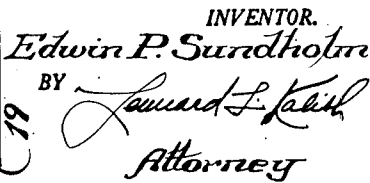


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2 SHEETS--SHEET 1



May 13, 1952

E. P. SUNDHOLM

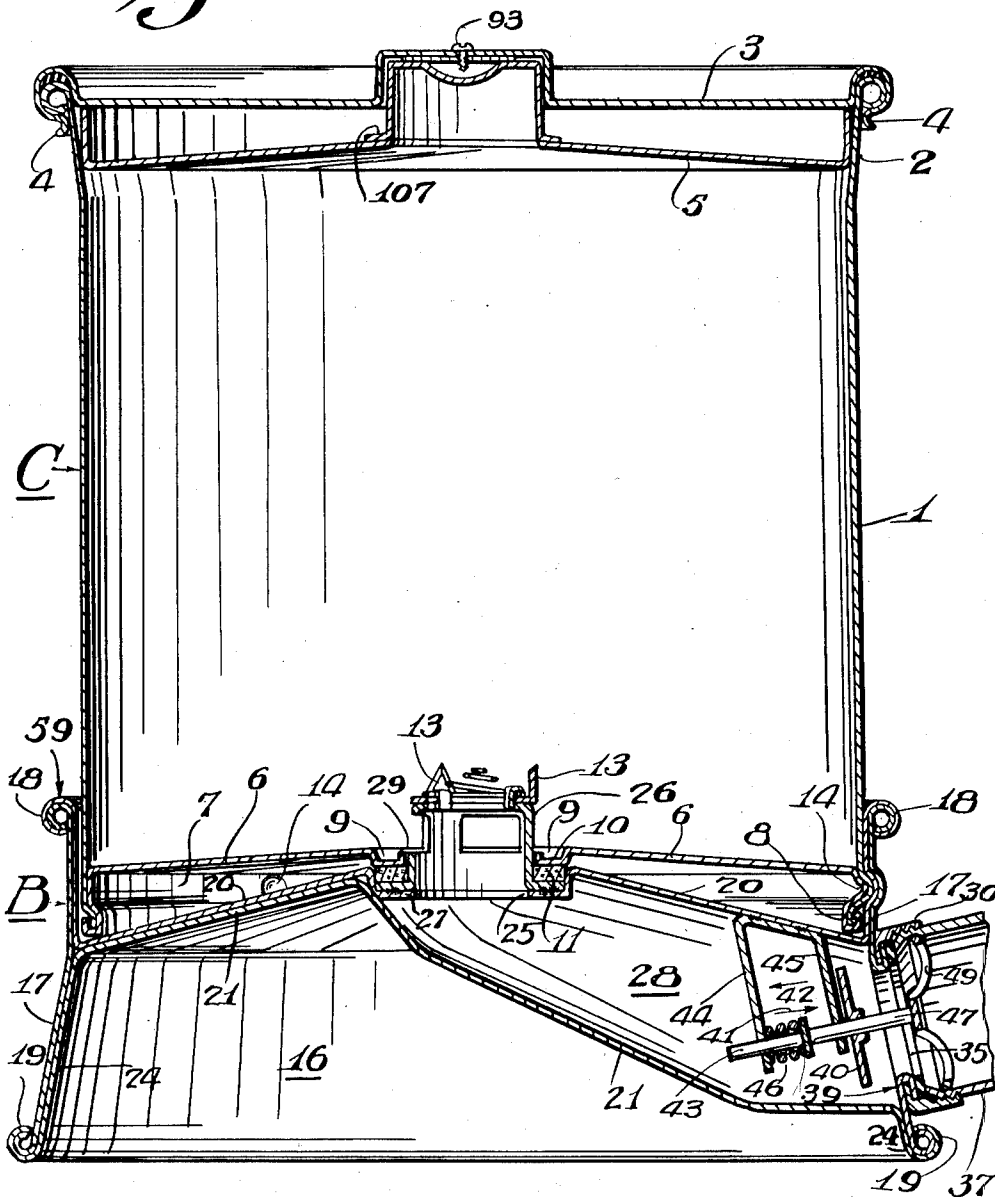
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GREASE GUN

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2 SHEETS—SHEET 2

Fig. 3



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GREASE GUN

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The present invention relates to fluid-dispensing guns (as, for instance, grease-guns) of the type which include a generally elongated cylindrical reservoir-barrel, a follower-piston in said barrel and a pull rod and handle connected with said piston, and a pump-head attached to the otherwise open end of the barrel, and which is adapted to be filled or loaded by detaching the pump-head and by sucking the grease or other fluid into the thus open end of the barrel by pulling the follower-piston back into the barrel (as, for instance, those of U. S. Patents 1,377,023, 2,024,097, 2,124,077, 1,587,597, 1,692,423, 1,696,606, 1,619,126, 1,894,274, 1,926,398 and 1,905,878 and others).

The present invention relates more particularly to fluid dispensing guns, such as, for instance, grease guns of this type especially arranged for loading the reservoir-barrels thereof by application to a gun-receiving socket of a large container or gun-loading transfer-base bearing such container, and particularly for application to such gun-receiving socket having therein a valve to be opened when the fluid is to be loaded into the reservoir-barrel applied to the socket.

The object of the present invention is to provide means carried by and associated with the reservoir-barrel of the gun, for automatically opening the valve of the socket or the valve associated with the socket when the reservoir-barrel is applied to the socket.

Other objects of the present invention will appear more fully from the following description and accompanying drawings.

For the purpose of illustrating the invention, there is shown in the accompanying drawings one form thereof which is 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.

In the accompanying drawings in which like reference characters indicate like parts:

Figure 1 represents a vertical cross-sectional view of a gun-loading transfer-base, and of the fragmentary lower portion of a pail or can adapted to be borne thereby and to cooperate therewith (with the can shown just before it is applied to the base, and just before the bottom of the can is cut out) and with the inlet-end of the reservoir-barrel of the gun applied to the gun-receiving socket of the base.

Figure 2 represents a similar cross-sectional

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view of a fragmentary portion of the base and of the can with the bottom of the can cut out and locked to the base, and showing the reservoir-barrel of the gun detached from the gun-receiving socket of the base.

Figure 3 represents a vertical cross-sectional view of the entire assembly of base, can and reservoir-barrel of the gun applied to the gun-receiving socket of the base, to illustrate, in its entirety, one form of gun-loading apparatus with which the gun of the present invention may be used.

In the accompanying drawings the letter "C" designates, in general, an original container, containing relatively viscous fluids such as grease, printers' ink, caulking compound or the like, while "B" represents the gun-loading transfer-base which is adapted to receive and to perforate the bottom of the can or pail "C," and which has a gun-receiving socket 30 on its side; the latter being adapted to receive the screw-threaded end 38 of the reservoir-barrel 37 of a grease-gun of the general type here-in-above indicated.

The thin-walled original vendable merchandising sheet-metal container, pail or can C may have a cylindrical side-wall 1 having its uppermost portion 2 flared outwardly slightly and having a lid or cover 3 secured to the upper flared and beaded end thereof either by means of the crimped tabs 4 or by any suitable means. The bottom 6, of the container C, is provided with a downwardly depending more or less cylindrical flange-like portion 7, which telescopes into the lower end of the cylindrical body 1 of the container C, to a greater or lesser extent, depending upon the axial length of flange 7, and is secured thereto by an interlocking crimped seam 8. The sheet-metal bottom 6, of the container C, may have pressed into it, in a downward direction, an annular groove 9, to form a dough-nut like ridge or annulus on the outside (or on the inside) of the bottom 6; the outer surface 10 of which constitutes a seating-surface for making sealing-contact with an annular sealing-gasket or ring 11 carried by the base B.

The annulus 9 serves to center or guide the cutters or knives 13, during the cutting operation, and serves also to stiffen and reinforce the center of the bottom 6 after it has been cut out.

A plurality (2, 3 or 4, more or less) of circumferentially distributed equidistant bayonet-lugs 14 may be pressed outwardly (or inwardly) from the side-wall 1 of the container C, for interlocking connection with the bayonet grooves or

channels 57 and 61 in the upstanding flange 23 of the base B.

Within the container C, near its upper end thereof, is a "follower" 5, which is held to the lid 3, prior to its actual use, by means of the screw 93 or the like, and which is released from the lid 3 when the container is put into use on the base B.

The base B may be formed of three members 15, 16 and 17, which may be interlocked by seams 18 and 19, so as to form a generally unitary construction, in which each member supports and gives rigidity to the other.

The upper and lower base-members 15 and 16, respectively, are generally "dish" shaped and arranged with their transverse portions or "bottoms" in juxtaposition and in generally contiguous relation to each other, that is, with the bottom 20 of the upper member 15 extending downwardly and with the bottom 21 of the lower member 16 extending upwardly.

In the end-wall or "bottom" 20, a center aperture 25 is formed, and the material from the aperture 25 may be pressed or drawn upwardly to form a short upstanding tube-like cutter-supporting intake-flange or intake member 26, although this tube-like cutter-supporting intake-flange or intake member is preferably formed separately, as shown in the drawings, and spot-welded or crimp-seamed to the aperture 25. The metal around the hole 25 may be pressed down in a downwardly extending annulus 27, forming an annular groove around the tube-like flange 26, for the reception and retention of the resilient and oil and grease-resistant packing-gasket or sealing-ring 11.

From the partition-wall or "bottom" 21 of the lower base member 16, radial channel 28, of more or less U-shaped cross-section, is pressed, in a downward direction, from a point which includes the projected area of the hole 25 (and may also include the projected area of the annulus 27), which channel 28 extends laterally outwardly to the side-wall 24 of the member 16, at one point, so as to form a fluid-conducting passageway or conduit in communication with the hole 29 which is ultimately formed in the bottom of the original container, pail or can C, within the annulus 9 thereof, outwardly to the gun-receiving socket 30 formed in or affixed to the side of the member 17. From the more or less cylindrical member 17, a circular flange 31 is drawn or pressed outwardly, in general alignment with the outer end of the passage-way or conduit 28, and preferably turned upwardly at a slight angle, so that the plane of its outer edge will be inclined upwardly slightly from the vertical. The circular center portion of the flange 31 is cut out, and the generally tubular flange 31 is thereafter crimped or flared outwardly as at 33, to overlap and interlock with the inturned flange 34 of the gun-receiving socket 30; the crimped portion 33 of the tubular-drawn flange 31 serving also as a seat for the sealing gasket 35 against which the end 36 of the barrel or reservoir 37 of the grease-gun is adapted sealingly to bear, when its screw-threaded end 38 is screwed into the internally screw-threaded cylindrical portion of the gun-receiving socket 30.

The inner surface 39 of the flat, transverse, portion may also serve as a valve-seat, against which a round shut-off valve 40 is adapted to seat in a direction of the arrow 41, and from which it is unseated in the direction of the arrow 42. The shut-off valve 40 may be carried by a valve-stem or rod 43 which may be guided by

a pair of journal brackets 44 and 45 fastened (by spot welding or otherwise) to the wall 20, and which is urged into a seating position by the helical compression spring 46 which bears against a cross-pin, shoulder, disc or other abutment 46-a affixed to or forming a part of the rod 43. The other end of the valve-stem 43 carries an operating extension 47, which extends outwardly to a suitable distance from the plane of the sealing-gasket 35 of the gun-receiving socket 30 of the base B.

The reservoir-barrel 37 may be the reservoir-barrel of any grease-gun of the general type hereinabove indicated, or it may be the reservoir-barrel of any other type of grease-gun, or it may be the pump-cylinder of a pump adapted to dispense viscous fluid, such as grease or the like, at relatively low pressure.

The barrel 37 is a generally cylindrical member, of any suitable length, as, for instance, a foot long, more or less, or it may be as much as two feet long, and has a piston 51 within it, which may be formed, as shown in the drawings, of two oppositely facing cup-shaped leather (or composition) washers 105 and 106 held together, between metallic washers 107 and 108, carried by a central sleeve 109, through which the piston-rod 52 slidably extends; a pin or other locking means 110 carried by the rod 52 being adapted non-slidably to engage and to interlock with the sleeve 109, by being pulled back into and turned into a bayonet-slot 111 in the end of the sleeve, which slot is undercut for a quarter of a turn or a half a turn, more or less. The helical compression spring 112 is interposed between the piston 51 and the cap or end-wall 113 of the barrel, through which the piston-rod 52 slidably extends. The handle 114, or other means for pulling and otherwise operating the piston 51, is provided at the outer end of the rod 52.

The "open" end or loading-end of the barrel 37, namely, that end of the barrel through which the lubricant or other fluid is to be loaded into the barrel or pump-cylinder 37, is provided with a screw-threaded or other interlocking connection-means 38, and the end is preferably flared inwardly slightly as at 36, to form a gasket-engaging annular portion to co-act with the gasket 35 in the socket 30.

A valve-depressor button or other valve-depressor means 48 is disposed within the open end of the barrel 37, generally in alignment with the end of the rod 47 in the socket 30. The valve-depressor element 48 may be carried by a plurality of arms or spokes radiating therefrom, or what may generally be called a "spider" 49. The ends of which arms or spokes 49 may be held in place in the open end of the barrel 37 by being spread out into an annular groove 50 formed in the inner surface of the outer end of the reservoir-barrel 37 of the grease-gun or of the pump-cylinder 37, or may be otherwise secured in the barrel 37, as, for instance, by butt-welding the ends of the spokes 49 as, for instance, by electrical-resistance heat or by "resistance-welding" to the inner side-wall of the barrel 37 by unbending the bowed portions of the spokes 49 to spread the ends thereof into firm contact with the cylinder 37 while welding-current is connected across the spokes and barrel, or by spot-welding the ends of the spokes which have been previously bent parallel to the side-wall of the barrel 37.

Thus, when the barrel or pump-cylinder 37 is screwed into the socket 30, the valve-depressor button or center portion 48, intervening the

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spokes 49, presses the valve-extension or valve-operator 47 inwardly so as to unseat the valve 40 and to permit the lubricant to be drawn out by the manual retraction of the piston 51 within the barrel or cylinder 37, by the manually operable retracting rod or piston rod 52, or by the suction of any other pump-piston (or by any other means exerting pressure on the grease in the can C or tending to make it flow out through the socket 30).

Instead of a rod-carried valve 40, with rectilinear unseating motion, I may use a flapper-type hinged or pivoted valve (not shown), pivoted at its top, for gravity-seating, or pivoted either at its top or bottom, or at its sides, and seated by any suitable valve-closing spring. In this latter case, a valve-operating means similar to the rod 47, and extending at suitable angle, may be affixed to the hinged valve, or the valve-depressor 40 may be extended and shaped to meet and depress the hinged valve.

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 embodiment 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 my invention, what I claim as new and desire to protect by Letters Patent is:

1. In combination with a fluid-dispenser having a generally cylindrical thin-walled barrel with a smooth inner bore and exteriorly screw-threaded at one end detachably to engage a complementary screw-threaded gun-receiving socket on a fluid container, with a piston axially slidable in said barrel and with the socket surrounding an opening in the wall of the container and with a valve controlling the opening and a valve-element extending into the socket; a valve depressor at the screw-threaded end of said barrel so dimensioned whereby operatively to engage said valve-element in said socket and open said valve when the screw-thread end of said barrel is screwed into said socket, said depressor supported within said barrel entirely between said screw-threaded end and said piston when said piston is in its position of farthest advance toward said screw-threaded end.

2. In combination with a fluid-dispenser having a generally cylindrical thin-walled barrel with a smooth inner bore and exteriorly screw-threaded at one end detachably to engage a complementary screw-threaded gun-receiving socket on a fluid container, with a piston axially slidable in said barrel and with the socket surrounding an opening in the wall of the container and with a valve controlling the opening and

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a valve-element extending into the socket; a valve depressor of relatively small axial dimension at the screw-threaded end of said barrel so dimensioned whereby operatively to engage said valve-element in said socket and open said valve when the screw-thread end of said barrel is screwed into said socket, said depressor supported within said barrel entirely between said screw-threaded end and said piston when said piston is in its position of farthest advance toward said screw-threaded end.

3. In combination with a fluid-dispenser having a generally cylindrical thin-walled barrel with a smooth inner bore and exteriorly screw-threaded at one end detachably to engage a complementary screw-threaded gun-receiving socket on a fluid container, with a piston axially slidable in said barrel and with the socket surrounding an opening in the wall of the container and with a valve controlling the opening and a valve-element extending into the socket; a valve depressor at the screw-threaded end of said barrel so dimensioned whereby operatively to engage said valve-element in said socket and open said valve when the screw-thread end of said barrel is screwed into said socket, said depressor supported in a peripheral groove in the inner bore of said barrel entirely between said screw-threaded end and said piston when said piston is in its position of farthest advance toward said screw-threaded end.

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