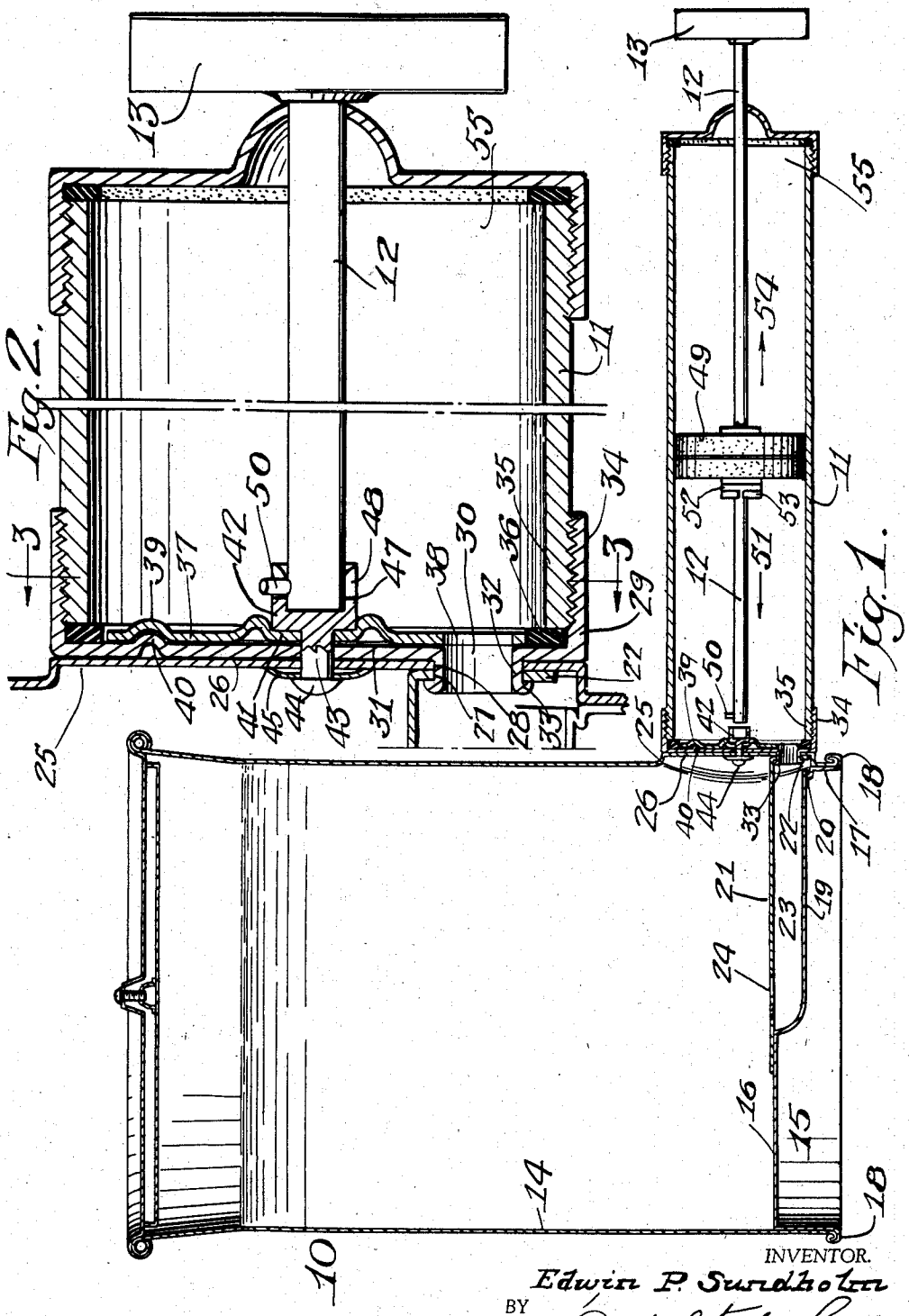
April 22, 1941. E. P. SUNDHOLM 2,239,581

FLUID-DISPENSING DEVICE

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FLUID-DISPENSING DEVICE

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Fig. 3.

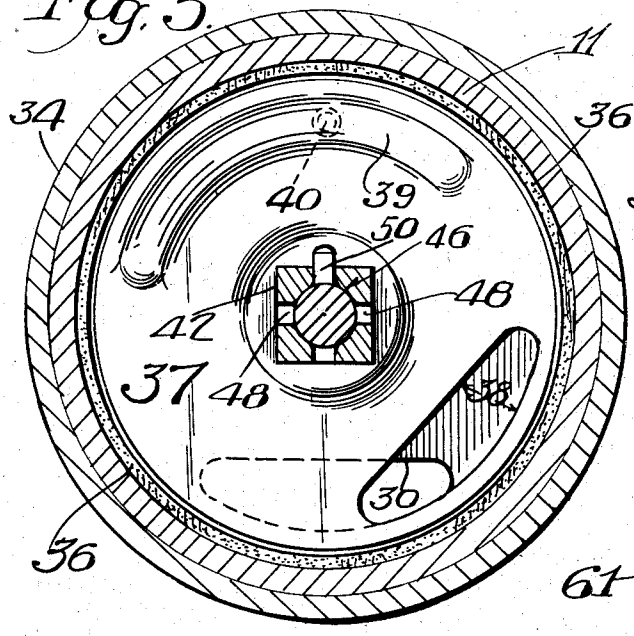


Fig. 6.

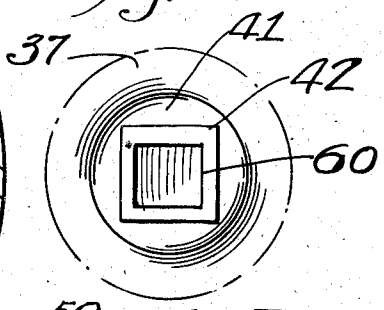


Fig. 7.

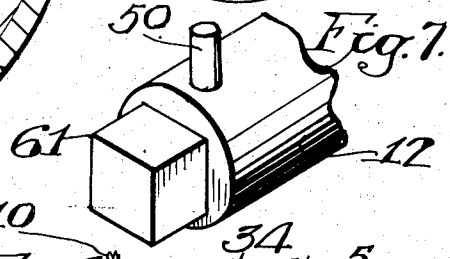


Fig. 5.

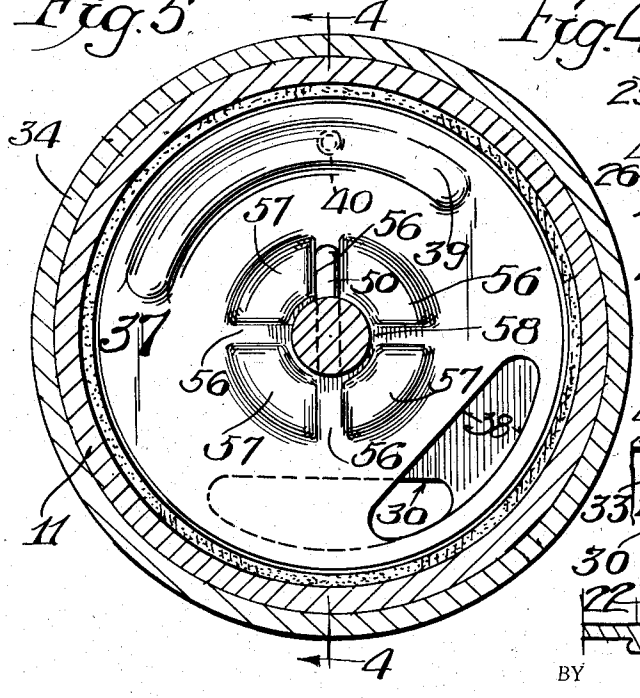
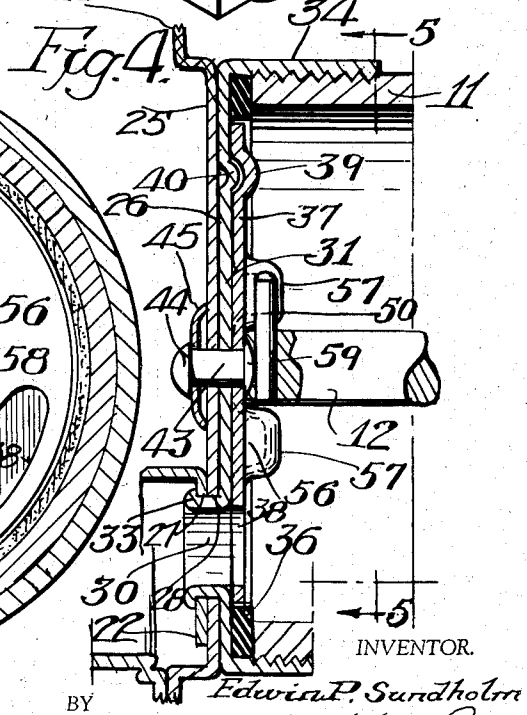


Fig. 4.



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FLUID-DISPENSING DEVICE

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Application November 9, 1939, Serial No. 303,658

4 Claims. (Cl. 221—47.5)

The present invention relates to a certain new and useful fluid-dispensing device, and it relates more particularly to certain novel means for transferring fluids such as greases, printers' inks, and the like, from a large container, as for instance, an original shipping container, into small hand-type dispensers, as for instance, grease guns shown in co-pending applications Serial Numbers 236,281, 303,655, 303,657 and 319,386.

One of the problems in handling fluids such as greases, printers' inks and the like, is to transfer the fluid from the relatively large container containing ten, fifty, or one hundred or more pounds, into the reservoirs of small hand-dispensing devices such as grease-guns, without pouring or otherwise handling the fluid in the open in the act of transferring, that is, without ladling or dipping or pouring the fluid from the original container to the reservoir of the grease-gun.

One of the objects of the present invention is to provide means whereby the reservoir or so-called "barrel" of a hand-type grease-gun or the like and the original grease-dispensing container may be so related to each other during the act of filling the grease-gun "barrel" from the original grease container, as to permit the grease container to be open and shut while the barrel of the grease-gun is attached thereto by a valve closing and opening operation through the grease-gun.

With the above and other objects in view which will appear more fully from the following detailed description, the present invention consists of a novel relationship between the piston-operating rod and rod handle of the grease-gun "barrel" and the shut-off means in the gun-receiving socket of a grease-dispensing container adapted for filling said grease-gun "barrel," whereby the shut-off means of said grease-dispensing container may be open and closed by and through either a rotary or a reciprocatory motion, or both, of the piston-operating rod and rod handle of the "barrel" of the grease-gun.

The present invention further consists of other novel features and details of construction, all of which will appear more fully from the following detailed description and accompanying drawings.

For the purpose of illustrating the invention, there is shown in the accompanying drawings forms thereof which are at present preferred, since the same have been found in practice to give satisfactory and reliable results, 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 arrangement and organization of the instrumentalities as herein shown and described.

Referring to the drawings in which like reference characters indicate like parts,

Figure 1 represents a vertical cross-sectional view of the fluid-dispensing device embodying the present invention shown in one of its operative conditions.

Figure 2 represents an enlarged fragmentary cross-sectional view of a portion thereof similar to that shown in Figure 1 on a much enlarged scale.

Figure 3 represents a fragmentary end elevational view of the form of construction shown in Figures 1 and 2 taken generally on line 3—3 of Figure 2.

Figure 4 represents a fragmentary cross-sectional view similar to that shown in Figure 2 but of a somewhat modified form of construction, taken generally on line 4—4 of Figure 5.

Figure 5 represents an end view, similar to that shown in Figure 3, but of the form of construction shown in Figure 4 and taken generally on line 5—5 of Figure 4.

Figure 6 represents an end elevational view of the central rod-receiving socket similar to that shown in Figures 3 and 5, but of a further modified form of construction.

Figure 7 represents a fragmentary perspective view of the end of an operating rod of a gun barrel to fit the socket shown in Figure 6.

The fluid-dispensing device of the present invention includes the dispensing container designated generally by the numeral 10, and the gun barrel designated generally by the numeral 11, which are adapted to co-act with each other in the general manner indicated in Figures 1, 2 and 4, in such a manner that fluid, such as grease, oil or other lubricant, or other similar fluids may be transferred from the dispensing container 10 to the gun barrel 11 without any loss of fluid by permitting the passageway from the container 10 to the gun barrel 11 to be opened and shut, at will, by and through the operating rod 12 and rod handle 13 of the grease-gun barrel.

The container 10 includes the generally upright sheet-metal wall 14 which may be cylindrical or any other shape, into the lower end of which the inverted cup-shaped bottom unit 15 is telescoped, having bottom wall 16, and cylindrical flange portion 17, which latter is seamed to the side wall 14 by the interlapped, crimped seam 18. A channel 19 is pressed downwardly from the bottom wall 16 and merges with the flange

17 through a folded-back or doubled-back portion 20. A cover plate 21 having a downwardly depending apron 22 is superimposed upon the channel 19 to form therewith a lateral passageway 23. The cover plate 21 is either made shorter than the channel 19, or is provided with a hole 24, so as to give communication between the interior of the container and the channel 23.

A boss 25 having a flat end wall 26 is pressed out of the side wall 14. Aligned apertures 27 and 28 are formed in the apron 22 and in the boss wall 26, of the generally elongated contour shown in Figures 3 and 5. A generally cup-shaped gun-receiving socket 29, formed in any suitable manner, but preferably stamped out of sheet metal of suitable gauge, is juxtaposed to the flat end wall 26 of the boss 25. A port opening 30 is provided in the end wall 31 of the socket 29, in registration with openings 27 and 28, and from the opening 30 a crimping sleeve or flange 32 is drawn, which is extended through the openings 27 and 28 and is flared or crimped over as at 33, to fluid-tight seal. The socket is screw-threaded as at 34, to receive the threaded end 35 of the gun barrel 11. A sealing gasket 36 is inserted in the socket to seal against the end of the gun barrel. A shut-off, which may comprise a disc 37 of sheet-metal or the like, is pivotally mounted within the socket, having a port 38 similar to the port 30, and having preferably an arcuate channel 39 pressed outwardly therefrom, of suitable arcuate extent, in registration with a stop projection or abutment 40 pressed out of the wall 31 of the socket 29 or otherwise provided thereon, to limit the rotary motion of the shut-off 37, to the open and closed positions of the port 38 thereof.

In the form of construction shown in Figure 2 a square (or other polygonal or irregular) socket 41 is pressed into the sheet metal of the shut-off 37, to receive the square (or other polygonal or irregular) head 42 of the pivot member 43, the stem of which extends through suitable central apertures in the shut-off 37 as well as in the wall 31 of the socket 29 and the wall 26 of the boss 25, and is then riveted over or otherwise secured at its inner end as at 44. If desired a slightly dished spring steel washer 45 may be interposed beneath the head 44, to give slight axial tension to the pivot stem 43, so as to tend to keep the shut-off 37 pressed against the wall 31 of the socket 29. The head 42 is thus locked to the shut-off 37 against relative rotation between the head and the shut-off 37. If desired, instead of interlocking the head 42 and the shut-off 37 by means of the polygonal socket formation 41, other means of interlocking may be employed, as for instance by merely soldering, welding or spot-welding the head 42 to the shut-off 37, which in that event could be left flat without the socket 41 pressed therein. Likewise, if desired, the pivot hole through the shut-off 37 can be made square or other polygonal shape, and that part of the pivot stem 43 which is disposed within the pivot hole in the shut-off 37 can be similarly shaped, so as to fit closely within the square or other polygonal-shaped hole, and thus effect an interlock. The head 42 may be provided with a central opening 46 of suitable depth, and the side wall 47 thereof may be provided with one or more slots 48. The operating rod 12 which extends through the follower piston 49 in the gun barrel 11, in the general manner shown in co-pending application Serial No. 303,657, is provided with a pin or lateral projection 50 which is adapted to enter any one of the slots 48 by advancing the rod 12 in the direction of the arrow 51. The follower piston 49 is first advanced to its extreme forward position near the front end 35 of the gun barrel 11, by engaging the pin 50 in the transverse slot 52 of the bushing 53 which forms a part of the assembly of the piston 49, and then pushing the rod forward in the direction of the arrow 51 until the piston has reached its limiting position. Then the gun barrel 11 is secured into the socket 29 and the rod 12 is then disengaged from the bayonet slot 52 and is advanced further in the direction of the arrow 51 by means of the handle 13, until the end of the rod enters the central opening 46 and until the pin 50 enters one of the slots 48. The handle 13 is then rotated in the direction necessary to turn the shut-off 37 into its open position. In the form of construction shown, this is in the clockwise direction, although it could be arranged in the opposite direction. Thereafter the rod 12 is pulled out in the direction of the arrow 54, thereby to retract the piston 49 to its rearmost position and thereby to suck grease or other fluid from the container 10 into the gun barrel 11. When the gun barrel has thus been filled the rod 12 is again advanced forward in the direction of the arrow 51, to re-enter the opening 46, with a pin 50 re-entering one of the slots 48 (the piston 49 being left behind at the rear end 55 of the gun barrel). The handle 13 is then turned in the direction to turn the shut-off 37 to its closed position. In the forms of construction shown in the drawings, this is in the counter-clockwise direction. Then the gun barrel 11 is unscrewed from the socket 29, and is screwed into the conventional grease gun "head," or into the grease gun "head" or pump "head" shown in co-pending application Serial No. 303,657.

Whenever the gun barrel 11 is empty or requires to be replenished, the operation is repeated. Likewise, if for any reason it should be desirable to replace the contents or partial contents of the gun barrel 11 into the dispensing container 10, the same may be done by a reversal of the operation hereinabove described.

In Figures 4 and 5 a modified form of construction is shown in which one or more arcuately spaced projections 56 are pressed out of the shut-off 37 with radial spaces 57 therebetween and with central clearances 58 therebetween, to receive the end of the rod 12. In this form of construction the pivot 43 is riveted over at both ends 44 and 59 and serves merely as a pivot.

In Figure 6 there is shown a modified form of construction in which the pivot head 42 is provided with a plain square opening 60 and in which the end of the rod beyond the pin 50 is cut square as at 61 to fit into the square hole 60, so as to provide interlocking engagement between the rod 12 and the head 42. If desired, other interlocking means may be provided. Thus for instance, the end of the rod 12 may be shaped to a blade-like shape similar to the end of a screw driver and similar recess or recesses provided either in the pivot head 42 in the manner indicated in Figures 1, 2 and 3, or pressed into the sheet metal of the shut-off 37 in the general manner indicated in Figures 4 and 5.

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 is hereby claimed as new and desired to be secured by Letters Patent, is:

1. A fluid-dispensing device including a fluid reservoir having a discharge opening, a gun-barrel-receiving socket in communication with said discharge opening, a gun-barrel telescopically associated with said gun-barrel-receiving socket, a follower piston in said gun-barrel, an operating rod extending through the rear end of said gun-barrel and through said follower piston and guided by said follower piston in a more or less axial line with respect to said gun-barrel, and a shut-off operatively associated with the discharge opening of said reservoir, the operating rod and the shut-off bearing complementary engageable motion-transmitting means whereby the shut-off may be moved into either its open or closed position, at will, by and through said operating rod while the gun-barrel is telescopically associated with said gun-barrel-receiving socket.

2. Fluid-dispensing apparatus including a fluid-reservoir having a discharge opening, a gun-barrel-receiving socket in communication with said discharge opening, a gun-barrel telescopically associated with said gun-barrel-receiving socket, a follower piston in said gun-barrel, a rotatable and axially movable operating rod extending through the rear end of said gun-barrel and through said follower piston and guided by said follower piston in a more or less axial line with respect to said gun-barrel, and rotary shut-off operatively associated with the discharge opening of said reservoir, the operating rod and the shut-off bearing complementary engageable motion-transmitting means whereby the shut-off may be rotatably moved into either its open or closed position, at will, by and through said operating rod while the gun-barrel is telescopically associated with said gun-barrel-receiving socket.

3. Fluid-dispensing apparatus including a fluid-reservoir having a discharge opening, a gun-barrel-receiving socket in communication with said discharge opening, a gun-barrel telescopically associated with said gun-barrel-receiving socket, a follower piston in said gun-barrel, a rotatable and axially movable operating rod extending through the rear end of said gun-barrel and through said follower piston and guided by said follower piston in a more or less axial line with respect to said gun-barrel, and a rotary shut-off operatively associated with the discharge opening of said reservoir, the operating rod and the shut-off bearing complementary motion-transmitting means, engageable with each other and disengageable from each other by axial movements of the rod, whereby the shut-off may be rotatably moved into either its open or closed position, at will, by and through said operating rod while the gun-barrel is telescopically associated with said gun-barrel-receiving socket.

4. Fluid-dispensing apparatus including a fluid-reservoir having a discharge opening, a gun-barrel-receiving socket in communication with said discharge opening, a gun-barrel telescopically associated with said gun-barrel-receiving socket, a follower piston in said gun-barrel, an operating rod extending through the rear end of said gun-barrel and through said follower piston and guided by said follower piston in a more or less axial line with respect to said gun-barrel, and a shut-off operatively associated with the discharge opening of said reservoir, said shut-off having means for receiving the end of said rod into anti-rotational interlocking engagement by relative axial movement of the rod, whereby the displacement of said shut-off into either its open or closed position may be effected, at will, by and through said operating rod while the gun-barrel is telescopically associated with said gun-barrel-receiving socket.

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