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DISPENSER TOP FOR CONTAINERS

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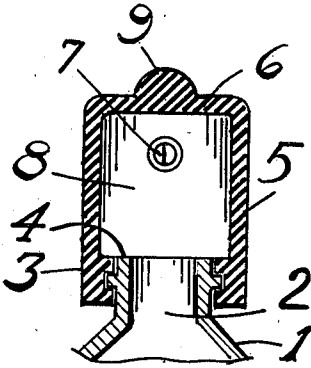


Fig.-1

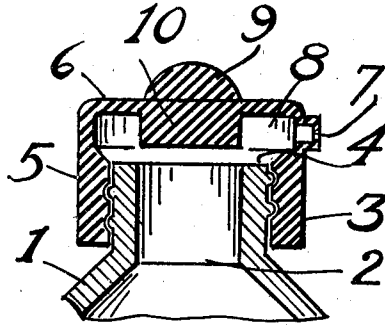


Fig.-2

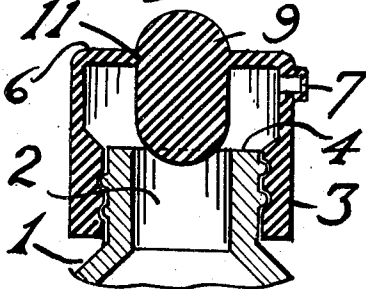


Fig.-3

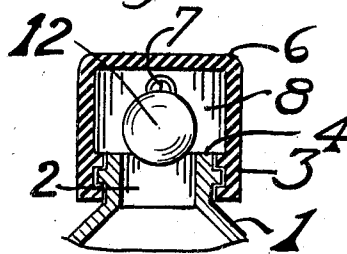


Fig.-4

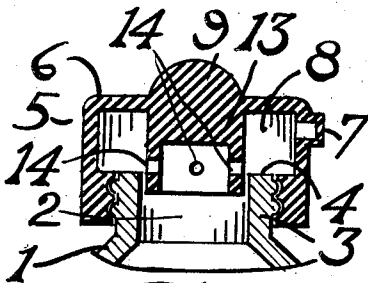


Fig.-5

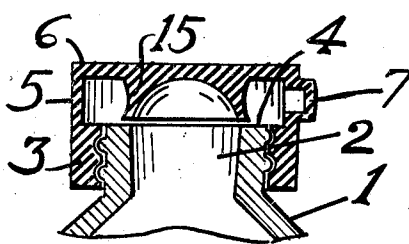


Fig.-6

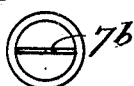


Fig.-7

Fig.-8

Fig.-9

Fig.-10

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UNITED STATES PATENT OFFICE

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DISPENSER TOP FOR CONTAINERS

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8 Claims. (Cl. 221-147)

The present invention relates to a closure for the discharge opening of a container for liquids and more specifically to a dispensing closure for such containers by means of which certain quantities of the liquid contents of a bottle, can, or the like may be discharged without removing the closure or cap therefor.

The invention may be fully understood from the following description when read in conjunction with the accompanying drawing in which:

Fig. 1 is a view, in cross section, of a general form of closure according to the invention.

Figs. 2, 3, 4, 5, and 6 are views in cross section of closures according to the invention in which are provided supplementary means for closing the discharge opening of a container.

Figs. 7, 8, 9, and 10 are illustrative of the forms of openings which may be provided in a closure for the discharge of liquid from the chamber therein.

Referring to Fig. 1, the numeral 1 denotes a container having an opening 2. A closure 3, engaging the edges 4 of the opening has walls 5 extending above and beyond the opening and a top 6. The closure may be secured to the edges of the opening by any conventional means as shown. It is required however that the joint between closure 3 and container 1 be air and liquid tight, and for that purpose it is preferred, in any event, to cement the cap to the container. The walls and top of the closure 3 should be of a resilient material to permit deformation by compression. In a side wall of the closure a self closing opening, indicated by the numeral 7, is provided for the discharge of liquid from the chamber 8 formed by the walls and top of the closure above the discharge opening 2 of the container 1. If desired, a button 9 may be disposed on the top of the closure to provide a means by which compression of the cap may be conveniently accomplished. This button 9 may be separately formed and then joined to the cap or may be formed integrally with the cap.

In Fig. 2 a similar closure arrangement is shown in which the top of the closure carries on its inner surface a plug 10 which is adapted to seal the opening 2 in the container 1 when the cap is compressed as by pressure on the button 9. This plug 10 may be formed integrally with the cap and of the same resilient material as the walls 5 and top 6 or it may be separately formed and cemented in place. While the plug 10 is preferably of a resilient material such as soft rubber or a skin coated sponge rubber, it may be of any similar material which will pro-

vide a sealing means as desired. As shown in Fig. 3, the plug 11 is somewhat elongated, as compared with the plug 10 of Fig. 2, extending downward into the opening of the container and having a tapered end to not only guide the plug into the opening, but to initially provide a passage for liquid around its sides.

Fig. 4 illustrates a plug for the discharge opening of the container, and which plug 12 is substantially spherical and is freely disposed within the chamber 8 formed by the closure 3 above the opening 2.

In Fig. 5 the plug 13 is hollow and extends into the opening 2 in the manner of the plug 11 of Fig. 3. In this instance, however, the flow of liquid from the container-opening to the chamber 8 is accomplished by means of passageways 14 in the walls of the plug, above the opening 2, which passageways communicate with the chamber 8 and with the hollow interior of the plug 13, and thereby, with the opening 2. When the cap is compressed the openings of the passageways 14 are closed by the edges of the opening 2.

Fig. 6 illustrates a variation of the hollow plug sealing means, in which the ends of the hollow plug 15, while terminating above the edges of the opening 2 as does the end of the plug 10 in Fig. 2, are flared outwardly to engage the edge of the opening 2 when the cap is compressed.

In Figs. 7, 8, 9, and 10, are illustrated various forms of self-closing openings suitable for discharge of liquid from the chamber 8 upon compression of the closure 3. These openings which are generally indicated by the numeral 7 in the previous figures are respectively indicated in the present figures by the numerals 7a, 7b, 7c, and 7d. It is intended that, to prevent leakage or evaporation loss in shipment, some form of air tight seal be provided for the closure, such as a gutta-percha cap-seal or a strip of such material encircling the closure and covering the discharge opening therein.

The opening 7a is a vertical slit in a wall of the closure 3 and upon compression of the cap, the sides of the slit are spread apart to release liquid from the chamber within the closure. The opening 7b is a diagonal slit operating in a substantially similar manner, and the opening 7c is a combined use of vertical and horizontal slits to obtain a greater area for the discharge opening. The opening 7d is a combination of a vertical slit with a very small perforation which combination also serves to increase the area of the discharge opening. Of course other forms of

self-closing discharge openings may be used if desired.

When using the closure according to this invention, the container 1 is first tilted or inverted to fill the chamber 3 with liquid, then by compression of the closure 1 the liquid in the chamber 3 is expelled through an opening as indicated at 7.

When using a closure provided with deep seating plugs, as illustrated in Figs. 3 and 5, or provided with edge seating plugs, such as illustrated in Figs. 2, 4, and 6, a considerable pressure may be exerted on the liquid in the chamber 3. Therefore, when the liquid in the container is viscous or heavy, such plug means are preferably used.

This invention is not to be limited by the particular details described above for the purpose of illustration, but only by the following claims, in which it is my intention to claim all novelty inherent in the invention as broadly as the prior art permits.

I claim:

1. A dispensing closure for the outlet of a container for liquids, comprising a cap of resilient material, including a top portion and a body portion having side walls engaging and extending vertically upward beyond the edges of said outlet, a chamber within the cap above the outlet, and opening downwardly therethrough into direct communication with the container, plug means for said outlet dependent within the chamber from said top portion and means for expelling liquid from said chamber by compression of the cap when the container is inverted.

2. A dispensing closure for the outlet of a container for liquids, comprising a cap of resilient material, including a top portion, and a body portion having side walls engaging and extending vertically upward beyond the edges of said outlet, a chamber within the cap above the outlet, and opening downwardly therethrough into direct communication with the container, plug means for said outlet integral with said top portion and dependent therefrom within the chamber, and means for expelling liquid from said chamber by compression of the cap when the container is inverted.

3. A dispensing closure for the outlet of a container for liquids, comprising a cap of resilient material, including a top portion and a body

portion having side walls engaging and extending vertically upward beyond the edges of said outlet, a chamber within the cap above the outlet, and opening downwardly therethrough into direct communication with the container, solid plug means for said outlet integral with said top portion and dependent therefrom within the chamber, and means for expelling liquid from said chamber by compression of the cap when the container is inverted.

4. A closure according to claim 3 in which said solid plug means has a tapered end extending into the opening of said container.

5. A closure according to claim 3 in which said solid plug means has a diameter greater than that of the container opening, engaging the edges of said opening in substantially fluid-tight relation when the cap is compressed.

6. A dispensing closure for the outlet of a container for liquids, comprising a cap of resilient material, including a top portion, and a body portion having side walls engaging and extending vertically upward beyond the edges of said outlet, a chamber within the cap above the outlet, and opening downwardly therethrough into direct communication with the container, hollow plug means for said outlet integral with said top portion and dependent therefrom within the container, and means for expelling liquid from said chamber by compression of the cap when the container is inverted.

7. A closure according to claim 6 in which said hollow plug means is a downwardly opening member flared at its lower end to a diameter greater than that of the container outlet, and having an annular lower end which engages the edge of said outlet in substantially fluid-tight relation, when the cap is compressed.

8. A dispensing closure comprising a cylindrical body portion of a semi-rigid resilient material; a top portion integral with said body portion; a self-closing port opening through said body portion; plug means dependent concentrically of the top within said body portion; means for securing said cap in fluid-tight relation to the discharge opening of a container; and means for longitudinal inward deformation of said body portion adjacent the upper end thereof.

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