Sept. 19, 1950 A. LOEFFLER 2,522,832

LIQUID CONTAINER AND DROPPER

Filed Oct. 14, 1949

FIG. 1.

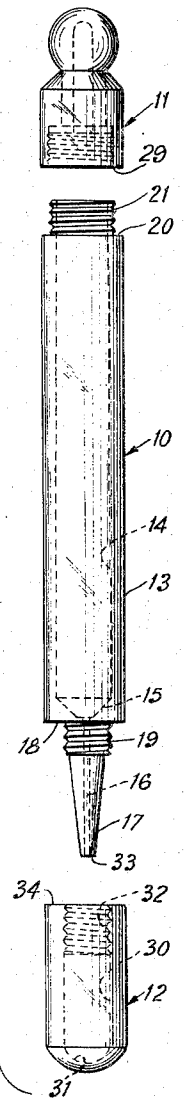


FIG. 2.

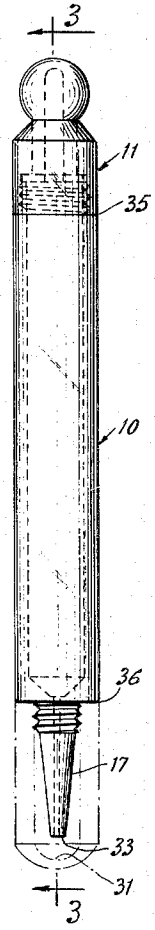


FIG. 3.

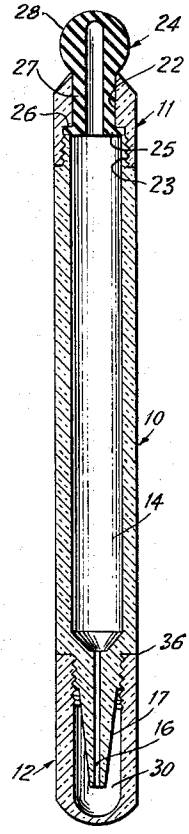


FIG. 4.

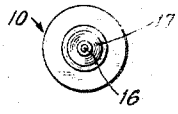
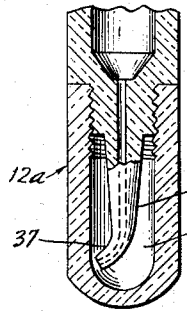


FIG. 5.



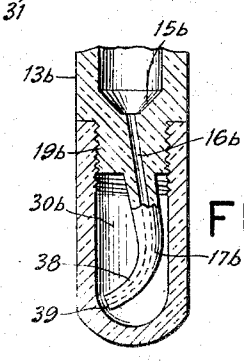


FIG. 6.

INVENTOR
ALBERT LOEFFLER
BY E. L. Spencer
ATTORNEY

Patented Sept. 19, 1950 2,522,832

UNITED STATES PATENT OFFICE

2,522,832

LIQUID CONTAINER AND DROPPER

Albert Loeffler, New York, N. Y.

Application October 14, 1949, Serial No. 121,360

10 Claims. (Cl. 222—215)

1

This invention relates to a combination liquid container and dropper, such as are used for applying medicaments to the nose, eyes, ears, or chemicals in the form of droplets or in relatively small quantities.

The most commonly known dropper construction simply consists of a dropper tube with a rubber bulb, the entire device being generally disposed within a separate container. With such devices it frequently becomes necessary to first remove the dropper, place it upon a table or basin, then cover the container with a cork, thereafter applying the dropper wherever it may be required. Not only does this involve several inconvenient steps, but the placing of the dropper upon the table or basin may render it non-sterile. It is accordingly within my contemplation to provide a combination unit comprising a container and drop dispenser which will simplify the application of drops and will eliminate the danger of rendering the dropper non-sterile as above indicated.

It is another object of this invention to provide a device of the above class having separable upper and lower caps, for the respective purposes of enabling the container to be filled and for protecting the outlet tip of the dropper. And in this aspect of my invention it is an important object to provide a device having a smooth outer surface, to enable the device to be conveniently fitted into a pocket or the like, and to prevent the accumulation of dust or dirt on the outer surface of the device, or in the portions separating the container portion from said caps.

Still a further object of this invention is to provide a device which is capable of being conveniently operated by one hand, with the fingers enveloping the smooth outer surface thereof and the thumb or forefinger over the rubber bulb for applying suitable pressure thereto.

It is further within my contemplation to provide the device with a bottom closure cap for the dropper tip portion—the cap being so constructed as to provide a well for receiving any drippings from the outlet tip while the device is not operatively in use—whereby such drippings may, if desired, be returned into the main container portion of the unit.

A further object of my invention is to enable the said bottom closure cap, and the well thereof, conveniently to accommodate dropper tips that are either straight, or that are curved. And in this aspect of my invention it is an important object to provide, in a special form of my invention, a bottom closure cap with a well adapted to receive a tip of comparatively large curvature.

2

And it is within my contemplation to provide a device having the aforesaid advantages and features, and yet which is simple in construction and easy to fabricate.

Other objects, features and advantages will appear from the drawings and the description hereinafter given.

Referring to the drawings,

Figure 1 is an exploded view of the container body portion and two cap containers of a preferred form of my invention.

Figure 2 is an elevation of the device of Figure 1 with the upper cap in place, and showing the position of the lower cap by dot-dash lines.

Figure 3 is a section of Figure 2 along line 3—3.

Figure 4 is a bottom view of Figure 2.

Figure 5 is a fragmentary view of the bottom portion of a modified form of my invention, showing a curved dropper tip accommodated by the well of a bottom closure cap, and

Figure 6 is a view like Figure 5, but showing a dropper tip of still greater curvature.

In the particular embodiment of my invention illustrated in the drawings, the device comprises three components, the main body member 10, the top cap member 11 and the bottom cap member 12. The body member 10 comprises a hollow cylindrical container portion 13 the internal chamber 14 being adapted to contain therein a selected fluid. The floor 15 of said chamber is conical in shape and communicates (in the form shown in Figures 1 to 4) with the central channel 16 extending through the conically shaped dropper tip 17—the axis of the said channel and tip being coincidental with that of the cylindrical portion 13.

The outer base 18 of said portion 13 is an annular flat plane normal to the axis of the said cylindrical body portion, said base surrounding the threaded boss 19 extending downwardly from the container portion 13. The top of the said container portion comprises a flat annular peripheral wall 20, normal to said axis, and surrounding the upper threaded boss 21 of member 10.

The upper cap member 11 contains an axial aperture 22 communicating with an expanded aperture 23 the lateral cylindrical wall of which is threaded—the proportions of said aperture 23 and the threads thereon being adapted to receive therein, for threaded engagement, the said boss 21. Fitted within said aperture 22 is the rubber bulb member 24 comprising a bottom flange 25 underlying the inner annular shoulder 26 of member 11, an intermediate portion 27 disposed within aperture 22, and an outwardly extending bulb portion 28.

The base of member 11 contains a flat annular peripheral wall 29 adapted for engagement with said wall 20 when cap member 11 is operably disposed upon member 10. The diameter of cylindrical member 11 is, in the preferred form of my invention illustrated, exactly equal to that of member 10, so that when cap 11 is assembled on member 10, the outer cylindrical wall of the two members are absolutely flush, separated only by the circular meeting line of bases 20 and 29.

The bottom cap 12 contains a central chamber or well 30 formed by the inner lateral wall of the member and the inner floor 31 thereof. The upper portion of said chamber comprises the threaded annular wall 32—the proportions of the chamber 30 and threaded portion 32 being adapted to receive, in threaded engagement, the said threaded boss 19. The length of chamber 30 is sufficient to accommodate the said tip 17, with the terminal portion 33 preferably disposed above the said floor 31.

The top of said member 10 contains the flat peripheral annular wall 34, normal to the axis of member 10, and adapted to meet said wall 18 when members 12 and 10 are in assembled relation. The outer diameter of member 12, which is cylindrical, is equal to that of member 10, so that when cap 12 is disposed on member 10, the outer cylindrical surfaces of the two members will be flush.

It is preferred that the material out of which said members are composed be transparent, of preferably glass or plastic material, with a smooth or highly polished outer surface. This will not only enable the contents within members 10 and 12 to be seen, but will also constitute a very convenient and sanitary unit for storing and handling. As will be seen from Figures 2 and 3, the smooth cylindrical construction, with no protruding portions on the outer lateral surface, provides an arrangement without pockets or recesses and which will therefore be less apt to accumulate dust. The circular meeting edges 35 and 36 provide, as aforesaid, flush and continuous surfaces along the entire length of the assembled unit, without protrusions or recesses.

In operatively employing this device, the bottom cap 12 is removed; immediately thereafter the device can be applied to its intended use. The cylindrical container portion 13 can be grasped with the fingers and either the thumb or the forefinger applied to the bulb 28, to force the liquid within said container out of the tip 17. There is no need to remove a dropper from a container, as is done with most conventional devices; and there is no need to place the dropper on an unsanitary table or basin while the stopper of the container is being removed.

The well 30 is intended not only to accommodate therein the tip 17, but also to receive any accumulations of fluid that may inadvertently drop through the channel 16. Since said well 30 is sealed from the atmosphere by the joint 36, the sterility of any accumulations of fluid within the well 30 will be maintained. Any such accumulated liquids could readily be poured back into the member 10 by removing cap 11, as indicated in Figure 1. The said well 30 also serves to keep the tip 17 properly confined and in sterile condition when the cap 12 is operatively in place.

Figure 5 shows a modification in which the tip 17*a* contains a curved terminal portion 37. It will be noted that the well 30*a* in bottom cap 12*a* is proportioned so as to accommodate this type of dropper tip.

At times it is required to have a curved dropper tip with considerable curvature, so as to enable it to be applied to recessed portions that are not otherwise accessible. The tip 17*b* of Figure 6 represents such a structure, the curved terminal portion 38 having a terminal 39 that is considerably offset with respect to the downwardly extending body portion of the tip. In this construction the channel 16*b* extends downwardly in a sloping direction from the floor 15*b* of the container portion 13*b* and then bends to the left to the said terminal 39. The said tip 17*b* extends downwardly from boss 19*b* in a generally sloping direction, to conform with the slope of channel 16*b*, and then curves around to follow the path of said channel. It is thus apparent that dropper tip 17*b* joins the boss 19*b* at an area that is eccentric with respect to the longitudinal axis of member 13*b*. The well 30*b* is proportioned to receive the entire curved tip 17*b*.

It is thus apparent that the forms of my invention shown in Figures 5 and 6 are adapted to curved tips, but otherwise have the advantages and features of the form first above described.

In the above description, the invention has been disclosed merely by way of example and in preferred manner; but obviously many variations and modifications may be made therein which will still be comprised within its spirit. It is to be understood, therefore, that the invention is not limited to any specific form or manner of practicing same, except in so far as such limitations are specified in the appended claims.

I claim:

1. A liquid container and dropper comprising a main body member, a top cap member and a bottom cap member; the said body member comprising a hollow container portion with a smooth outer cylindrical surface, a hollow outwardly threaded bottom boss extending downwardly from the base of said container portion, a hollow conical dropper tip extending downwardly from the said boss, the hollow interiors of said tip and boss forming a continuous channel communicating with the interior of the said container portion, a hollow outwardly threaded top boss extending upwardly from the top of said container portion and communicating with the interior thereof, peripheral walls at the top and bottom of said container portion surrounding said top and bottom bosses, respectively, said peripheral walls being disposed in intersecting relation to the axis of the container portion; the said top cap member having a cylindrical wall with a smooth outer surface and two axially aligned apertures extending therethrough, one of said apertures being larger than the other whereby an annular shoulder is formed at their juncture, the larger of the apertured portions of the top cap being in threaded engagement with the said top boss, and a resilient bulb member comprising a substantially spherical bulb portion extending from the upper portion of the top cap, an intermediate portion extending through said smaller of the apertured portions, and a flange underlying said annular shoulder; the said bottom cap member comprising a cylindrical lateral wall with a smooth outer surface, a floor at the bottom of the cylindrical wall, and an internal chamber extending down from the upper edge of the said wall to said floor, the lateral wall of said chamber being in threaded engagement with said bottom boss, said chamber being proportioned to accommodate therein said dropper tip; the base of the said top cap and the upper end of said bottom

cap each comprising an annular wall in intersecting relation to the longitudinal axis of the device and in mating engagement with the said respective upper and lower peripheral walls of the container portion.

2. A liquid container according to claim 1, the outer diameters of the said main body, top cap and bottom cap members being equal, whereby the outer cylindrical surfaces of said members are flush and the junctures of the main body and cap members are circumferential lines.

3. A liquid container according to claim 1, both of said bosses and the said dropper tip and the said channel being in axial alignment.

4. A liquid container according to claim 1, the interior of said container portion having a conical floor communicating with said channel.

5. A liquid container according to claim 1, the interior of said container portion having a conical floor communicating with said channel, said channel being in axial alignment with the container portion.

6. A liquid container according to claim 1, the dropper tip being of curved configuration, the terminal thereof being substantially in facing relation to the annular wall of the chamber in the bottom cap.

7. A liquid container according to claim 1, the said dropper tip being joined to the bottom boss at a portion thereof eccentric with respect to the said axis, the tip being curved at the bottom thereof, the said channel being curved to correspond with the configuration of said tip.

8. A liquid container according to claim 1, the said peripheral walls at the top and bottom of the said container portion, and the said annular

walls at the base and upper end of the top and bottom caps being flat and normal to the said axis.

9. A liquid container according to claim 1, the upper edge of the top boss being in engagement with the said flange of the bulb member.

10. A liquid container and dropper comprising a main body member, a top cap member and a bottom cap member; the said body member comprising a hollow container portion with a hollow dropper tip extending downwardly from the said container portion and communicating with the interior thereof; the said top cap member comprising a hollow shell and a resilient bulb member extending from the upper portion of the top cap and communicating with the interior thereof; the said bottom cap member comprising a hollow shell open at the top and having a floor at the bottom to form an internal chamber, the chamber being proportioned to accommodate therein said dropper tip; said cap members being releasably secured to said main body member, the said container portion being cylindrical, the said dropper tip being joined to the base of the container portion at a region thereof eccentric with respect to its axis, the tip being curved at the bottom thereof.

ALBERT LOEFFLER.

REFERENCES CITED

The following references are of record in the file of this patent:

FOREIGN PATENTS

Number	Country	Date
423,757	Great Britain	Feb. 7, 1935