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W. G. GORMAN
PLASTIC SPRAY BOTTLE
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FIG. 1

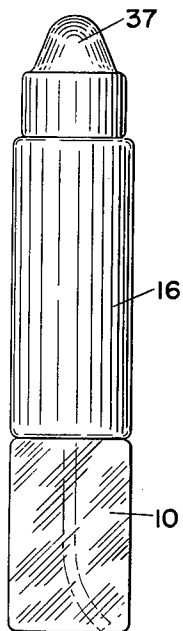


FIG. 2

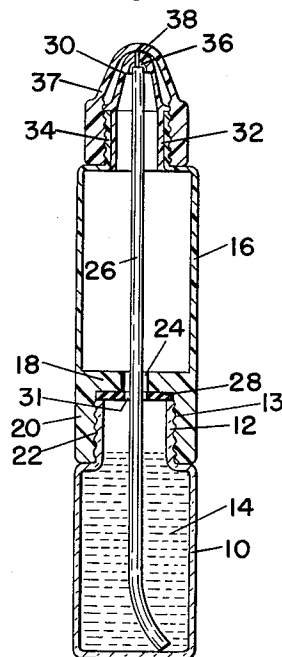


FIG. 3

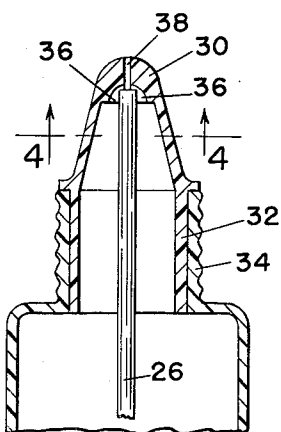
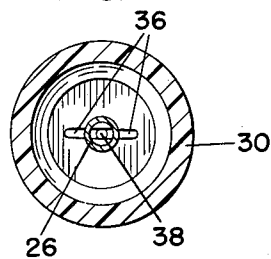


FIG. 4



INVENTOR
WILLIAM G. GORMAN

by Charles R. Fay,

ATTORNEY

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PLASTIC SPRAY BOTTLE

William G. Gorman, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y., a corporation of Delaware
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5 Claims. (Cl. 239—362)

This invention relates to a new and improved plastic spray bottle, and the particular object of the invention resides in the provision of a permanent, non-permeable container for the material to be sprayed, particularly when such material may be volatile, aromatic or oxidizable; in combination with a flexible plastic spray bottle such as for instance one made of poly-ethylene, which is manipulated by being squeezed to cause a spray to emanate therefrom, whereby the material to be sprayed is kept always in the non-permeable container and is not contained within the permeable flexible plastic container.

Other objects of the invention include the provision of a permanent, non-permeable bottle or other container such as a glass bottle, in combination with a demountable flexible plastic spray unit including a flexible squeeze body having inter-engaging means at one end thereof to fit removably onto the glass bottle and having other means at the opposite end thereof to receive a spray valve attachment.

Further objects of the invention include the provision of a capped impervious container for the liquid to be sprayed in which the liquid may be stored and sold but when used by the customer the cap may be removed from the container and the novel spray unit secured to the bottle in place of the cap, and the squeeze body may then be manipulated to deliver the spray; and the provision of a device of the class described where if the solution is adapted to be used continuously, the unit may be left assembled on the bottle or if greater stability is desired, the flexible squeeze bottle spray unit may be removed and the cap replaced on the glass bottle as before, but ready for continued use.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

FIG. 1 is a view in elevation illustrating the device in assembled relation;

FIG. 2 is a vertical cross sectional view through the device of FIG. 1;

FIG. 3 is an enlarged sectional view illustrating the spray nozzle; and

FIG. 4 is an enlarged section on line 4—4 of FIG. 3.

In carrying out the present invention, ordinarily glass bottles will be used to store, ship and distribute the liquid contents thereof. In this case, the glass bottle is illustrated as a simple cylindrical glass bottle as at 10 having more or less the usual neck 12 thereon externally threaded at 13. This neck may be closed by any kind of a cap as is common. The bottle content has been indicated by reference numeral 14. Such content may be volatile, aromatic or capable of oxidization, and as such are kept stable in the glass bottle, but would not be stable if stored in the usual poly-ethylene squeeze bottle due to the permeability of the plastic.

The squeeze-bottle or plastic spray unit comprises a generally cylindrical flexible plastic hollow member 16 which is provided near one end with a bottom partition 18, depending from which there is a cylindrical portion 20 provided with internal threads 22. These threads match those on the neck 12 of the glass bottle for application of the squeeze bottle or spray unit to the neck of the glass bottle 10.

The partition 18 in the squeeze bottle 16 is provided

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with a central aperture at 24 for the passage therethrough of a capillary tube or the like as indicated at 26. This tube extends preferably to the bottom of the bottle 10. Also, a washer or the like 28 may be utilized to make a firmer closure between the unit 16 or bottom partition 18 thereof and the top edge or lip of the neck of the bottle upon which appear the external screw-threads 12. The washer 28 is also provided with an opening as indicated at 31, this opening being relatively small but capable of transmitting the air pressure from the squeeze-bottle 16 to the interior of the glass bottle 10 in order to apply pressure thereto so that the contents 14 will move up the capillary tube in order to create the spray. On the other hand, the fluid 14 will not run out through opening 31, since the bottle 10 is not vented, even though the device should be inverted.

Referring now to FIG. 2, it will be seen that the capillary tube 26 extends upwardly and is secured in a nozzle or spray valve generally indicated at 32 and having a reduced end at 30. This nozzle is of general construction and is adapted to fit the neck of the squeeze-bottle 16 as indicated at 34. It may be provided with external screw-threads for the reception of a closure cap 37, see particularly FIG. 2.

The tube 26 is secured in the material of the spray valve 32 near end 30 but at the same time there are provided the air passage 36 more or less as conventional so that when the liquid is expressed through the tip of the nozzle at 38, air is also expressed through the passages to provide the spray.

In the use of the device, the liquid to be sprayed is stored and sold in the glass or similar bottle 10 which has its own cap. When used by the customer, however, the bottle cap is removed from the bottle and the spray unit is applied thereto in place of the bottle cap. The squeeze-body 16 is then manipulated and it delivers spray as will be clear by applying pressure to the contents 14 and also due to the air orifices 36 as described above. The member 16 may then be removed from the bottle and the bottle-cap replaced so as to prevent any kind of evaporation or oxidation of the material in the bottle, but if the solution is to be used continuously, the unit 16 may be left in place for constant and easy use of the device as will be clear.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. A spray device comprising a non-permeable container having a pouring neck and a removable cap and a flexible plastic squeeze bottle or the like having an opening at one end thereof for removable disposition on said non-permeable container neck so that there is a passage between the squeeze bottle and the non-permeable container, similar means on said bottle and cap for selective securement to the neck of the container, spray-forming means at the opposite end of said squeeze bottle, and a capillary tube extending therefrom into the non-permeable container through said passage, the cap closing the non-permeable container when the flexible plastic squeeze bottle is removed, the latter closing the non-permeable container when in use.

2. A spray bottle or the like comprising a non-permeable container, and a cap therefor, said cap being removable, a flexible, elongated, plastic squeeze bottle, means at one end of said squeeze bottle for attachment to said non-permeable container in place of the cap and replacing the cap for operative use, means on the cap for securement to the bottle, both said means being substantially equivalent so that the cap and bottle are selectively replaceable with respect to said container, a spray-forming head at the opposite end of said squeeze bottle,

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a removable cap covering the same, and a capillary tube extending from the spray-forming means through the plastic squeeze bottle into the non-permeable container.

3. A spray bottle or the like comprising a non-permeable container, and a cap therefore, said cap being removable, a flexible, elongated, plastic squeeze bottle, means at one end of said squeeze bottle for attachment to said non-permeable container in place of the cap and replacing the cap for operative use, means on the cap for securement to the bottle, both said means being substantially equivalent so that the cap and bottle are selectively replaceable with respect to said container, a spray-forming head at the opposite end of said squeeze bottle, a removable cap covering the same, a capillary tube extending from the spray-forming means through the plastic squeeze bottle into the non-permeable container, inter-engaging means between the cap for the non-permeable container bottle and the container, and similarly inter-engaging means disposed upon the squeeze bottle at the container-attaching end thereof.

4. A spray bottle or the like comprising a non-permeable container, and a cap therefor, said cap being removable, a flexible, elongated, plastic squeeze bottle, means at one end of said squeeze bottle for attachment to said non-permeable container in place of the cap and replacing the cap for operative use, means on the cap for securement to the bottle, both said means being substantially equivalent so that the cap and bottle are selectively replaceable with respect to said container, a spray-forming head at the opposite end of said squeeze bottle, a removable cap covering the same, and a capillary tube extending from the spray-forming means through the plastic squeeze bottle into the non-permeable container, inter-engaging means between the cap for the non-permeable container bottle and the container, similarly inter-

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engaging means disposed upon the squeeze bottle at the container-attaching end thereof, said inter-engaging means comprising exterior screw-threads on the non-permeable container and interior screw-threads meshing therewith at the lower end of the plastic squeeze bottle.

5. A spray bottle or the like comprising a non-permeable container, a flexible, elongated, plastic squeeze bottle, means at one end of said squeeze bottle for attachment to said non-permeable container, a spray-forming head at the opposite end of said squeeze bottle, and a capillary tube extending from the spray-forming means through the plastic squeeze bottle into the non-permeable container, inter-engaging means disposed upon the squeeze bottle at the container-attaching end thereof, said inter-engaging means comprising exterior screw-threads on the non-permeable container and interior screw-threads meshing therewith at the lower end of the plastic squeeze bottle, a sealing barrier within the plastic spray-bottle at the inner end of the interior screw-threads and adapted to seat on the lip of the non-permeable container, and an aperture therein through which the capillary tube passes so that pressure may be applied to the contents of the non-permeable container.

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