ABSTRACT

A dispensing bottle is provided for dispensing two separate fluids to a common point. Such bottle is formed with an opening in the top and a divider extending through the interior and integral therewith to form two separate non-communicating compartments communicating with the opening and separated by said divider. Pump means communicating with each compartment to withdraw fluid simultaneously from each compartment and discharge fluid from each compartment simultaneously to a common point and means for actuating said pump means.

4 Claims, 4 Drawing Figures
DISPENSING BOTTLES WITH PUMP MEANS FOR SIMULTANEOUS DISPENSING

This invention relates to dispensing bottles, and particularly to a dispensing bottle for dispensing two separate liquids so as to bring them together on the surface to be sprayed or treated.

There have been many forms of dispensing bottles proposed in which a device is provided for pumping and spraying the liquid contained in the bottle onto a surface to be treated. Typical of such devices is the common window spray bottle which is sold in commerce filled with a window cleaning material. In such apparatus there is generally provided a holding chamber having a depending tube which runs to approximately the bottom of the bottle. The chamber is sealed from the tube by a ball check. A sliding piston in the chamber is provided at one end with an opening sealed by a check valve which opening is adapted to communicate at one end with the chamber, and at the other end with a spray nozzle through which material is sprayed under pressure when the piston is depressed. This is a common structure and does not need any further explanation. There are many situations, however, where it is desirable to simultaneously apply two materials which cannot be packaged together in the same bottle onto the same surface at substantially the same time. For example, there are situations where it is desirable to spray two liquids which will react one with the other and whose reaction is desired to occur on the surface but not in the bottle. Examples of this sort of system are cleaning systems in which an alkaline material and an acid material are brought together on a surface to provide an efflorescing action which cleans and dissolves the soil on the surface. These materials cannot be packaged together because they would promptly react in the bottle and their great advantage of interaction and reaction on the surface would be lost. In the past, materials such as this have been separately packaged and each material has been separately sprayed onto a surface to be treated.

The present invention provides a dispenser bottle which permits two materials which cannot be packaged together to be packaged in a single unit and sprayed from the single unit onto a surface to be cleaned. The apparatus of the present invention permits an alkaline material and an acid material to be packaged in the same package and simultaneously sprayed by the same nozzle head without the need for two separate individual packages which must be handled independently and separately.

There is preferably provided a bottle having an opening at the top, said bottle being divided by a divider member integral with the sidewalls into two separate non-communicating compartments, said divider extending into the opening. A cap member is provided having fixed thereto a pair of separate chambers each having a depending tube extending to a point adjacent the bottom of the two separate compartments of the bottle one on each side of the divider member. A nozzle head having two spaced pistons each adapted to be slidably received in the two chambers is provided, each piston being hollow and communicating at one end through the head to at least one outlet nozzle in said head, and at the opposite end having an opening communicating with the chamber, said opening being normally closed by spring loaded ball check. A spring loaded ball check normally closes the connection between the chamber and the depending tube in each chamber and an independent locking member locking the cap to the opening to seal the two compartments of the bottle formed by the divider member. Preferably the two pistons communicate with separate nozzles in the head which are adjacent each other and are directed to spray so as to intersect one another at a point spaced from the nozzle head. The pistons may, however, communicate with and through a single nozzle so that the materials are brought together at the nozzle orifice. Preferably the apparatus is made of plastic.

In the foregoing general description, certain objects, advantages, and purposes of this invention have been pointed out. Other objects, purposes and advantages of the invention will be apparent from a consideration of the following description and the accompanying drawings in which:

FIG. 1 is an isometric view of a dispensing bottle according to this invention;

FIG. 2 is a vertical section through the dispensing bottle of FIG. 1;

FIG. 3 is a vertical section through a second embodiment of dispensing head and nozzle according to this invention; and

FIG. 4 is a vertical section through a third embodiment of dispensing head according to this invention.

Referring to the drawings there is illustrated a bottle 10 made of rigid polyethylene. A divider member 11 extends through the middle of the bottle to separate it into two compartments 13 and 14 and extends into an opening 12 at the top of the bottle flush with the rim of the opening. Preferably there are provided two filler openings 15 and 16 at the bottom of the bottle, one communicating with each of the compartments 13 and 14 formed by the divider extending through the bottle. Each of these openings 15 and 16 is closed by a threaded cap 17 and 18 in a recess 19 which acts as a funnel for filling each of the separate compartments. A cap member 20 is provided, adapted to fit over the top of the opening 12. The cap member 20 is provided with two depending tubes 21 and 22 adapted to extend into the two compartments 13 and 14 of the bottle to a point adjacent the bottom. Each of the tubes 21 and 22 is connected at its upper end to a chamber 23 and 24 respectively through openings 25 and 26 normally closed by ball checks 27 and 28 held in place by resilient springs 29 and 30. Each of the chambers 23 and 24 carries a vertically moving piston 31 and 32, each of which is hollow and communicates with the chamber through openings 33 and 34, respectively in the bottom of each. Each of the openings 33 and 34 is normally closed by spring held ball checks 35 and 36. The top of each hollow piston 31 and 32 communicates with a passage 37 and 38 respectively extending through the head 40 to orifices 41 and 42 respectively.

The two separate compartments 13 and 14 are filled with liquids to be applied to a surface. When the head 40 is depressed and released liquid is pumped by each of the pistons into each of chambers 23 and 24. The next time the two pistons are depressed by moving the head downwardly the fluid held in the two chambers is forced through the openings 33 and 34 past ball checks 35 and 36 in the bottom of the pistons into the area within the hollow pistons against the resistance of the spring holding the ball checks 35 and 36 in place. When the pistons 31 and 32 are raised, liquids again flows from the bottle into each of the chambers 23 and
24. The next downward stroke of the pistons ejects fluid through the two nozzle orifices 41 and 42 which fluid is brought together on the surface to be treated.

In the embodiment illustrated in FIG. 3 all of the parts are exactly the same and bear like identifying numbers with a prime sign. The only difference is that the two passages 37 and 38 from the hollow pistons 31 and 32 are brought together within the head to form a single discharge passage 50 and the fluid from the two is ejected as a single stream through a single nozzle 51.

In FIG. 4, all of the bottle and pump paths are the same as those of FIG. 1 and bear like numbers with a double prime sign. The head of the unit is, however, different. It consists of a hollow chamber 60 into which the two fluids are pumped and mixed and thereafter poured through spout 61 by manually tipping the whole assembly.

In the foregoing specification certain preferred embodiments of this invention have been illustrated and described. It will be obvious, however, that this invention may be otherwise embodied within the scope of the following claims.

We claim:

1. A dispensing bottle for dispensing simultaneously two separate fluids to a common point comprising a bottle having a cylindrical opening at the top thereof, a divider member extending from the top of said cylindrical opening and flush therewith intermediate the walls of the bottle and integral therewith to form two separate non-communicating compartments in said bottle communicating with the opening, pump means sealingly communicating with each compartment through said opening to withdraw fluid simultaneously from each compartment and discharge fluid from each compartment simultaneously to a common point, means for actuating said pump means and fastening means holding said pump means sealingly in said opening against said divider member.

2. A dispensing bottle as claimed in claim 1 wherein the pump means includes a pair of spaced chambers, each one communicating through a depending tube with one of said compartments, a hollow piston in each chamber fixed to a head, said pistons communicating at one end with its corresponding chamber and at the other end with a passage in said head, said passages in the head discharging to a common point.

3. A dispensing bottle as claimed in claim 1 wherein the pump means discharges fluid from spaced nozzles to a common point.

4. A dispensing bottle as claimed in claim 1 wherein the pump means discharge fluid to a common nozzle.

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