April 3, 1956 R. J. BOULAY 2,740,666

DISPENSING GUN FOR FLUID CONTAINERS

Filed June 12, 1953 2 Sheets-Sheet 1

Fig. 1.

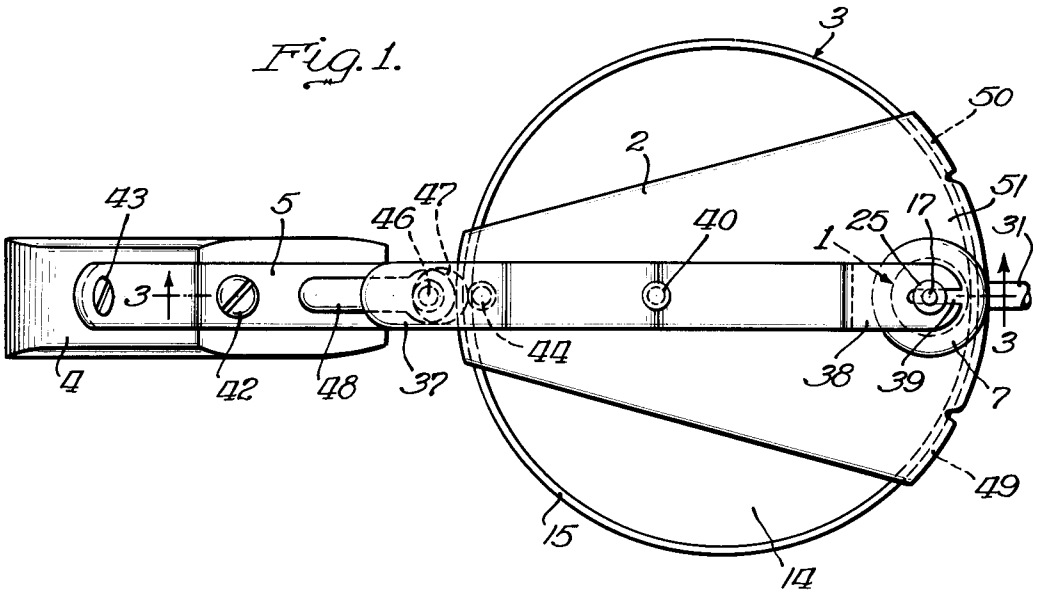
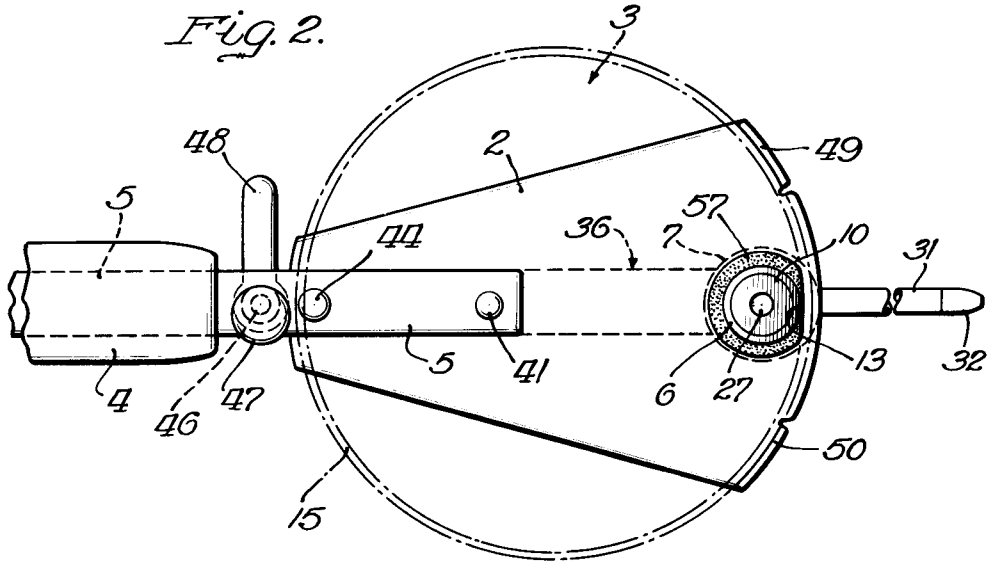


Fig. 2.



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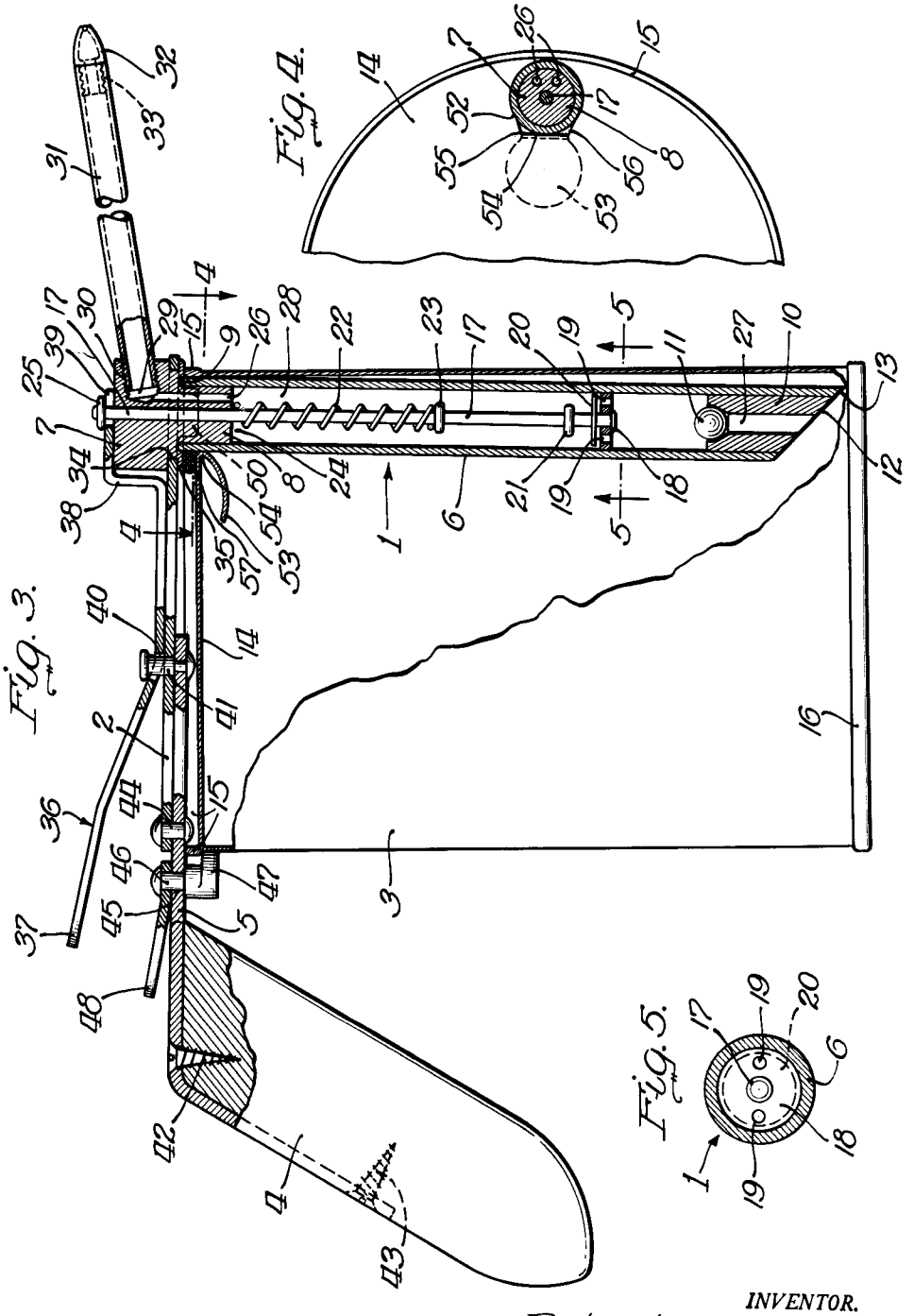

Fig. 3.

Fig. 4.

Fig. 5.

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DISPENSING GUN FOR FLUID CONTAINERS

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15 Claims. (Cl. 299—97)

This invention relates to a fluid dispensing gun for fluid containers.

More specifically, the present invention relates to an apparatus comprising a pumping structure that can be used in connection with a commercial can of fluid material and which will serve the purpose of drawing the fluid out of such can and discharging the same externally thereof as directed by the user.

It is one of the objects of the present invention to provide a simple operative mechanism which includes a can piercing element that is constructed and arranged for entering one wall of a can carrying a fluid and which mechanism includes simple detaching means for securing this structure to a can and wherein the piercing unit contains operative pumping mechanism for drawing the liquid from within the can, together with a nozzle discharge element for directing the fluid to a given location externally of the can.

It is a further object of the present invention to provide a lightweight structure of this character which is attachable to a conventional commercial fluid containing can and which, when associated with such conventional can, provides a complete fluid dispensing unit that is readily portable and usable for discharging the fluid from within the can as needed by the user or operator thereof.

It is a further object of the present invention to provide a dispensing unit of this type wherein the piercing element comprises the pump construction and wherein the entire pump structure is confined within a smooth wall element that can be driven into the can to its final operative position with respect thereto with a minimum amount of effort on the part of the operator.

As another object the present invention includes a piercing structure wherein the can forming and rupturing tip thereof is so designed and positioned so as to provide an opening of predetermined outline in the top of the can to provide a suitable vent or vent areas adjacent the piercing element whereby air can enter the can as the fluid from the can is drawn therefrom.

Another object is to provide a suitable gasket or washer arrangement which preferably comprises a neoprene sponge unit that encircles at least a greater portion of the piercing structure and which is capable of being pressed against the can top, particularly in a position adjacent the vent openings of the ruptured hole in the can. With this particular neoprene sponge unit or washer, it is possible for the can to breathe and with the necessary amount of compression, such washer also prevents the fluid from leaking or passing out of the vent openings adjacent the piercing unit of the fluid dispensing mechanism.

Other objects of the present invention include the design of an apparatus having a generally flat basic structure for positioning adjacent the can top and including a depending handle to provide a balancing arrangement wherein the handle is placed adjacent one side of the can, the same construction including a slightly elevated and angled nozzle mechanism to provide better sighting for directing a stream of the dispensing fluid toward a certain

location, together with other constructional details such as the convenient fastening means employed and the efficient piercing unit, together with other details which shall hereinafter be described.

Other objects and advantages relating to the present invention shall hereinafter appear in the following detailed description having reference to the accompanying drawings forming a part of this specification.

In the drawings:

Figure 1 is a plan view of the dispensing gun of the present invention illustrating this apparatus as attached and in operative position upon a conventional fluid carrying can;

Figure 2 is an underneath view of the same apparatus showing the attached means released and illustrating the general position of a can in dot and dash lines in relation to this apparatus;

Figure 3 is a side elevational view of the can arrangement shown in Figure 1 with a greater portion thereof broken away and in section substantially as seen along the line 3—3 in Figure 1;

Figure 4 is a fragmentary detail plan view of a part of the apparatus shown in Figure 3 and as viewed along the line 4—4 therein; and

Figure 5 is a detail transverse sectional view taken substantially along the line 5—5 in Figure 3.

The dispensing gun of the present invention constitutes as its chief element of construction a pump 1 supported and carried upon a positioning and orientation plate 2 which overlies a conventional fluid carrying can 3 and a suitable handle 4 is connected by means of a strap iron 5 with the supporting plate 2, the pump mechanism 1 comprising the piercing element of the can 3. Referring more specifically to Figure 3, the pump mechanism 1 comprises a tubular barriel 6 secured at its upper end to a head 7 surrounding a depending boss 8 of said head and abutting a shoulder portion 9, while the opposite end of the barrel is plugged by means of the valve sleeve 10 which carries a loose check ball 11. The entire barrel 6 is preferably externally smooth and free from any obstructions between its head and the terminal end thereof, and such terminal end comprising the valve sleeve 10 and the adjacent portions of the barrel are cut off and angled as at 12 to provided a can piercing point 13 at one side of the barrel. Preferably, the point 13 is laterally disposed as shown in Figure 3 so as to properly pierce the can top 14 in a position adjacent either one of the beads 15 and 16 provided at the ends of the can, and which beads comprise the sealed structure between the top and bottom and the side walls of the can 3.

By so locating the point 13, the entire structure is prepositioned in a given relation with respect to the can whereby this apparatus can then be easily secured to the can top as will hereinafter by explained.

Referring back to Figure 3 and to the pump 1, this construction includes a reciprocable rod 17 which carries a piston 18 including a plurality of bores such as 19 and a flap valve 20 is carried upon the stem or reciprocable rod 17 to alternately open and close the bores 19 in accordance with the direction of operation of the rod or stem 17. A shoulder abutment 21 is supplied upon the rod 17 to limit the upward movement of the flap valve 20. A spring 22 encircles the rod 17 and is confined between an annular shoulder unit 23 connected with or formed upon the rod 17 and the bottom surface 24 of the sleeve 8 of head 7. Downward movement of the rod 17 is limited by means of the annular washer or annular integral portion 25 formed at the upper and head end of the stem or rod 17.

As best shown in Figures 3 and 4, the head 7 is provided with several vertical bore 26—26 which communicate from within the chamber 28 of the barrel 6

with a bored and threaded cavity **29** which receives the threaded end **30** of a spout or tube **31**. This spout or tube **31** is preferably provided at its outer end with a nozzle **32** that will thread or connect with the spout or tube **31** substantially as shown at **33**.

Thus the entire pump unit or structure per se comprises a complete pump in the form of a piercing element as described which is capable of positioning within a can by piercing one end thereof so that the fluid from within the can is adapted to be drawn off through the bore **27** of sleeve **10** past the check ball **11** by means of the piston and operating structure connected therewith when reciprocated so as to force the liquid into the barrel **28** through the apertures or bores **26** and into chamber **29** for dispensing through the tube **31** and nozzle **32**.

The foregoing described pump and piercing element **1** is connected by means of the head **7** to the supporting plate **2** through an opening **34** in said plate with portions such as **35** of the head wedged or secured over against the underside of the plate and positioning member **2**. The pump operating mechanism comprises a rockable strap or trigger **36** which includes the lever or trigger **37** for thumb operation at one end thereof and an offset lever **38** which extends upwardly and over the head **7** from the plate **2** terminating in a bifurcated or slotted end **39** straddling the stem or rod **17** of the pump operating mechanism. This trigger or rockable strap **36** is provided intermediate its length with an opening **40** which rides upon a pin **41** that is connected with the triangular support or base member **2** of the dispensing apparatus.

The handle **4** which is suitably secured by means of fastening units such as the screws **42** and **43** to the strap iron bar **5** is connected with the main supporting plate or support **2** by means of a rivet **44** and also by means of the rivet **41** previously described. This provides a rigid continuous structure comprising the handle and the supporting unit which together are securely fastened to or support the entire pump structure which has also been previously described.

In addition, the strap iron **5** of the handle structure is provided with an opening or bore **45** which carries pin **46** that is connected with the cam **47** and which comprises part of the securing mechanism which connects the dispensing unit and apparatus with the can associated therewith. Pin **46** and cam **47** are also secured or fastened by any suitable means to the release lever **48** which can turn about the axis of the stem **46** to obviously rotate the cam **47** into and out of engagement with the side of the can and particularly from under the bead **15** thereof. In this respect, the cam **47** is vertically offset as best shown in Figure 3 to thereby provide the means for engaging beneath the bead **15** of such can **3**.

Referring now to Figures 1 and 2, it is to be noted that the plate or support **2** is provided with depending ears **49** and **50** in spaced relation along the forward or pump end edge thereof. These ears depend downwardly and are provided for engaging over the bead **15** at the adjacent portion of the can. Furthermore, the forward edge **51** of the support or plate **2** also overlies the adjacent can portion as best illustrated in Figure 1.

During the piercing operation as previously referred to, the point **13** is placed inside of either one of the beads **15** and **16** and the operator can push down upon the head structure to cause the pump barrel to pierce the can which is a relatively easy operation. As the pump is pushed into the opening caused by the piercing point **13** and the bevelled edge **12**, the two depending lips or ears **49** and **50** merely engage over the outer peripheral edge of the particular bead that lies adjacent the head and which is bead **15** in the particular illustration shown in Figure 3. When this apparatus is brought into this position, the cam **47** is normally positioned as shown in Figure 2 with the handle **48** extending at right angles to the lengthwise dimension of the apparatus. If the supporting unit or plate **2** and the pump head **7** are all seated against the upper portion of the can, this will bring the ears **49** and **50** over the beaded edge of the can as described and simultaneously this will bring the cam **47** into a position whereupon a rotation of the arm or lever **48** into the position shown will bring the cam **47** into tight locking engagement beneath the bead **15** with the opposite edge of the can with respect to the ears **49** and **50**, thus firmly securing the entire apparatus in a predetermined dispensing relation with respect to the can. This entire operation also places all of the working parts into convenient use for the operator with the nozzle pointing radially outwardly from the forward edge of the can as shown in Figure 3 and with the handle **4** depending below the upper portion of the can and with respect to the overlying apparatus of the dispensing device so as to provide a feasible balanced unit for use in dispensing fluid from within the can through the nozzle **32**. It should also be noted that the trigger or thumb operating member **37** is conveniently brought into a position adjacent and above the handle **4**, which places this lever in the very useful and convenient position for engagement by the operator's thumb from the same hand that is gripping the handle **4**. Then by operating the trigger or lever **37** downwardly, the pump mechanism is actuated as desired with the spring **22** returning the lever **37** to its normal seated position as shown in Figure 3 after each depression of the end **37** thereof.

In order to provide a vent to permit the can to breathe during the dispensing of the fluid, attention is directed to the opening **52** which is formed through the can top as shown in Figure 4. With the circular barrel design and with the diagonal edge **12**, the piercing barrel cuts a generally smooth circular opening such as **52** and turns the metal downwardly and inwardly into a loose flap such as shown at **53** in Figures 3 and 4. This flap automatically turns back inwardly about the connected end and hinged portion so to speak **54**, and with this particular configuration formed during the piercing action, a pair of vents such as **55** and **56** are formed as a part of the hole **52** as shown in Figure 4. These vents such as **55** and **56**, therefore, provide the venting or breathing apertures for the can so that no air lock is possible and the dispensing of the fluid is conveniently and efficiently brought about by the pump structure **1**.

However, it is also desirable to prevent any fluid from leaking out of the vents such as **55** and **56**. To prevent such fluid leak, a suitable neoprene sponge washer such as **57**, as best shown in Figures 2 and 3, is employed which washer at least partially encircles the barrel **6** of the pump and also is seated adjacent the head portion **7** of the pump structure.

It has been found that the use of a neoprene sponge gasket or washer such as **57** provides an automatic air venting seal which will prevent the fluid from leaking out of the can through the openings or vents **55** and **56**, which will also permit air to flow into the can as required by the lowering of the fluid level. It has also been found that with the spongy structure of such a gasket or washer **57** that if the same is not compressed over fifty per cent of its height, this gives adequate fluid seal capacity without blocking off the air breathing attributes of such a washer or sealing member. Thus, with the particular pump structure forming the piercing element and having an end as described which is capable of forming the opening **52** in a can with the adjacent vents **55** and **56**, the entire arrangement forms a self breathing unit facilitated by the washer **57** constructed and arranged as used and as illustrated in Figures 3 and 4.

With the dispensing gun comprising the apparatus described, it is possible to use, as an example, a commercial one quart oil can as a reservoir unit, and the particular dispensing apparatus can then be forced into the can top metal by means of the piercing barrel of the pump until the entire flat bracket arrangement overlies the beaded edges of the can, which downward depression of the en-

tire unit causes the ears 49 and 50 to engage one edge of the can whereby the entire unit is prepositioned to permit an operator to swing the cam 47 by means of lever 48 into tight locking engagement with this reservoir or can to dispense the fluid from therein through the pumping arrangement and out of the nozzle as directed by an operator. Attention is also directed to the fact that the supporting apparatus and bracket unit 2 is slightly inclined downwardly from the cam end of the can toward the outer pump end whereby the smooth surfaced barrel 6 of the pump is inclined inwardly with respect to the adjacent can edge. During the use of this particular dispenser with a heavy fluid filled can, it is possible that the forward edge of the can might come into contact with a piece of apparatus or other unit that is being oiled. Should this unit strike the lower portion of the can which is most susceptible to possible damage, this portion of the can being spaced from the bottom end of the pump will protect such pump barrel from damage primarily due to the clearance relationship between the adjacent can wall and the pump barrel.

It should also be understood that substantially all of the fluid can be dispensed from within the container by tipping such container slightly so that very little liquid remains in the corner at the depending pump end. In fact, the amount that remains in the can is substantially negligible and not objectionable to the use of this particular handy dispensing unit hereinbefore described.

The pump apparatus of the present dispensing gun has been constructed and arranged to provide a very efficient pumping unit maintaining such tolerances wherein any fluid from gasoline to heavy oil may be drawn from a can and forced out of the nozzle tube of the dispenser. This, together with the efficient use of this apparatus in connection with the commercial container of a fluid such as oil, provides a means that can be used in many situations where other less practical structures cannot be used. In many field vehicles such as ditch diggers, caterpillar units and the like, there are many times when these vehicles or traction devices cannot be stopped but must be oiled in order to maintain the same in proper working order. It would be impossible to use a commercial oil can for this purpose, but with the disperser of the present invention oil may be taken from the can and directed as a stream toward the part requiring the oil. In this respect, the entire unit can be put to any number of uses for dispensing any number of fluids individually as required.

Although the foregoing description is directed to a preferred embodiment of the dispensing gun of the present invention and its use in connection with a commercial can or reservoir, certain changes are contemplated in the exact construction of the individual elements or in the combination of elements as used in this device. Any such modifications shall, however, be governed by the breadth and scope of the language of the appended claims directed to the dispensing gun of the present design.

What I claim is:

1. A dispensing gun for an end beaded can of fluid comprising a can piercing unit, means to secure said unit in a given relation with respect to said can comprising a support connected with said piercing unit and having coacting clamp means adapted for releasable securement solely with the adjacent bead at the pierced end of the can and at opposite sides of said can, and operative mechanism in said unit constructed and arranged to draw fluid from within said can and to discharge said fluid externally of the can.

2. A dispensing gun for a sealed can of fluid comprising a can piercing unit, attaching means on said unit to secure said unit in a given relation with respect to said can comprising a plate to overlie one end of the can and to seat directly upon opposite edges thereof in fully stabilized relation to the can end, and coacting clamp means depending from said plate and arranged for contacting engagement with the adjacent can edge and radially inwardly thereof, and pump mechanism carried within said piercing unit to draw fluid from within said can and including means to discharge the fluid externally of said can.

3. A dispensing gun for a sealed can of fluid comprising a can piercing unit, attaching means adapted for contacting engagement with one end of said can only to secure said unit in a given relation with respect to said can comprising a plate to seat upon the can and clamp means depending from said plate to tightly engage said can rim radially inwardly, and pump mechanism housed within said piercing unit to draw fluid from within said can and including means to discharge the fluid externally of said can, said attaching means having a handle secured thereto in spaced relation with respect to one side of said can with said handle being freely suspended from the attaching means, and means operative to actuate said pump mechanism including an operating member positioned adjacent said handle.

4. A dispensing gun for a sealed can of fluid comprising a can piercing unit, attaching means to secure said unit in a given relation with respect to said can including an orientation member to completely overlie one end of the can and to overhang beyond the sides of said can, and pump mechanism connected with said piercing unit to draw fluid from within said can and including means to discharge the fluid externally of said can, said orientation member being provided with coacting elements on the overhanging portions thereof constructed and arranged for multiple point peripheral engagement with one end of said can and at opposite sides of the can with respect to the can piercing unit.

5. A dispensing gun for a sealed can of fluid comprising a can piercing unit, attaching means to secure said unit in a given relation with respect to said can, and pump mechanism connected with said piercing unit to draw fluid from within said can and including means to discharge the fluid externally of said can, said attaching means being provided with coacting members all constructed and arranged for multiple point peripheral engagement with one end of said can, at least one of said members being a cam element and the other of said members providing abutment pieces.

6. A fluid dispensing device constructed and arranged for connection with a can of fluid to draw the fluid from within said can and to discharge the fluid externally of said can, said device comprising a structure assembly to overlie the can top, an extension on said assembly and a handle connected with said extension, a pump unit carried by said assembly and adapted for piercing and entering said can, a fluid discharge nozzle connected with said pump unit, a pump unit operating mechanism carried by said assembly and having a manual actuator arranged for use adjacent said handle, and releasable attachment means on said assembly to secure the latter and its connected parts in a given operative relation with respect to said can comprising depending ears on said assembly to engage one side portion of said can, and a cam member to tightly engage an opposite side portion of the can including an operating lever arranged adjacent said handle for manual operation.

7. A fluid dispensing device constructed and arranged for connection with a can of fluid to draw the fluid from within said can and to discharge the fluid externally of said can, said device comprising a structure assembly to overlie the can top, an extension on said assembly and a handle connected with said extension, a pump unit carried by said assembly and adapted for piercing and entering said can, a fluid discharge nozzle connected with said pump unit, a pump unit operating mechanism carried by said assembly and having a manual actuator arranged for use adjacent said handle, and releasable attachment means on said assembly to secure the latter and its connected parts in a given operative relation with respect to said can comprising depending ears on said assembly

to engage one side portion of said can, and a cam member to tightly engage an opposite side portion of the can including an operating lever arranged adjacent said handle for manual operation, and said structural assembly constituting a generally flat construction to hug the can top, said handle depending from said assembly at one side of said can, and said cam operating lever being carried at the top of the assembly and in a position to overlie the handle for manual operation by the user's thumb, and said pump unit operating mechanism being supported on top of the assembly and over said can to also terminate in a position adjacent and above said handle for thumb engagement.

8. In a dispensing gun for a can of liquid comprising a supporting unit to engage one surface of said can, a can piercing unit on said supporting unit and comprising fluid pump means to draw fluid from within said can, and attaching mechanism on one of said units to secure both of said units in a given relation upon said can comprising ear members located to extend in the same general direction as said pump unit, and cam means carried by one of said units constructed and arranged to laterally engage said can, said ear members and cam means being oppositely positioned in radial relation with respect to said can.

9. In a dispensing gun for a can of liquid comprising a supporting unit to engage one surface of said can, a can piercing unit on said supporting unit and comprising fluid pump means to draw fluid from within said can, and attaching mechanism on one of said units to secure both of said units in a given relation upon said can comprising ear members located to extend in the same general direction as said pump unit, and cam means carried by one of said units constructed and arranged to laterally engage said can, said ear members and cam means being oppositely positioned in radial relation with respect to said can, and said ear members being at least two in number spaced to peripherally contact the adjacent edge of the can and adjacent the overlying supporting unit, and said cam means being located at the opposite edge of said can and in a radial location on a diameter passing between said ear members whereby said cam means and said ear members provide at least a three point can gripping instrumentality to attach said units to said can.

10. A dispensing gun for a sealed can of fluid comprising a can piercing unit, attaching means including fixed and movable members arranged for relative radially operative movement to engage spaced rim portions at opposite sides of the can to secure said unit in a given relation with respect to said can, and pump mechanism connected with said piercing unit to draw fluid from within said can and including means to discharge the fluid externally of said can, said attaching means and said can piercing unit being constructed and arranged to position said piercing unit at an angle with respect to the walls of the can when said attaching means is connected and disposed in place against said can rim.

11. A fluid dispensing mechanism constructed and arranged for connection with a fluid can to draw said fluid from within the confines of said can and to discharge the fluid externally of said can, said mechanism comprising a pump having a can piercing end thereon to permit said pump to enter the can through the opening made by said pump piercing end, said piercing end being constructed and arranged to preform the opening in said can to snugly fit said pump for the most part but to provide at least one lateral gap forming a vent at one side of said pump opening and adjacent the pump per se, said pump including shouldered stop means to limit the insertion of said pump into said can, and gasket means associated with said shouldered stop means to engage the can adjacent the peripheral portion of said pump and overlying said lateral gap of the can opening to prevent fluid from leaking out of said can, but to permit air to filter into said can, said gasket comprising a body of predetermined thickness constructed from resilient spongy and compressible material, and securing means to fasten said pump to said can in a position to compress said body to a given limit to thereby render said body rigid enough to prevent fluid leakage through said can opening and its gap, but free enough to permit air infiltration into said can therethrough during fluid volume changes.

12. A fluid dispensing gun adapted for releasable connection with a can of fluid comprising a can piercing unit, operative mechanism for said unit constructed and arranged to draw fluid from within said can and including means to discharge said fluid externally of the can, and an attachment structure connected with said unit and adapted for positioning said unit in a predetermined relation with respect to said can comprising an orientation plate to abut the edge of the can rim at spaced points upon the periphery thereof, said plate having depending portions to circumferentially engage the same rim of the can, and a movable securing member on said plate arranged to circumferentially engage the rim of said can at a location peripherally spaced with respect to said depending plate portions to mount said plate in fixed relation with respect to said rim and can.

13. A fluid dispensing gun adapted for releasable connection with a can of fluid comprising a can piercing unit, operative mechanism for said unit constructed and arranged to draw fluid from within said can and including means to discharge said fluid externally of the can, and an attachment structure connected with said unit and adapted for positioning said unit in a predetermined relation with respect to said can comprising an orientation plate to abut the edge of the can rim at spaced points upon the periphery thereof, said plate having depending portions to circumferentially engage the same rim of the can, and a movable securing member on said plate arranged to circumferentially engage the rim of said can at a location peripherally spaced with respect to said depending plate portions to mount said plate in fixed relation with respect to said rim and can, said depending plate portions being arranged for said spaced point engagement of the rim at one side of said can, and said securing member occupying a position along a diameter of the can that intersects the can rim at a location intermediate said spaced depending portions of said plate.

14. A fluid dispensing gun adapted for releasable connection with a can of fluid comprising a can piercing unit, operative mechanism for said unit constructed and arranged to draw fluid from within said can and including means to discharge said fluid externally of the can, and an attachment structure connected with said unit and adapted for positioning said unit in a predetermined relation with respect to said can comprising an orientation plate to abut the edge of the can rim at spaced points upon the periphery thereof, said plate having depending portions to circumferentially engage the same rim of the can, and a movable securing member on said plate arranged to circumferentially engage the rim of said can at a location peripherally spaced with respect to said depending plate portions to mount said plate in fixed relation with respect to said rim and can, said can piercing unit being carried by said plate in a predetermined spaced relation with respect to said depending plate portions, and piercing of said can with said unit at a position adjacent the rim of the can establishing an orientation means for the proper circumferential engagement of said can rim by said depending plate portions at one side of said can and providing locating means for said securing member for proper can rim engagement at the other side of said can.

15. A fluid dispensing gun adapted for releasable connection with a can of fluid comprising a can piercing unit, operative mechanism for said unit constructed and arranged to draw fluid from within said can and including means to discharge said fluid externally of the can, and an attachment structure connected with said unit and

adapted for positioning said unit in a predetermined relation with respect to said can comprising an orientation plate to abut the edge of the can rim at spaced points upon the periphery thereof, said plate having depending portions to circumferentially engage the same rim of the can, and a movable securing member on said plate arranged to circumferentially engage the rim of said can at a location peripherally spaced with respect to said depending plate portions to mount said plate in fixed relation with respect to said rim and can, said securing member comprising a cam pivotally carried upon said plate, said cam including a shouldered portion to engage beneath the rim of said can to confine said rim between said plate and cam when said cam is actuated into can engaging position.

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