Jan. 5, 1932. L. E. ANDERSON 1,840,283

LIQUID DISPENSING CONTAINER

Filed Nov. 22, 1930

Fig. 1.

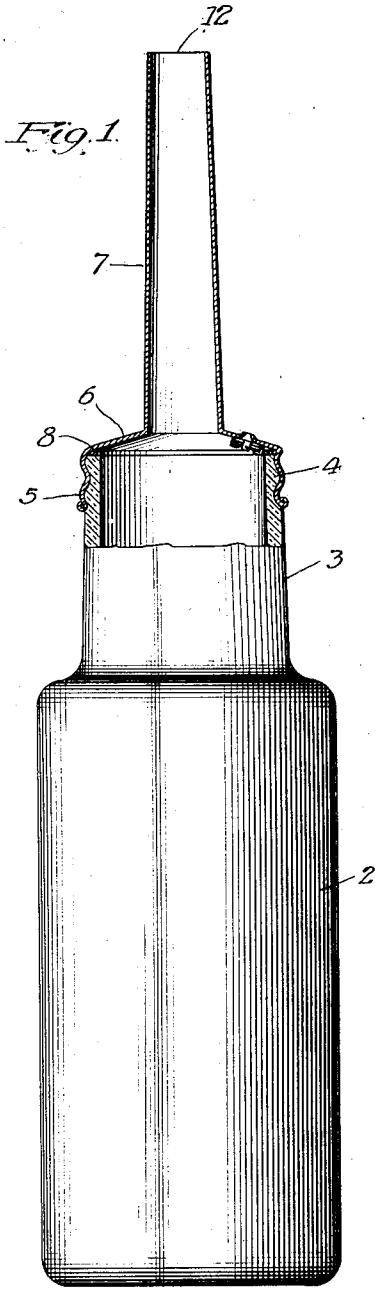


Fig. 2.

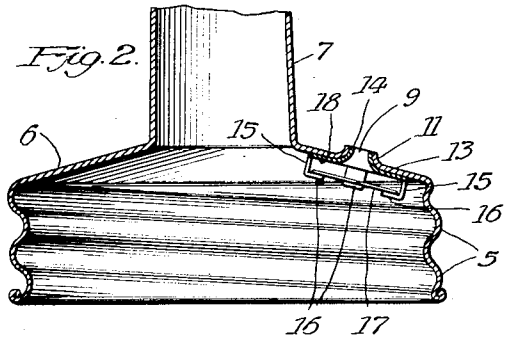


Fig. 3.

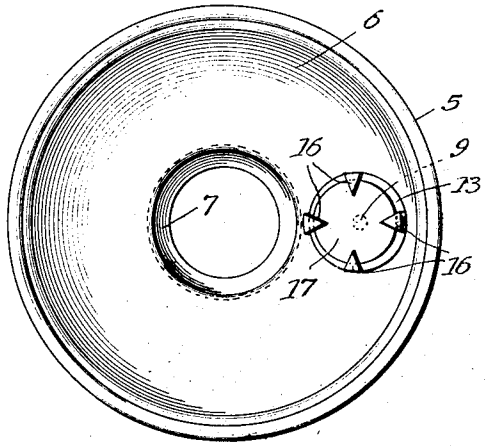


Fig. 4.

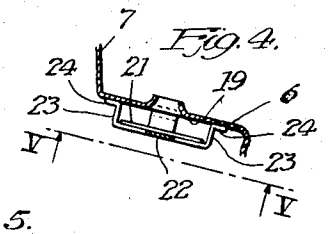
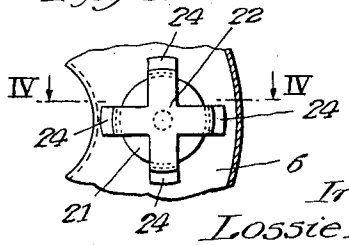


Fig. 5.



Witness:
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UNITED STATES PATENT OFFICE

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LIQUID DISPENSING CONTAINER

Application filed November 22, 1930. Serial No. 497,462.

This invention pertains to liquid dispensing devices such, for instance, as service station oil measuring and dispensing containers and, more particularly, to spouts and vents for spouts therefor.

It has been found desirable, because of convenience of handling, economy and effectiveness of display and use, to dispense oil and other liquids, such for instance as alcohol, to motorists, in glass containers or bottles more or less of the "Mason" type, the bottles at once serving to display the quality and quantity of the contents and to permit the contents to be emptied into the place desired by simple manipulation of the hand. Such dispensing containers are now common at service stations throughout the country. These dispensing jars or bottles are ordinarily equipped with a combination spout and cap, the cap being provided with a circumferential flange which is threaded and adapted to screw upon similar threads formed on the neck of the jar or bottle. A vent is usually provided either through the spout proper or through the cap to permit air to enter as the liquid empties out through the spout, thereby reducing or eliminating surging of the liquid and spurting as it pours from the end of the spout.

Many different forms of vent have been devised for the purpose but they either failed to solve the problem or they introduced additional problems or difficulties equally undesirable. In some cases short tubes open at both ends have been projected through the cap or spout or a hole has been punched through the cap or spout on what may be referred to as the upper side (when pouring) of the spout. Either expedient will operate in a reasonably satisfactory manner so long as the vent opening is maintained uppermost during the pouring and so long as the container is not suddenly tipped from an upright to a pouring position. If the vent opening is on the down side as the liquid is being poured from the container, some of the liquid is certain to ooze or pour through the vent, whereas if the container be suddenly tipped toward a pouring position even though the vent is on the up side, a spurt of oil through the vent opening will generally result. Either happening is undesirable.

Other venting arrangements include those in which a long tube passes through the cap or through the spout proper and down into the container practically to the bottom thereof and those employing various kinds of baffles either in or on the cap or in the spout. None of such devices is entirely satisfactory and most of them are quite expensive to manufacture or are so complicated that they are impractical or they are open to both objections.

Consequently, it is a primary object of the present invention to provide a dispensing container of the character to which reference has been made with a suitable dispensing spout having a venting arrangement so constructed that liquid cannot escape through the vent when the container is tipped to pouring position, regardless of the position of the vent relative to the orientation of the spout or container or the flow of liquid from the spout, and regardless of whether the container is tipped rapidly or slowly to pouring position. The device is so constructed and arranged that when the container is tipped to pouring position a rush of liquid toward the vent effects the closing of the vent while the air necessary to permit displacement of the liquid from the container may flow into the container through the vent and is sufficient, while the vent is open, to prevent the liquid from flowing out.

Another object is to provide a vent arrangement or device which may be simply and cheaply constructed and which will be substantially fool-proof in operation.

Still further objects include the provision of two alternative forms of the invention to illustrate its adaptability to modification without departing from the spirit of the invention and the provision of other features which will be, or should become, clearly apparent and understood after reading the following description and claims and after viewing the drawings, in which:

Fig. 1 is a side elevational view of a container with one form of spout embodying my

invention applied thereto, the top portion of the container being shown in section.

Fig. 2 is an enlarged detail section of the cap and a portion of the spout shown in Fig. 1.

Fig. 3 is a bottom plan view of the same.

Fig. 4 is a fragmentary sectional detail of a modified form taken substantially along the line IV—IV of Fig. 5 and

Fig. 5 is a bottom plan view of the modification shown in Fig. 4, looking at the same from the position of the line V—V of Fig. 4.

The container 2, which may be made of glass or any other suitable material, but preferably of glass so that the contents may be visible to all concerned, is provided with a body portion of a size sufficient to permit it to be grasped by the hand of the user and a neck portion 3 of reduced cross section. Ordinarily, a mark will be placed upon the container to indicate the height to which the container should be filled for a standard measure. The neck 3 is open at its top end and is provided with integrally molded threads 4 with which the corresponding pressed threads 5 of a cap 6 may be engaged in order to secure the cap, tapered spout 7 and container properly together. Of course, a cap and spout may be secured to the container in any suitable manner other than by threads and, while the cap and spout are shown as integral or made from a single piece of sheet metal, they may be made in two or more parts and connected together as suits the convenience of the manufacturer. A suitable washer or gasket 8, to provide a tight connection between the cap and the neck of the container, completes the general assembly.

Referring more particularly to Figs. 2 and 3 for the present, it will be observed that the cap 6 is punched or otherwise formed to provide a vent opening 9 about which a struck-up flange or upwardly directed nipple or shoulder 11 projects. The purpose of the nipple 11 is two-fold, namely, to prevent water, dirt and other débris foreign to the contents of the container from running down the spout or the cap and passing through the vent opening 9, and to act as a centering means for a valve member to be described. In most spouts for containers of the character described, it is common practice to bevel off the nozzle of the spout and to place the vent in the cap or in the spout on that side at which the bevel is nearest to the cap. This is for the purpose of insuring that the vent will always be uppermost with respect to the flow of the liquid, because it has been recognized that the liquid will flow through the vent if it be placed in some other position. With my invention the end of the spout need not be beveled; it may be cut straight across as shown at 12 for pouring from any position.

A disc, or the like, of sheet metal having a body portion 13 is centrally punched or otherwise formed to provide an aperture with an outstanding flange or nipple 14 thereabout, and is provided with a plurality of tangs 15 at spaced places about its outer circumference. The flange or nipple 14 is adapted to be received in and positioned by the upstanding flange or nipple 11 so that the axis of the aperture in the body 13 is concentric with the vent opening through the cap 6. The tangs 15 are made of sufficient length to permit of their being bent intermediate their ends to provide inwardly directed portions 16 which, when the tangs are bent up at right angles to the plane of the body 13, serve to provide a retaining means or valve cage within which or between which and the body portion a flat disc valve 17 is loosely retained. The interior surface 18 circumferentially of the vent opening therethrough and preferably for a reasonable radial distance is of such contour as to enable the disc valve 17 to make a substantially liquid tight contact therewith all the way round. The body member 13 of the valve is preferably soldered to the cap but it may be connected thereto in any other suitable manner that will maintain a good liquid tight joint between the body and the cap and a joint sufficiently strong to withstand the ordinary abuse to which it may be subjected.

In operation, whenever the container with the spout attached is tipped to empty the contents, the disc valve will fall or be forced against its seat 18 and will close the vent 9 against egress of liquid therethrough until such time as the pull of the liquid flowing from the spout becomes sufficient to cause air to flow in through the vent opening. As soon as air begins to flow in, it tilts the disc valve 17 about one edge but, owing to the inrush of air, the liquid does not flow out through the vent. The vent opening may be "fingered" to retard the flow of air and hence the flow of liquid, and it is immaterial in what position the vent may lie during pouring. The liquid will not, if the parts are properly made, flow out through the vent. The container may also be filled through the spout 7, in which case the valve 17 will rest in the position illustrated in Fig. 2 during the filling operation, the air rushing out through the vent 9 as the liquid pours in.

In Figs. 4 and 5 the construction is quite similar to that previously described, except that the interior surface 19 of the cap is made to serve the function of the valve seat against which a disc valve 21 may seat. In this form the valve cage is formed from a metal cross, generally designated 22, the arms of which may be struck-up, as shown at 23, and then flared outwardly, as shown at 24, at which places they may be soldered or otherwise suitably secured to the interior surface of the cap. The operation of this

form of the invention is substantially the same as the operation of the form previously described.

While I have illustrated and described two forms of the invention either of which may be preferred to the other, dependent upon various factors apparent to those skilled in the art, many other forms may be conceived, and the invention is susceptible of embodiment in other types and characters of container. Consequently, I do not desire to be limited to the details of construction illustrated and described, but only by the spirit of the invention and the scope of the appended claims.

I claim:

1. In a liquid dispensing device, a container, a sheet metal cap for said container, a spout connected with said cap and opening to said container, said cap having an air vent opening therethrough adjacent said spout, a substantially flat disk-like check valve disposed in operative relationship to said opening on the inside of said cap, and a valve cage secured directly to said sheet metal cap, said valve being operated by the fluid to close said vent when the container is inverted and by the tendency toward unequal pressures interior and exterior of the container for opening said valve to admit air to the container.

2. In a liquid dispensing device, a container, a combined hollow cap and spout for said container, a rim on said cap, said cap having a vent opening between said rim and spout and a struck-up flange surrounding said opening, a valve seat surface surrounding said opening on the container side of said cap, a substantially flat valve member adapted to seat against said surface and close said opening upon inverting the container, and means secured to the inside of the cap for limiting movements of said valve member away from said surface.

3. A combined spout, hollow cap and vent for a liquid dispensing container comprising, said cap having a rim portion for connection to the container and having an opening for liquid passage and a vent opening, a spout connected to said cap about said liquid passage opening, a valve cage connected with said cap on the interior thereof, and a freely movable flat valve member within said cage for closing said vent opening.

4. A device as described in claim 3 in which said cage comprises a sheet metal body having tangs struck up and bent over toward the center of the body and in spaced relation thereto.

5. A device as described in claim 3 in which said cage comprises a sheet metal body having a plurality of arms bent to space the body a predetermined distance from the interior of the cap about the vent opening, said arms being secured to said cap.

6. A combined spout, cap and vent for a liquid dispensing container comprising, a cup shaped cap formed of sheet metal, said cap having an opening substantially central of the bottom of the cup for the passage of liquid therethrough, a tapered sheet metal spout secured at one end to said cap about said opening, said cap having a bottom portion struck-up outwardly about a vent opening, a substantially plane surface on the inside of said cap about said vent opening, a flat sheet metal disc valve member adapted to cooperate with said plane surface for closing said vent opening, and means for normally retaining said valve member in spaced relation to said surface.

7. In a container, a hollow cover or top for said container, said cover or top having an air vent opening therethrough, and a valve for said opening comprising, a valve seat extending perimetrically about said vent opening, a valve cage on the interior side of said cover or top adapted to loosely position a valve with respect to said seat, and a disc valve loosely disposed in said cage and adapted to float against said seat.

8. In combination with a container wall having an air vent opening therethrough, a substantially flat valve seat formed on the interior side of said wall about said opening, a valve cage spaced from and secured to said wall about said seat and opening by a plurality of arms, and a disc-like valve member disposed loosely within said cage and adapted to cooperate with said seat for closing said opening.

9. In a liquid dispensing device, a container, a hollow cap for said container, a tapered spout on said cap and communicating with said container, a vent aperture in said cap, a valve seat surrounding said vent aperture and spaced laterally therefrom, the diameter of the valve seat exceeding that of the aperture, a disc, means for retaining the disc and for guiding an edge thereof toward and against the valve seat whereby said disc can flap toward and away from the seat with variations in pressure.

10. A sensitive breather valve for venting air into a liquid dispensing container adjacent a pouring spout which comprises a valve seat member having an opening therethrough with a seat surrounding the opening, a valve cage consisting of tangs integral with said valve seat member and bent over toward the center of the valve seat member, and a disk-like valve disposed within said cage and movable against and away from said seat.

In witness whereof I have affixed my signature.

LOSSIE E. ANDERSON.