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DISPENSING CONTAINER FOR LIQUIDS

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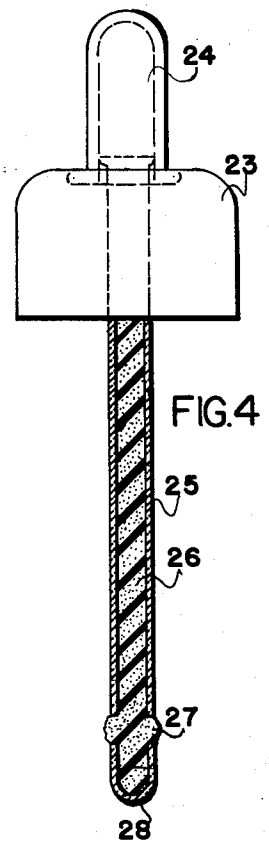


FIG. 4

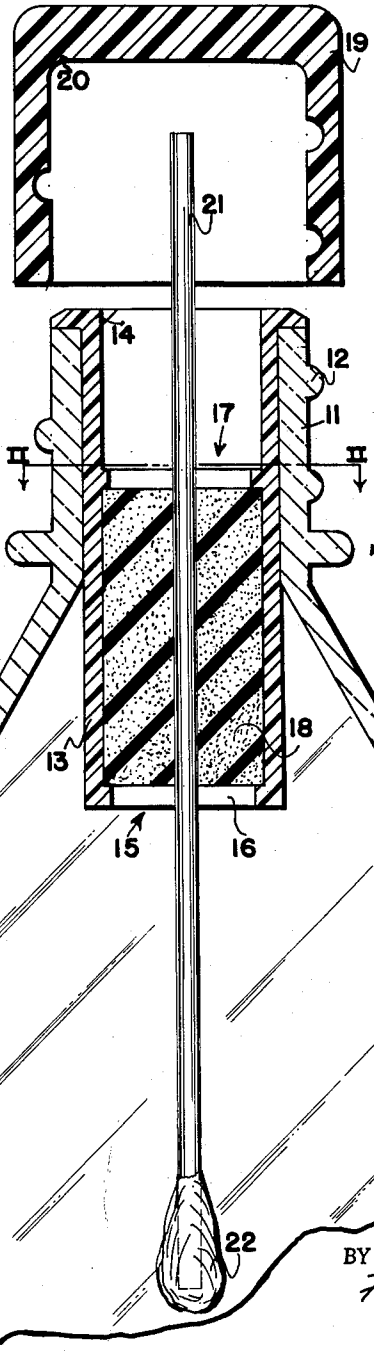


FIG. 3

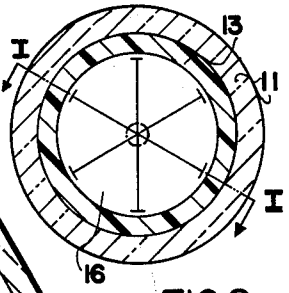


FIG. 2

FIG. 1

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DISPENSING CONTAINER FOR LIQUIDS

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This invention relates to a dispensing container primarily for medicinal preparations commonly used in the home, and more particularly to improvements in a stopper assembly adapted to be slideably positioned and permanently retained in the neck of a bottle for use in addition to a screw-type of cap normally provided for such containers. It is now common practice in the art to package various liquid preparations in a glass bottle having a screw-type cap which may or may not be provided with a permanently attached depending applicator stem which in a closed position of the cap extends down into the liquid in the bottle. Many of these liquid preparations contain highly volatile carriers such as alcohol and ether and, in addition, the active ingredients are often of a crystalline character in their undissolved state. This combination of characteristics presents considerable problems in the packaging of the liquid preparation and in the dispensing of the same from the package in normal day-to-day or week-to-week use. First, such liquid preparations are, of course, subject to rapid evaporation when the cap is off the bottle and, secondly, since the preparations are purposely made of maximum wetting and spreading power the open end of the neck of the bottle and the adjacent screw threads are more or less completely wetted upon each use of the preparation whether the cap is provided with an attached depending dauber and whether or not a separable dauber or swab is used. The wetting is more pronounced if the liquid is simply poured out of the bottle. This evaporation and dispersion is not only objectionable because of loss of the fluid but also for the facts that heavy odors are imparted to the atmosphere and that the resultant evaporation of the fluid about the screw threads and the outer surface of the neck of the bottle interferes with proper application of the cap and makes an unsightly appearance particularly if the crystalline substances are highly colored.

It is the primary object of this invention to provide a stopper assembly for use in the neck of a bottle in addition to the usual closure cap which is operative to impede evaporation and loss of fluid and which may be used with elongated stick-type of various applicators in such manner that the fluid preparation is kept free and clear of the open end of the neck of the bottle, from the screw threads thereof and generally from the exterior surface of the bottle neck. An ancillary object and advantage of the structure of my invention is that while stopper permits the insertion and withdrawal of elongated applicators it is yet operative to impede the rapid outflow of the liquid preparation if the bottle should be accidentially overturned when its cap is off. Further objects and advantages of the invention are that the stopper assembly inherently provides a sealing gasket for the closure cap and in that a well is provided in the upper portion of the stopper to receive any excess or unused fluid in a sealed manner within the cap to permit this excess or unused fluid to drain slowly down into the bottle as the closed bottle rests on the shelf.

A still further object of the invention is the provision of an improved combined cap, dropper and applicator which may be used in connection with the improved bottle stopper assembly of my invention.

The above and other objects and advantages of my invention will become apparent upon consideration of the following specification and the accompanying drawing wherein there is disclosed a preferred embodiment of the invention.

In the drawing:

FIGURE 1 is a fragmentary vertical section of an assembled bottle and stopper constructed according to the principles of my invention;

FIGURE 2 is a sectional view taken along the line II—II of FIGURE 1;

FIGURE 3 is a sectional view of a cap which may be used on the bottle of FIGURE 1; and

FIGURE 4 is a sectional view of a modified form of cap with dropper and applicator permanently attached thereto which may be used on the bottle of FIGURE 1.

In the drawing, reference numeral **10** designates a conventional medicinal bottle having a neck **11** formed on its outer surface with integrally cast threads **12**. The improved stopper assembly of my invention comprises a tubular member **13** having an integral outwardly directed flange **14** at its upper or outer end and a transverse wall **15** at its inner or bottom end. The wall **15** is slit radially outward from its center point along a multiplicity of circumferentially spaced lines to provide segments **16** which are free at their radially inward ends but which are integrally attached at their outer peripheries to the tubular member **13**. Axially intermediate the bottom wall **15** and the flange **14** is a wall **17** which is identical in all respects to the wall **15**—being similarly slit and segmented and forming an integral part of the member **13**. Intermediate the walls **15** and **17** and slightly compressed thereby as well as by the outer cylindrical wall of the member **13** is a plug **18** of spongy or foam-like material.

The member **13** is molded of resilient flexible plastic material such as polyethylene or nylon or other suitable plastic of a chemical composition which is inert to the ingredients of the fluid which will be stored in the bottle. The plug **18** is made of similar material and is pierced longitudinally along its central axis but the expansive tendency of the sponge-like material is such as to normally almost close this pierced hole. The action is such that when the bottle is standing on a shelf for a substantial period of time any liquid which may be entrapped above the wall **17** or in the plug **18** will slowly drain downwardly through the slits in the walls **17** and **15** and through the almost closed pierced hole in the plug **18**. The spongy mass of the plug **18** will thereby tend to dry out so that if later the bottle is accidentally overturned any liquid which would otherwise spill out of the end of the bottle will be absorbed by the plug **18**.

As explained initially above, I preferably provide a detachable screw-cap in addition to the stopper assembly **14–18**, and FIGURE 3 shows a molded cap member **19** which may be used for this purpose. Cap member **19** has an inner surface **20** which may overlie the flange **14** to thereby provide an effective seal for the cap.

Considering now the practical use of the stopper above described, it should be noted that any type of thin stick or rod-like applicator may be used to dispense the preparation packaged in the bottle. In FIGURE 1 I have illustrated a conventional wooden swab stick **21** to one end of which is tightly wound a bit of cotton **22**. This swab assembly is of the kind which is prepared anew for each treatment and is discarded after each treatment. The yieldability of the segment **16** and of the spongy plug **18** is such that the wrapped end of the stick may be penetrated into the bottle by a firm aligned inward force being applied to the handle or clear end of the stick **21**. Upon retraction of the swab the flexing action of the segment **16** in the barrier walls **15** and **17** and the compressive action of the plug **18** appears to cause the fibers of the cotton balls **22** to bite deeper into the grain of the wood of the stick **21** so that the swab is withdrawn without any loss of the cotton. The wiping action of these segments and plug, however, removes any excess

liquid from the cotton so that there is no dripping after the swab is withdrawn although the cotton remains sufficiently wetted for effective application of the liquid medicant carried thereby.

If the nature of the treatment is such that a larger quantity of the liquid medicant should be applied I prefer to furnish the container with the combined cap and dropper shown in FIGURE 4. Here, the molded screw-cap member **23** permanently carries a squeeze bulb **24** which projects exteriorly of the cap member **23** and which communicates with a thin plastic tube **25** permanently secured to the inner face of member **23**. Tube **25** is filled with a length **26** of spongy material similar to that used for the plug **18**, and openings **27** are provided adjacent the bottom or free end of the tube **25** through which this spongy material may bulge. The bottom end of the tube **25** is closed as shown at **28** to facilitate entry of the tube into the bottle through the stopper. The bulb **24** operates in the conventional manner when the tube **25** is inserted into the bottle containing a liquid preparation to draw the liquid up into the tube **25**. At the point of application subsequent squeezings of the bulb **24** will keep the bulges of material **26** in the openings **27** well moistened for a substantial period to treat wide areas or to build up a heavy application on a limited area. Alternatively, if only minute quantities of the preparation are required to be applied I may provide a suitable cap member with a solid rod-like applicator in the manner shown in U.S. Patent No. 2,509,369, for example.

It should now be apparent that I have provided an improved dispensing container primarily for highly volatile medicinal fluids which accomplishes the objects initially set out. By semi-sealing the glass container bottle evaporation and loss of liquid is very substantially reduced, the odor emitted is of much lower density, and the outflow of liquid is for all practical purposes arrested in the event that the bottle should be accidentally overturned when its cap is off. No excess liquid is drawn from the bottle to wet and contaminate the open end of the bottle or the exterior surface of its neck or the threads on said neck so that there is no wastage of the fluid, no formation of unsightly and odorous incrustation, and no interference with the operation of the threads. Also, an effective sealing gasket for the closure cap is inherently provided, and since the mass of the semi-sealing stopper is spaced inwardly from the open end of the bottle neck a well is provided to receive any excess liquid in sealed condition to allow time for the liquid to seep downwardly into the principal body portion of the bottle.

While I have emphasized the use of my invention for packaging and dispensing medicinal liquid preparations it should be obvious that the invention is equally applicable for various other purposes such as the storing and dispensing of poisonous or corrosive fluids or expensive fluids which it is normally desired to use sparingly.

Since various changes may be made in the details of construction of my device without departing from the spirit or scope thereof and since the invention may be utilized in varying applications reference should be had to the appended claims in determining the scope of the invention.

I claim:

1. For use in a liquid dispensing bottle of the kind having an open neck and screw threads cast integrally with the neck on the exterior surface thereof a unitary tubular body member slideably received in said neck and having a radially outward directed flange at its outer end to overlie the end surface of said neck and thereby provide a sealing gasket for a conventional closure cap secured by said threads, said tubular body member having a pair of axially spaced transverse walls positioned inwardly of said flange, each of said walls being slit radially outward from the central longitudinal axis of said body member along a multiplicity of circumferentially spaced lines, said body member being formed of yieldable and flexible plastic material whereby the radially inner ends of the segments thus formed in said walls by said slits may be flexed in an axial direction to permit the insertion of an applicator stem into the body portion of said bottle, and a plug of sponge-like foamesced and compressible plastic material positioned within said tubular body member intermediate said transverse walls thereof, said plug being pierced in axial alignment with the longitudinal axis of said tubular body member.

2. An insert for use in the neck of a liquid dispensing bottle comprising a unitary tubular body member formed of yieldable and flexible plastic material for slideable reception in the neck of the bottle in fluid-tight relation therewith, said body member having a pair of integral and axially spaced but inwardly directed flanges each having a centrally disposed passage therein to permit the insertion of an applicator stem into the body portion of the bottle and removal of the stem therefrom, the uppermost of said flanges being spaced downwardly from the upper end of the body member to provide a cavity extending downwardly from the top edge of the neck of the bottle, a plug of sponge-like foamesced and compressible plastic material positioned within said tubular body member intermediate said flanges, said plug being pierced in axial alignment with the longitudinal axis of said body member to permit the entry of said applicator stem, and the material of said plug being such that the pierced aperture therethrough is substantially closed when said applicator stem is removed.

References Cited in the file of this patent

UNITED STATES PATENTS

1,313,566	Trowbridge	Aug. 19, 1919
2,129,144	Lancaster	Sept. 6, 1938
2,197,326	Streyle	Apr. 16, 1940
3,033,213	Joss et al.	May 8, 1962
3,084,374	Ziegler	Apr. 9, 1963