COMPRESSED GAS-TYPE LIQUID DISPENSER

Fig. 1.

Fig. 2.

Fig. 3.
This invention utilizes a weighted-end flexible tubing coupled to a valve and nozzle mechanism in a compressed gas-type liquid dispenser container so that the weighted end of the tubing, along with the liquid, always seeks when not constrained, the lowest position within the container no matter what position the container is held.

Compressed gas-type liquid dispensers are known for their utility and ease of use for many different applications from the dispensing of shaving cream to the spraying of paint. Generally, this type of dispenser has come to be known as an Aerosol dispenser due to the type of chemical used to provide the compressed gas pressure to force the liquid to be dispensed from the container through a nozzle when a valve mechanism, usually associated with the nozzle, is actuated.

In all known commercially available dispenser cans of this type, the liquid and gas under pressure is sealed when manufactured, so that when the liquid contents of the dispenser is depleted, it is no longer usable or refillable and must be discarded. There are, however, several advantageous applications of a compressed gas-type liquid dispenser that could be refilled with a liquid and recharged with compressed gas. For example, automotive gasoline filling stations could advantageously utilize such a refillable dispenser for dispensing a liquid chemical glass cleaner on windshields of automobiles and the like where the container could easily be refilled with compressed air from the source used to inflate the tires of automobiles serviced there.

Also, in all known commercially available dispenser cans of the type described, the position of the can as it is held when the valve is actuated will determine whether the liquid or the gas within the can will be emitted from the nozzle. That is, if the can is held generally upright when the valve is actuated, the liquid will be dispensed but if the can is held generally horizontally or upside down, then the compressed gas will be ejected from the nozzle and not the liquid. This is due to the fact that these dispensers now available use either sniff intake stems or tubes of metal or stiff plastic extending from the bottom or intake of the valve mechanism to the vicinity of the other end of the container which is the bottom of the can. Thus, it can be readily visualized that when the can is inverted, the liquid therein flows to the lowest position of the can due to the force of gravity and leaves the intake end of the stem only surrounded by the compressed gas. This principle has proven desirable, however, in applications where the liquid to be dispensed tends to harden upon being exposed to the atmosphere, such as paint for example. Here, the users of such spray paint cans are directed by the manufacturer to invert the can and then actuate the valve in order to have the gas so ejected to clear any of the possibly clogging liquid from the nozzle so that the device will be ready for use on the next occasion.

There are, however, many applications where it would be very desirable to be able to dispense a steady flow of the liquid from the nozzle no matter in what position the container is held. For example, it would be very desirable to be able to spray paint upon the underside of a heavy or immovable object and not have the problem of maintaining the spray can in generally an upright position. In many such situations, there simply isn't enough room to do so; whereas, if the container could be made to spray such a steady flow of paint with the can held horizontally or even inverted, the job could be accomplished.

From the foregoing, it should be clear that a compressed gas-type liquid dispenser that may be refilled and recharged and/or that may be used effectively in any position would constitute a substantial advancement of the art. Such an advantageous device is provided by the present invention which incorporates a flexible intake stem or tubing in place of the rather stiff stems known in the prior art and that further incorporates a weight at the open end of this flexible stem so that it will follow the liquid in the container, unless constrained, no matter in what position the dispenser may be utilized. This invention may also incorporate a capturing structure that will hold the weighted end of the flexible tubing near the opposite end of the container from where the valve mechanism is located, only when desired, in order to be able to eject a portion of the compressed gas and thereby clear the nozzle of any liquid that may possibly block this opening.

Accordingly, it is an object of the present invention to provide an improved compressed gas-type liquid dispenser that is competitive in cost to prior art devices of this type. It is another object of the present invention to provide a compressed gas-type liquid dispenser that may be refilled and recharged with a compressed gas.

It is still another object of the invention to provide a compressed gas-type liquid dispenser that may be effectively used to dispense a liquid in any position.

It is yet another object of the invention to provide a compressed gas-type liquid dispenser that may be utilized in any position and that may also be oriented to a position where the compressed gas may be forced through the nozzle to clear this opening of any possible contaminants.

The invention and specific embodiments thereof will be described hereinafter by way of example and with reference to the accompanying drawing wherein like reference numerals refer to like elements or parts, and in which:

FIG. 1 is a perspective cut-away view of a compressed gas-type liquid dispenser constructed according to the invention and shown in an upright position;

FIG. 2 is a perspective cut-away view of an embodiment of the invention where the container is shown on its side; and

FIG. 3 illustrates an embodiment of the invention where the container is shown in an inverted position.

With reference now to the drawing and more particularly to FIG. 1, there is shown a container 11 having a...
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3. A compressed gas-type liquid dispenser comprising a container means for holding a gas at a predetermined pressure and a liquid to be dispensed; a valve and nozzle means attached to said container means and communicating with the contents thereof for dispensing through a nozzle the contents of said container when actuated; flexible tubing means disposed within said container means and having a first end coupled to said valve and nozzle means and a second end for conveying therethrough to said valve and nozzle means gaseous and liquid materials exposed to the opening in said second end, when said valve and nozzle means is actuated; weight means connected to the outer surface of said flexible tubing means adjacent said second end for causing said second end to seek and maintain when not constrained a position within said container means governed by gravity forces acting thereon; and capturing means disposed within said container means adjacent the end thereof farthest from said valve and nozzle means for capturing and readily disen- gaging said weight means thereat.

4. A compressed gas-type liquid dispenser according to claim 1, wherein said container means also includes...
means for refilling and recharging said container means with a liquid and compressed gas.

3. A compressed gas-type liquid dispenser according to claim 2, wherein said container means further includes safety valve means for preventing overcharging of said compressed gas.

4. A compressed gas-type liquid dispenser according to claim 1, wherein said container means also includes means for refilling and recharging said container means with a liquid and compressed gas.

5. A compressed gas-type liquid dispenser according to claim 4, wherein said container means further includes safety valve means for preventing overcharging said container means with said compressed gas.

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