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DISPENSING CONTAINERS

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FIG. 1

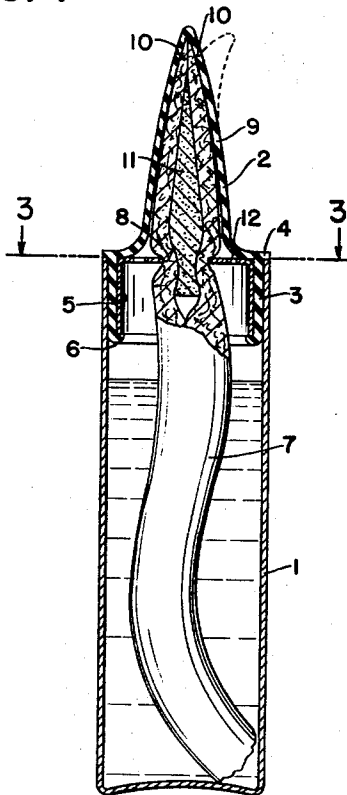


FIG. 2

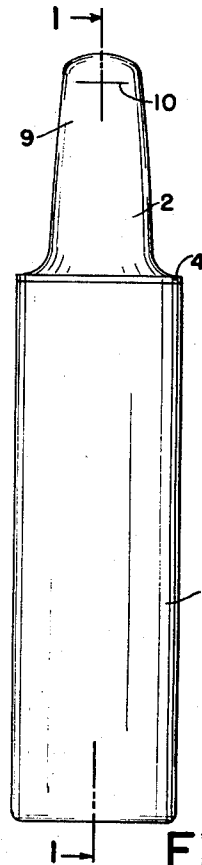


FIG. 3

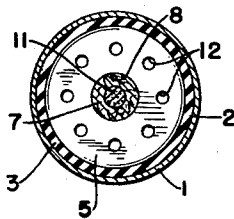


FIG. 4

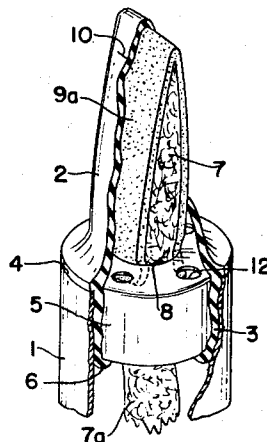
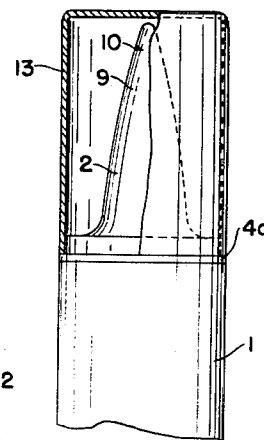


FIG. 5



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DISPENSING CONTAINERS

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9 Claims. (Cl. 15—139)

This invention relates to dispensing containers, particularly containers for dispensing controlled quantities of liquids and simultaneously applying the liquid to a surface.

The principal object of the invention is to provide a container of the class described for applying liniments, lotions, deodorants and like liquids in such manner that the quantity of liquid applied to a given area may be accurately controlled by the mere manipulation of the container and without the use of valves, sprays, pressurized containers, etc.

A further object of the invention is to provide a container of the class described which is ready for immediate use without preliminary priming, inverting or other manipulation and which is self-closing when the application of the desired quantity of liquid is accomplished.

A further object of the invention is to provide a container of the class described which is of low manufacturing cost and which can be filled and closed automatically without special machinery.

A further object of the invention is to provide a container of the class described which is of pleasing appearance and which can be lithographed or otherwise labeled or decorated by the machines customarily employed for labeling glass or metal containers.

Further objects of the invention will appear from the following description taken in connection with the accompanying drawings, wherein

Fig. 1 is a vertical sectional view of a preferred form of our improved container on line 1—1 of Fig. 2;

Fig. 2 is a side elevation of the container shown in Fig. 1;

Fig. 3 is a horizontal sectional view on line 3—3 of Fig. 1;

Fig. 4 is a perspective view of the upper portion of our improved container showing a modification; and

Fig. 5 is a detail view of a cover which may be employed.

Referring to the drawings, particularly to Fig. 1, 1 indicates the liquid holding container which may be of glass or metal and is here shown as a one piece drawn metal can of small diameter fully open at the top. 2 indicates the dispensing closure for the container which is of the shape shown and is preferably of a molded plastic such as rubber which is both flexible to some extent and elastic. The dispensing closure 2 in the form shown comprises a circular neck 3 at its lower end of a diameter to fit snugly within the can 1 with an external shoulder 4 at the top of the neck 3 which fits against the edge of the can 1. The neck 3 is held in place at the top of the can by means of a metal cup 5. The cup is held in place in inverted position within the neck 3 by means of an inwardly extending flange 6 at the bottom of the neck which underlies and engages the bottom edge of the cup. The cup 5 is of such diameter with relation to the thickness of the neck 3 and the diameter of the can as to cause the neck to be compressed when it is pushed into the can

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after filling to thereby provide a liquid-tight closure for the can without cement. If there is no reuse of the container contemplated adhesive may be employed if desired.

5 The cup 5 serves not only to hold the dispensing closure in place but also serves as a support for a wick 7 through which the liquid to be dispensed is fed by capillary action from the container into the dispensing enclosure. To this end the bottom of the inverted cup 5 is formed with a central hole 8 of a diameter somewhat less than that of the wick so as to hold the wick firmly in place when the wick is threaded through the hole 8 in the manner shown in Fig. 1.

10 The dispensing portion 9 of the closure 2 consists of an upwardly extending nipple-like member integral with the collar 3 but of thinner material than the collar so as to readily bend back and forth when the contents of the can are applied to the skin or other surface. The applying portion 9 is circular at the bottom where it joins the collar 3 but is flattened at its upper end as shown, and has slits 10 cut in each side near the top. Through these slits the liquid contents of the can is applied to the skin or other surface when the container is moved over the surface with the applying closure pressed against the surface and sufficiently to bend the closure to one side to the extent indicated in dotted lines in Fig. 1. The bending of the nipple-like member causes the slit on the side contacting the surface to open slightly and some of the liquid in the wick will be expelled by the pressure on the wick and spread by the movement of the dispenser.

20 The wick 7 is preferably of a diameter when not compressed considerably greater than the diameter of the hole 8 in the cup 5. The wick is of soft compressible material and of a texture to have a good capillary action so as to take up the liquid from the container and keep it saturated with the liquid at all times. To better control the discharge of liquid, the portion of the wick enclosed within the dispensing closure is slit and there is inserted in the slit a piece 11 of porous cellulosic material which is not as soft as the wick but is compressible and flexible to an extent to permit the bending of the dispensing closure back and forth when used in the manner described.

30 To secure a uniform distribution of the applied liquid at all times it is desirable to provide openings 12 in the top of the cup 5 so that any liquid in excess of that necessary to saturate the wick will drain back into the container.

40 Apparently the alternate compression and expansion of the wick has a pumping effect which without the holes causes the space within the nipple surrounding the wick to become filled with liquid. When the wick is compressed the liquid in the nipple cannot escape except through the slits, thereby causing an excess of liquid to be discharged. With the holes, even when the container is inverted when used, the liquid will be applied uniformly in an amount determined by the applied pressure.

50 In Fig. 4 we have shown a modified form of a wick structure. As here shown the wick 7a is not split across the top as in Fig. 1 to receive a cellular core, but instead the cellular stiffening member 9a is in the form of a flat strip which is folded over the top of the wick, the strip being of a width to fill the upper part of the dispensing closure and hold the closure normally erect when not pressed against the surface to which the liquid is to be applied.

65 Our improved container when not in use requires no cover. The slits 10 are tightly closed and prevent any evaporation of the liquid contents even if quite volatile, but if desired a cap 13, as shown in Fig. 5, may be provided. As shown, the cap 13 consists of a cup similar to the receptacle but shorter. The external shoulder 4a on the neck 3 of the dispensing closure is positioned below

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the upper edge of the neck when a cap is provided and the lower edge of the cap fits the shoulder 4a.

In use the wick and the cellulosic member in the dispensing closure remain saturated with liquid at all times, even though the container is not inverted during its entire period of use. The pressure of the closure against the surface to which the liquid is applied serves to compress the wick and cellular member, and when the pressure is relieved the expansion of the wick and cellular member is immediately followed by an equalization of the liquid in the wick and cellular member and the withdrawal of further liquid through capillary action from the container.

In the foregoing specification and accompanying drawings we have described and shown our improved container in its presently preferred form. It is to be understood, however, that our invention includes all such modifications thereof as are embraced within the scope of the appended claims.

We claim:

1. A dispensing container for liquids comprising a receptacle having an opening at one end, a dispensing closure mounted thereon, said dispensing closure comprising an upstanding flexible, liquid-impermeable plastic cap having a liquid-tight fit with said opening at its base, a wick within the cap, a discharge opening in the cap adjacent the end thereof, said container having means for supporting said wick in position to substantially fill the cap, whereby bending of the cap from its normal upstanding position will compress said wick and force liquid therein through said discharge opening, said wick having a portion extending substantially to the bottom of the receptacle.

2. The container of claim 1 wherein said wick consists of a soft loose fibrous portion extending from the bottom of the container into the cap and a stiffer, elastic reinforcing portion extending upwardly from the wick supporting means.

3. The container of claim 1 wherein the wick supporting means comprises a transverse disk at the base of said cap having a central opening of smaller diameter than the wick when not compressed, said wick being threaded through said opening and held therein with the wick substantially filling said cap.

4. The container of claim 3 wherein said wick consists of a loose portion extending from the bottom of the container into the cap and a stiffer elastic reinforcing portion with the lower end of the reinforcing portion extending downwardly through said central opening.

5. The container of claim 1 wherein the plastic dispensing closure is formed with a downwardly extending sleeve fitting within the neck opening of said receptacle

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and is held in place by a ring within the sleeve of a diameter to compress the portion of the sleeve between the ring and the receptacle wall.

6. The container of claim 5 wherein said sleeve is provided with an external flange which fits against the upper edge of said container.

7. The container of claim 6 wherein the ring and sleeve extend above the top of the receptacle and a cap fits over the upwardly extending portion of the sleeve.

8. A dispensing container for liquids comprising a receptacle having an opening at one end, a dispensing closure at said end, said closure comprising a flexible cap member of liquid-impermeable material having a liquid-tight fit with said opening, said cap member including a protruding, hollow dispensing portion having at least one discharge opening adjacent its outer end, said discharge opening normally being closed but openable by pressure from within said protruding portion, liquid-conveying means partly within said protruding portion and extending to the bottom portion of said receptacle, the protruding portion of said cap member having its maximum interior capacity when in its normal protruding position, said liquid-conveying means being effective upon the application of pressure to said protruding portion in a lateral direction to deflect it from its normal protruding position to cause liquid to be conveyed from said receptacle to said discharge opening.

9. A dispensing container as set forth in claim 8 in which material substantially fills the protruding portion of the cap member, the liquid-conveying means includes a resilient wick and the wick forms at least a part of said material in the protruding portion of the cap member, whereby lateral pressure exerted against said protruding portion to deflect it from its normal protruding position causes a pressure to be exerted on said wick which effects a pumping action and causes liquid contained in said wick to be forced therefrom and through said discharge opening.

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