Oct. 24, 1939. F. A. WILDER ET AL. 2,177,161

DISPENSING CAP

Filed Oct. 10, 1938

Fig. 1.

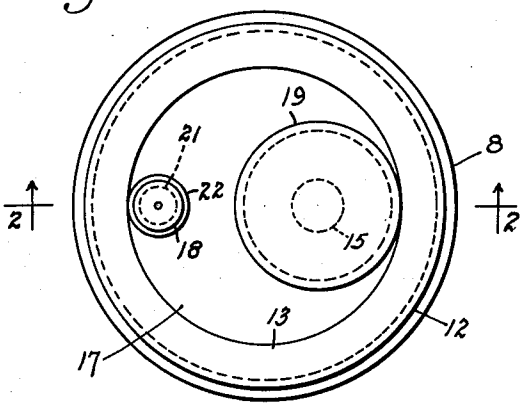


Fig. 3.

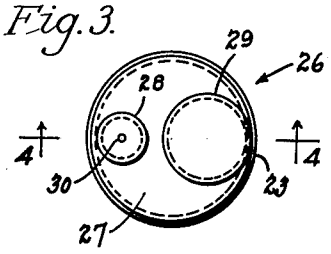


Fig. 4.

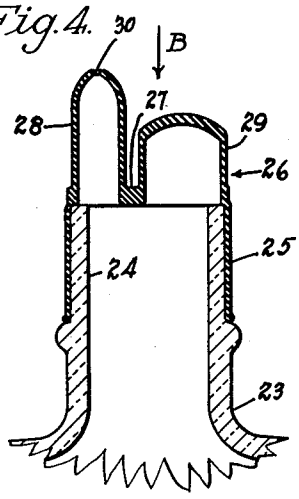


Fig. 2.

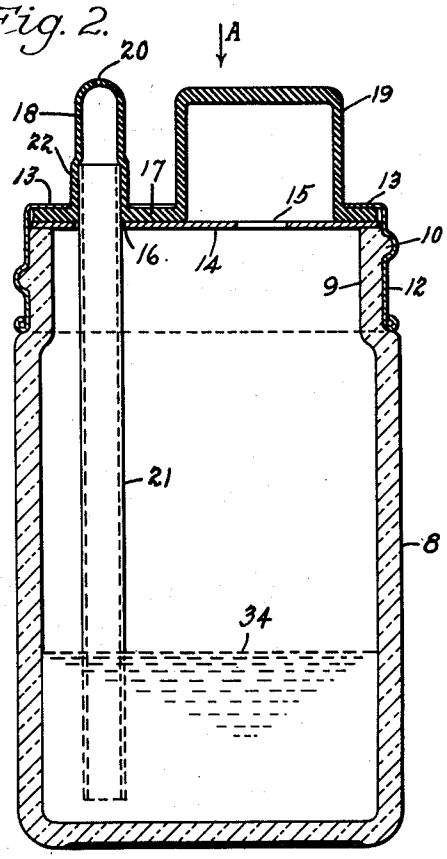


Fig. 5.

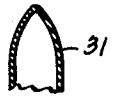


Fig. 6.

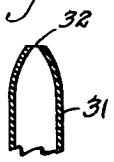
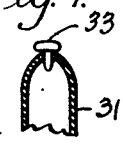


Fig. 7.



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DISPENSING CAP

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Application October 10, 1938, Serial No. 234,169

4 Claims. (Cl. 221—76)

Our invention relates to dispensing caps and more particularly to means for manually dispensing variable quantities of liquid from a container, from drop to a stream.

Another object is to provide means for dispensing variable quantities of liquid under atmospheric pressure.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description.

In the drawing, like reference characters designate similar parts in the several views.

Figure 1 is a plan view of an embodiment of my invention, looking in the direction of the arrow A of Figure 2.

Figure 2 is a section taken on the line 2—2 of Figure 1.

Figure 3 is a plan view of a modified construction, looking in the direction of the arrow B of Figure 4.

Figure 4 is a vertical section taken on the line 4—4 of Figure 3.

Figures 5 and 6 are respectively representations of a form of nozzle that may be used in any of the forms of the present invention. Figure 5 shows the nozzle molded with a closed end and Figure 6 represents the same nozzle after the end has been clipped therefrom.

Figure 7 represents the nozzle shown in Figure 6 with the end opening closed by a plug.

Referring more in detail to the drawing, the reference numeral 8 generally designates a container of glass or other suitable material. Neck 9 of the bottle is threaded, as suggested at 10 for the reception of a screw cap 12. Other suitable caps or crowns may also be used.

The cap 12 has a circular flange 13 at the top thereof.

Mounted between the neck 9 of the container and the flange 13 of the cap are two members, one of which is a washer 14 of metal or other substantially rigid material. The washer 14 has a port 15 and an opening 16.

Disposed between the flange 13 and the washer 14 is an elastic disc 17 containing two protuberances, one of which is a nozzle 18 and the other is an air cup 19. The nozzle 18 contains a discharge orifice 20 at its tip, while the interior of the cup 19 communicates with the interior of the container 8 through the port 15 in the washer 14.

A tube 21 is preferably inserted in the elastic nozzle 18, the elasticity of which maintains the upper end of the siphon tube 21 within the nozzle, as illustrated at 22.

It is to be understood that the parts 17, 18 and 19 are made of elastic rubber.

In the form shown in Figures 3 and 4, container 23 has a neck 24 that is smooth exteriorly. A circumferential lip 25 on the dispensing device 26 may be maintained on the neck 24 by reason of the elasticity of the lip 25 of the rubber dispenser 26 and in addition the lip 25 may be cemented in place upon the neck 24, so that the dispenser 26 may not be removed without tearing the lip 25.

The dispenser 26 comprises a disc 27 from which the lip 25 depends. The disc 27 has a protruding nozzle 28 and a protruding air cup 29. The nozzle 28 has a discharge orifice 30 at its tip.

Figure 5 illustrates a nozzle 31 similar to nozzle 28 except that the nozzle 31 has no discharge orifice. The nozzle 28 may be molded closed, similar to the nozzle 31 and when ready for use, the tip may be cut from the nozzle, as suggested at 32. Thereafter when the dispenser is not in use, a plug 33 may be used to close the orifice 32. A body of liquid is suggested at 34.

Using a dispenser that is molded shut, provides practical means for packaging and distributing closed containers, by providing a nozzle that can be easily used for dispensing by merely cutting the end or otherwise making an opening in the nozzle.

In the use of the form shown in Figures 1 and 2, cap 19 is depressed, forcing the air therein through the port 15 and into the container 8 above the liquid 34. This movement compresses the air in the container 8 and forces liquid through the tube 21 and out through the orifice 20. It is not necessary to invert the container in order to accomplish this dispensing step.

The washer 14 provides a support for the disc 17 and prevents the nozzle 18 and tube 21 from tipping laterally when the cap 19 is compressed.

In the form shown in Figures 3 and 4, no siphon tube and no supporting washer are employed. It is necessary to invert the container 23 in order to dispense the fluid therein, but upon inversion the fluid may be dispensed in any amount from a drop to a stream.

While we have illustrated and described what we now regard as the preferred embodiment of our invention, the construction is, of course, subject to modifications without departing from the spirit of our invention. We, therefore, do not wish to restrict ourselves to the particular form of construction illustrated and described, but desire to avail ourselves of all modifications which

may fall within the scope of the appended claims.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A dispensing device comprising a container having an opening, an elastic top member closing said opening, a nozzle and an elastic protuberance on the top member, and a relatively rigid washer disposed between the top member and the container, the washer having two openings, respectively alined with the nozzle and with the protuberance, the protuberance being collapsible to force air through the opening in the washer alined with the protuberance, displace liquid in the container and effect discharge of the liquid through the opening alined with the nozzle and out at the nozzle.

2. A dispensing device comprising a flexible, apertured body member, a nozzle and an elastic protuberance on the body member and disposed at the apertures thereof, and a support between the nozzle and the protuberance and beneath the body member, the protuberance being collapsible to force air into a container upon which the device is mounted, displacing liquid therein and effecting discharge of the liquid through the nozzle.

3. A dispensing device comprising an apertured body member, a protruding, collapsible air pocket on the body member connecting with an aperture thereof, and a nozzle on the body member connecting with another aperture thereof, the nozzle tapering to a closed tip, the tip being adapted to be cut off in the tapered portion to provide a restricted aperture for the nozzle.

4. A dispensing device comprising a flexible, apertured body member, a nozzle and an elastic protuberance on the body member and disposed at the apertures thereof, and a support for the portion of the body member between the nozzle and the protuberance and disposed beneath the body member and substantially preventing flexing of the body member, the protuberance being collapsible to force air into a container upon which the device is mounted, displacing liquid therein and effecting discharge of the liquid through the nozzle.

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