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ATOMIZER CONTROL

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Fig. 1

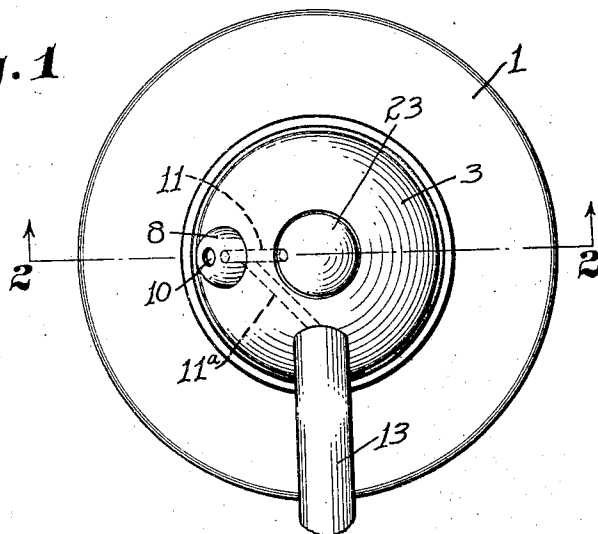
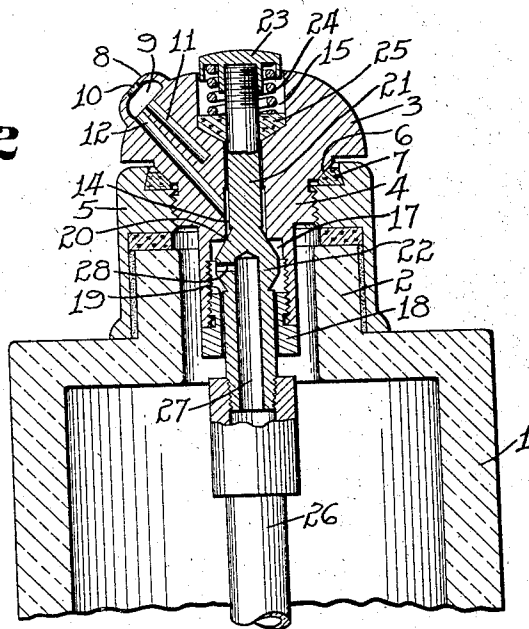


Fig. 2



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ATOMIZER CONTROL

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This invention relates to spraying devices of the type commonly used for the spraying in atomized form of toilet and other liquids, and particularly to those having valves operable to tightly close the passages leading from the liquid receptacle to prevent leakage of the liquids from the receptacles, should they be placed in other than upright position.

Difficulty is experienced in the use of such devices due to the air contained therein expanding under certain conditions when the device is not in use and causing an exuding or an initial spurting of a small quantity of liquid from the spray-head through the liquid passage when the valve means is first opened preparatory to effecting a spraying operation.

The object of the invention is to overcome said objection by the provision of an automatic feature operable instantly, and only momentarily, upon an opening of the control valve to release any air under pressure in the device and prevent its action to discharge the liquid therefrom.

The invention is fully described in the following specification, and while in its broader aspect it is capable of embodiment in different forms, one embodiment thereof is illustrated in the accompanying drawing, in which—

Figure 1 is a top plan view of a device embodying the invention, and Fig. 2 is a sectional view thereof on the line 2—2 in Fig. 1, with parts broken away, and showing the valve means in normal liquid passage closing position.

Referring to the drawing, 1 designates the liquid receptacle of an atomizer or spraying device embodying the invention, the neck 2 of which is closed by a spray-head 3 attached thereto. In the present instance, the spray-head has a neck portion 4 threaded into a ferrule member 5 secured to the receptacle neck, as by cementing or in any other suitable manner, and has a shoulder 6 seating against a gasket 7 on the ferrule to provide a close jointed connection therebetween, as well understood in the art.

The spray-head 3 has the customary spray nozzle 8 provided with a mixing chamber 9

and discharge orifice 10 therefrom; and having air supply and liquid passages 11 and 12, respectively, leading into said chamber. The air passage 11 has communication through a side passage 11^a with a tubular extension 13 from a side of the head with which connection may be made by a hose, or otherwise, with a source of air pressure supply of any suitable type; as for instance, a hand-operated compression bulb. The liquid passage 12 leads into the side of a bore or passage 14 provided axially through the spray-head and having communication at its inner end with the interior of the receptacle, as hereinafter described.

The outer end of the bore 14 opens into an enlargement 15 in the top side of the spray-head 3, and its inner end opens into an enlargement 17 provided in an extension of the spray-head neck 4, which extends down into the neck portion of the receptacle. A plug or bushing member 18 is threaded into the lower or outer end of the bore enlargement 17 and forms at its upper edge an annular valve seat 19, while the upper end wall of the enlargement 17 forms an annular valve seat 20.

A valve stem 21 is mounted in the bore 14 and has an enlargement 22 within the chamber or enlargement 17, which is provided with two opposed conical faces, one adapted to seat against the valve seat 20 when the stem is raised and the other being adapted to seat against the valve seat 19 when the stem is lowered within the spray-head. The outer end of the stem is provided with a cap or thumb piece 23 projecting partially into the enlargement 15, and a coiled expansion spring 24 is disposed between such cap and a gasket 25 disposed in the bottom of the enlargement 15, thus serving to normally hold the stem 21 in outwardly projected position with the valve member 22 bearing against the valve seat 20, thus normally closing the communication between the valve chamber 17 and the portion of the bore 14 into which the liquid discharge passage 12 of the spray nozzle communicates. The lower end of the stem 21 projects down through the bushing 18 and carries a tube 26 which ex-

tends down to near the bottom of the receptacle with its lower end in submerged relation to the liquid therein, as well understood in the art. The passage-way in the tube 26 communicates at its upper end with a passage-way 27 projecting axially for a distance up into the stem 21 and having communication at its upper end with the interior of the chamber 17 through a passage 28.

In the use of this device, the liquid discharge passage 12 is normally closed to the valve chamber 17 and to the interior of the liquid receptacle by the seating of the valve 22 against the valve seat 20 due to the action of the spring 24. Before using the device to effect a spraying of liquid therefrom by the discharge of air under pressure from the nozzle 8, it is necessary to press the valve stem 21 inward to effect an opening of the communication between the chamber 17 and liquid discharge passage 12 and incidentally to effect a seating of the lower face of the valve against the seat 19, which latter closes communication between the chamber 17 and the interior of the receptacle except through the stem passages 26, 27 and 28. Should the air within the receptacle, when the device is not in use, become expanded, for instance by reason of setting in the sun, the pressure thus created enters the chamber 17 through the space between the bushing 18 and valve stem and enters the stem passage 27, thus partially equalizing the pressure of the air on the liquid within and without the stem, and tending to prevent the liquid from being forced into the chamber 17. When the valve stem is depressed, the communication between the chamber 17 and discharge passage 12 is open, thereby relieving the air pressure within the chamber 17 and also momentarily from the interior of the receptacle until the valve has been lowered sufficiently to seat against the valve seat 19. The movement of the valve between the two seats is not very great but it is found that it is adequate to sufficiently relieve the air pressure within the receptacle during the downward movement of the valve from closed to full-open position to prevent liability of the liquid within the receptacle being forced out of the spray-head by such air pressure.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and changes without departing from the spirit of the claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. In a spraying device of the class described, a liquid receptacle having a discharge passage therefrom with an enlargement therein above the normal liquid level in the receptacle and in permanent com-

munication with the lower interior portion of the receptacle through said passage and having auxiliary communication with the upper portion of the receptacle, and a valve normally closing the discharge end of said passage at the outer side of said enlargement and operable when opened to effect a closing of said auxiliary communication.

2. In a spraying device of the class described, a receptacle having a liquid discharge passage therefrom with an enlargement in said passage above the normal liquid level in the receptacle and in permanent communication through a portion of the passage with the lower interior portion of the receptacle and in auxiliary communication with the upper portion of the receptacle, and a valve disposed in said enlargement and normally closing the discharge end of said passage at the outer side of the enlargement and manually operable externally of the receptacle to open said passage-way and at a predetermined point in its opening movement to effect a closing of said auxiliary communication with the interior of the receptacle.

3. In a spraying device of the class described, a spray-head for said receptacle having a valve chamber therein and a discharge passage from said chamber, and a valve stem extending through the spray-head into the receptacle and having valve means in said chamber normally operating to close the communication between the chamber and said discharge passage, said chamber having permanent communication through the stem with the lower interior portion of the receptacle and having temporary communication with the upper portion of the receptacle, said last communication being closed by the valve means upon a predetermined movement thereof from its normal seating position.

4. In a spraying device of the class described, a liquid receptacle, a spray-head therefor having a liquid discharge passage in communication with the upper portion of the receptacle and having a chamber therein, a valve stem extending through the spray-head and into the receptacle, said stem having valve means within said chamber and a passage opening communication between said chamber and the lower interior portion of the receptacle, said valve means having seats in spaced portions of said chamber axially of the stem, and means normally acting on the stem to maintain the valve means seated at the outlet side of the chamber to close the discharge passage therefrom and being adapted upon a predetermined opening movement thereof to close the communication between the chamber and upper portion of the receptacle.

5. In a spraying device of the class described, a liquid receptacle, spray discharge

means having a liquid discharge passage, a liquid supply passage and a pressure release passage, said last two passages being respectively in communication with the lower and upper interior portions of the receptacle, and a valve above the normal liquid level in the receptacle and normally acting to close the communication between said discharge passage and both said other passages and to open communication between said supply and pressure release passages, and manually operable to open the communication between the discharge and supply passages and close the communication between the pressure release passage and both said other passages, and said spray discharge means having an air discharge passage discharging into said liquid discharge passage.

6. In a spraying device of the class described, a liquid receptacle, liquid discharge means having a liquid discharge passage, a liquid supply passage and a pressure release passage, said last two passages being respectively in communication with the lower and upper interior portions of the receptacle, and a valve above the normal liquid level in the receptacle and operable to close the communication between said discharge passage and both said other passages and at the same time to open said communication between said supply and pressure release passages, and also operable to open the communication between the discharge and supply passages and close the communication between the pressure release passage and both said other passages, said valve while moving from one to the other of said positions effecting an opening of the communication between the pressure release and discharge passages, and said spray discharge means having an air discharge passage discharging into said liquid discharge passage.

7. In a spraying device of the class described, a liquid receptacle, liquid discharge means having a liquid discharge passage, a liquid supply passage and a pressure release passage, said last two passages being respectively in communication with the lower and upper interior portions of the receptacle, and a plunger valve above the normal liquid level in the receptacle and normally acting to close the communication between said discharge passage and both said other passages, and operable to open the communication between the discharge and supply passages and close the communication between the discharge and pressure release passages, said valve while moving from one to the other of said positions effecting an opening of the communication between the pressure release and discharge passages.

In testimony whereof I have hereunto signed my name to this specification.

JOY B. SCHMITT.