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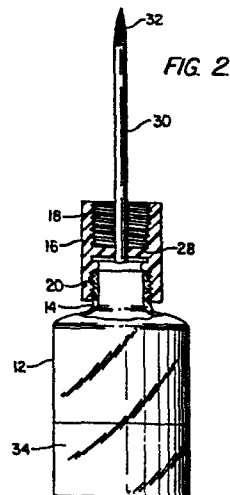
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(54) A liquid dispenser.

(57) A dispenser for dispensing liquid such as nail varnish has a flexible bottle 10 and a cap 16 which supports a tube 30 leading to a brush 32. The cap may be reversed from an operative position in which the brush protrudes from the bottle to a storage position with the brush in the bottle. A closure cap may be mounted on the exposed part of the main cap to seal the end of the tube 30. The brush is prevented from drying out in the storage condition.



A Liquid Dispenser

This invention relates to a liquid dispenser, and more particularly to a liquid dispenser of the type that incorporates a brush to apply the liquid, the brush being at the end of a hollow tube that communicates with a deformable bottle containing the liquid.

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The prior art provides a wide variety of dispensers and applicators utilizing a deformable bottle and brush combination for dispensing liquid from the deformable bottle onto the brush. The prior art has recognized the benefits provided by these containers in the application of liquid from a bottle directly to a brush by squeezing the liquid through a conduit connecting the bottle and the brush. The majority of such prior containers, however, have suffered the disadvantage of the brush becoming dry and brittle during periods of non-use. However, certain prior containers have employed complicated or expensive systems for sealing the brush from the atmosphere to prevent the liquid drying on the brush or by providing a wad of solvent for preventing the liquid drying on the brush. The necessity of preventing the drying of the brush in periods of non-use is critically important to the longevity of the brush and the overall commercial acceptability of the product on the marketplace, especially where the liquid is paint or nail varnish, or some other liquid which will dry to form a hard coating around the brush. As a result, such prior proposed systems have not found widespread applications for use even though the deformable bottle brush applicator combination is a particularly useful means for applying paints, nail polish and other liquids to surfaces.

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According to this invention there is provided a dispenser for dispensing a liquid, said dispenser comprising a bottle defining an open neck or spout; a cap having two opposed ends, each end being adapted to be

sealingly mounted on said neck or spout, a conduit mounted on the cap, adapted to be located within the bottle when one end of the cap is mounted on said neck or spout, and adapted to protrude away from the bottle when the other end of the cap is mounted on said neck or spout with one end of the conduit communicating with the interior of the bottle, and means to seal said one end of the conduit when said one end of the cap is mounted on said neck or spout.

In one embodiment said neck or spout is provided with threads, and each of said opposed ends of the cap is provided with threads to engage the threads on the bottle.

In another embodiment each of said opposed ends of the cap is provided with a boss which is a friction fit within the neck or spout of the bottle. In this case the neck need not be provided with threads.

Preferably said means to seal one end of the conduit comprises a closure or end cap which is releasable to the said other end of the cap.

In one embodiment the closure or end cap is provided with screw threading to cooperate with screw threading on the cap.

Alternatively the closure is provided with means dimensioned frictionally to engage said cap.

Preferably said closure or end cap is provided with a spigot located and dimensioned to be sealingly inserted into the said one end of the conduit.

The other end of the conduit may carry a brush, and the conduit may be made of a material that repels the liquid to be dispensed: such a material is sold under the Trade Mark "TYGON". The bottle may be deformable.

In order that the invention may be more readily understood, and so that further features thereof may be appreciated, the invention will now be described by way of example with reference to the accompanying drawings in which:

FIGURE 1 is a front elevational view of an applicator container in accordance with the invention in its storage configuration;

5 FIGURE 2 is a front elevational view partly in section of the applicator in its fluid dispensing mode;

FIGURE 3 is an exploded view partly in section illustrating an arrangement for the reversible cap and end closure;

10 FIGURE 4 is a front view partly in section illustrating an alternative embodiment of a reversible sleeve, conduit and brush combination;

FIGURE 5 is a perspective view illustrating the applicator in use;
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FIGURE 6 is an elevational view of an alternative embodiment for the end closure or cap.

20 A dispenser 10 in accordance with the invention comprises a bottle 12 that is to contain the liquid 34 to be dispensed. The bottle 12 is formed of a flexible material so that the bottle is deformable. The bottle has a spout or neck provided, on the exterior, with male screw threads 14.

25 A cap 16 is provided to be mounted on the bottle. The cap 16 is double ended. The cap 16 is of tubular or sleeve-like configuration. At one end of the cap a set of threads 18 is provided adapted to engage the threads 14 on the bottle. At the other end of the cap another set of threads 20 is provided, also adapted to engage the threads 14 on the bottle. A partition 28 extends across the cap, separating the two sets of threads 18,
30 20. A tube 30 is supported on the partition 28 and extends axially of the cap. The tube has an open end 36 located immediately adjacent the partition 28 on the side thereof facing the threads 20. The tube 30 extends from the partition 28, through the part of the cap defining the threads 18, and terminating with a brush 32. The brush 32 is mounted on the tube 30 in
35 such a way that liquid 34 from the bottle can flow through the tube 30 onto the bristles of the brush 32.

The tube 30 is made of a plastic material that tends to repel the liquid to be dispensed, such as the material sold under the Trade Mark "TYGON"

5 A closure or end cap 22 is provided consisting of a generally cylindrical body having a screw thread 24 at one end adapted to engage the screw threads 20. The closure or end cap 22 defines a spigot 40 dimensioned and located to become inserted in the end 36 of the tube 30 when the closure or end cap 22 is connected to the cap 16.

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When the dispenser is in the dispensing mode, as shown in Figure 2, the threads 20 of the cap 16 are screwed onto the threads 14 on the neck of the bottle. The tube 30 and brush 32 are thus exposed. If the dispenser is tilted, as shown in Figure 5, the liquid 34 in the bottle flows to a position adjacent the neck of the bottle. If the bottle is squeezed the liquid flows down the tube 30 to the brush 32 and can then be applied to the appropriate surface.

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When sufficient liquid has been dispensed the cap 16 is unscrewed from the bottle, and is inverted. The brush 32 is then introduced into the bottle through the neck and the threads 18 are engaged with the threads 14. The cap is tightened. The closure or end cap 22 is then screwed into the threads 20. The spigot 40 enters the end 36 of the tube 30 to seal the end of the tube and to purge liquid from the tube. In an alternative embodiment the spigot 40 may be long enough to purge the liquid completely from the tube 30. The dispenser is thus in the storage mode as illustrated in Figure 1.

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When in the storage mode the brush is maintained sealed within the bottle 12 containing the liquid 34 to be dispensed, and thus cannot dry out. As the tube 30 is made of a material which repels the liquid to be dispensed the liquid will not tend to adhere to the interior of the tube 30 but will drain back into the bottle. The closure or the end cap 22 serves to prevent air entering the bottle to dry up the contents of the bottle and also prevent the liquid 34 from escaping from the bottle.

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When the dispenser is to be re-used the closure end cap 22 is removed, and the cap 16 is removed from the bottle, re-orientated, and re-connected to the bottle.

In a modified embodiment of the invention, illustrated in Figure 4, the cap 16 is not screwed onto the bottle, but is instead provided with two opposed bosses 54, 56 each of which is a friction fit within the neck of the bottle. A collar 50 protrudes from the cap 16 and is provided with a knurled surface 52 to enable the user to obtain sufficient grip to introduce and remove the cap from the bottle. In such an embodiment the neck of the bottle is not threaded. Also in such an embodiment an end cap closure 22 such as shown in Figure 6 may be used. This end cap has a protruding ridge 26 which surrounds the cap. The ridge is a friction fit within a recess located within the boss 56 to enable the end cap to be mounted in a sealing position in which it seals the end 36 of the tube 30.

An end cap as shown in Figure 6 may, if desired, be used with the cap shown in Figure 3, with the ridge 26 being a snap fit within the threads 20.

In using a preferred embodiment of the invention the dispenser may be changed from the operative mode to the storage mode without the need for cleaning or softening the brush.

The invention may be used with all types of liquids and fluids, such as nail varnish, paints or medicaments which might tend to dry on the brush. The brush is simply and cheaply prevented from drying out by being stored within the liquid to be dispensed.

The invention has been described by way of example only. The size of the container and/or brush and/or conduit and the configuration of the illustrated components may be altered without departing from the scope of the invention.

The features disclosed in the foregoing description, in the following claims and/or in the accompanying drawings may, both separately and in any combination thereof, be material for realising the invention in diverse forms thereof.

CLAIMS:

1. A dispenser for dispensing a liquid, said dispenser comprising a bottle defining an open neck or spout; a cap having two opposed ends, each end being adapted to be sealingly mounted on said neck or spout, a conduit mounted on the cap, adapted to be located within the bottle when one end of the cap is mounted on said neck or spout, and adapted to protrude away from the bottle when the other end of the cap is mounted on said neck or spout with one end of the conduit communicating with the interior of the bottle, and means to seal said one end of the conduit when said one end of the cap is mounted on said neck or spout.
2. A dispenser according to claim 1, wherein said neck or spout is provided with threads, and each of said opposed ends of the cap is provided with threads to engage the threads on the bottle.
3. A dispenser according to claim 1, wherein each of said opposed ends of the cap is provided with a boss which is a friction fit within the neck or spout of the bottle.
4. A dispenser according to any one of the preceding claims, wherein said means to seal one end of the conduit comprises a closure or end cap which is releasable to the said other end of the cap.
5. A dispenser according to claim 4, wherein the closure or end cap is provided with screw threading to cooperate with screw threading on the cap.
6. A dispenser according to claim 4, wherein the closure is provided with means dimensioned frictionally to engage said cap.
7. A dispenser according to any one of claims 4 to 6, wherein said closure or end cap is provided with a spigot located and dimensioned to be sealingly inserted into the said one end of the conduit.
8. A dispenser according to any one of the preceding claims, wherein the other end of conduit carries a brush.

9. A dispenser according to any one of the preceding claims, wherein the conduit is made of a material that repels the liquid to be dispensed.
10. A dispenser according to any one of the preceding claims, wherein the
5 bottle is deformable.

FIG. 1.

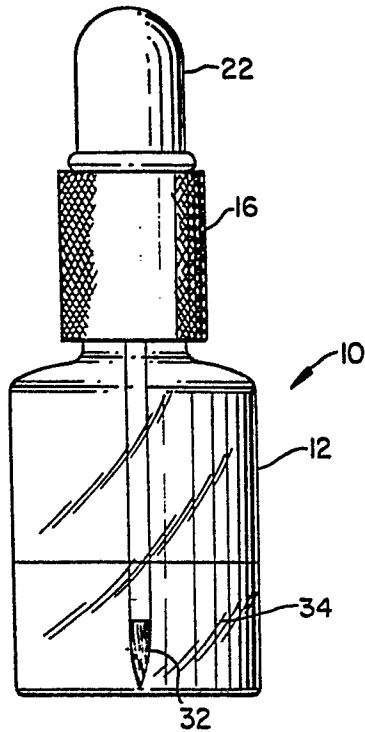


FIG. 2.

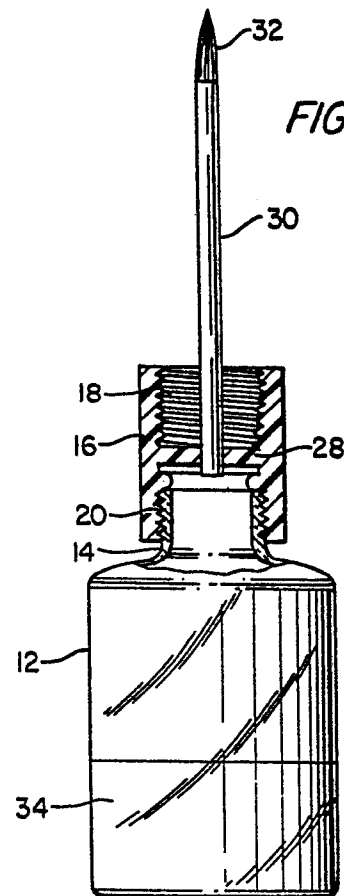


FIG. 3.

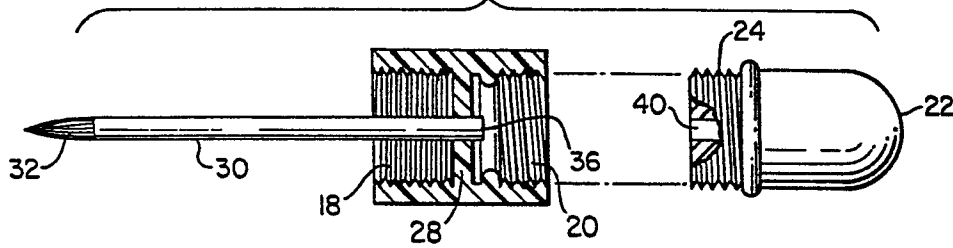


FIG. 4.

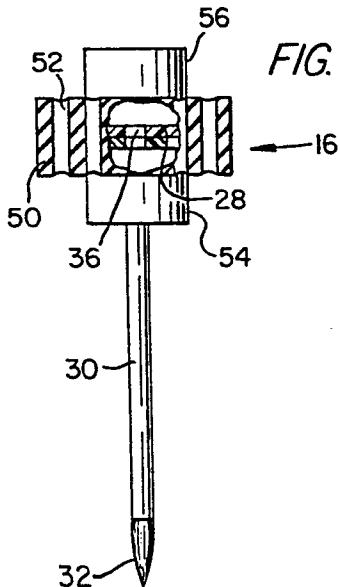


FIG. 5.

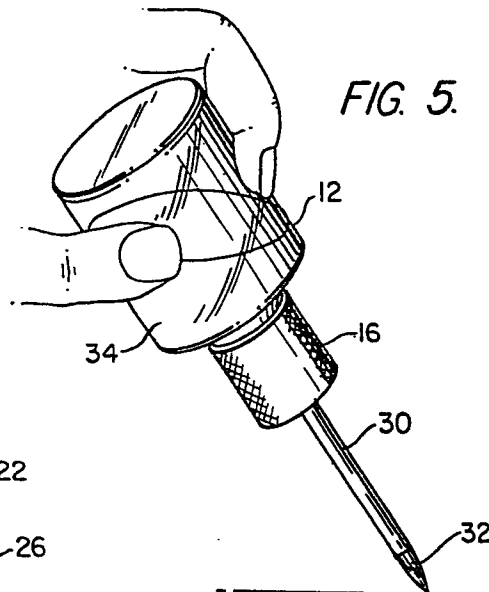


FIG. 6.

