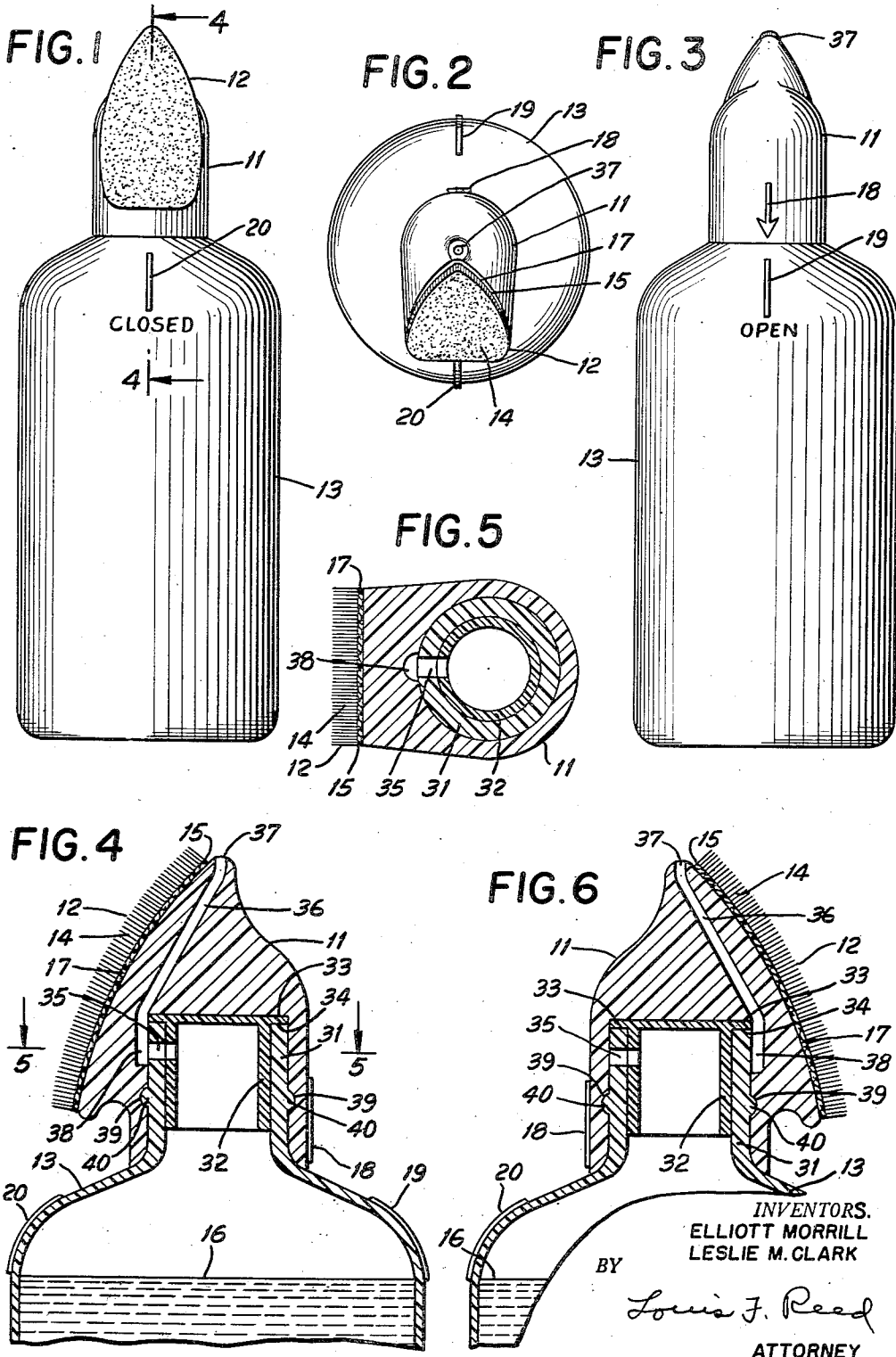


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LIQUID APPLICATOR AND DISPENSER

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## LIQUID APPLICATOR AND DISPENSER

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The present invention relates to liquid applicators and dispensers, and more specifically to a simple unitary apparatus which will both dispense a desired amount of a liquid to a surface to be treated and provide an efficient means for spreading or applying the liquid over a larger area of the surface.

It is a principal object of the invention to provide an improved liquid applicator and dispenser combination that is simple and compact in construction and is capable of accomplishing its intended functions in an efficient and trouble-free manner.

Another object of the invention is to provide a liquid applicator and dispenser that is inexpensive to manufacture.

An additional object of the invention is to provide an applicator and dispenser device which in combination with a flexible container serves to contain a liquid in a leak-resistant condition, resisting expulsion of the liquid due to shock and dropping during storage, and yet to make possible ready dispensing and application of the liquid by simple manipulation.

It is a further object of the invention to provide a liquid applicator and dispenser device which is superior in its ability to resist clogging of the liquid in its channels.

It is contemplated that the device of the invention may be used to dispense and apply a large variety of liquids and semi-liquids to solid surfaces. The device is adaptable to use with both solvent and water types of solutions, suspensions and emulsions which are used to treat solid surfaces. It is particularly adaptable for the dispensing and application of liquids used to treat shoes and other leather surfaces; including such liquids as: colored shoe polishes, shoe dyes, sole-edge dressing, suede and gabardine dressing and other shoe and leather dressings. It may also be used for the application of dyes to textile fabrics. The applicator-dispenser device of the invention is highly advantageous for use with white liquid shoe polishes. The latter are usually thick suspensions or emulsions containing large amounts of solids which have a tendency to dry and form a solid plug in the channels of a dispenser. By using the device of the present invention, there is provided a means of exerting positive pressure sufficient to loosen and expel the dry plug and thus free the channels of the dispenser. In addition to providing a means for freeing the channels of dried materials, the present device is unique in that it will also provide a closure means which will resist leaking or expulsion of the liquid due to accidental squeezing, dropping, etc., when the dispenser is in a closed condition. This latter property is of importance as the user of a polishing liquid may desire to include the liquid with his luggage while travelling. In the course of handling, the liquid container may be subjected to shock, dropping and squeezing. The leak-resistant properties of the device of the invention prevent damage, loss and inconvenience caused by such leaking.

The above enumerated objects, as well as other objects,

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together with the advantages of the invention, will be readily comprehended by persons skilled in the art upon reference to the following description, taken in conjunction with the annexed drawings, which respectively describe and illustrate two preferred forms of equipment in accordance with the invention.

In the drawings:

Figure 1 is a side view of the combination of a liquid container and an applicator and dispenser device embodying the invention;

Figure 2 is a top plan view of the device and container shown in Figure 1;

Figure 3 is a side view of the device and container of Figure 1 from the opposite side;

Figure 4 is a vertical cross-sectional view of the device of Figure 1 taken along the line 4—4 with part of the container omitted, showing the dispenser in open position;

Figure 5 is a view taken along the line 5—5 of Figure 4; and

Figure 6 is a counterpart of Figure 4 but showing the dispenser in the closed position.

Referring now to the drawings, wherein like reference numerals denote corresponding parts throughout the several views, the liquid applicator-dispenser includes a cap or closure 11 which acts as the dispensing head. Affixed to or integral with the dispensing head is an applicator surface 12 for spreading the expelled or dispensed liquid over the surface or material to be treated. The applicator-dispenser closure is intended to function in cooperation with a flexible container 13 preferably having a relatively narrow neck and opening with which the applicator-dispenser closure may be engaged. The container may be a plastic bottle made of polyethylene or similar plastic material. Laminated compositions of plastic materials and the like, foils and paper which may be molded are also satisfactory. It is essential for best results that the container be flexible enough to permit squeezing of the contents through the opened dispenser and be chemically resistant to the liquid 16 to be dispensed. The container may be of any size that will contain a convenient and sufficiently large volume of liquid.

The cap or closure 11 may be satisfactorily made of a number of materials. Any material which is chemically resistant to the liquid to be dispensed and which has a reasonable degree of rigidity may be used. A number of the plastics have been found to be suitable, such as methyl methacrylate ("Lucite"), cellulose acetate, cellulose acetate-butyrate, and the thermoplastic resins, including polyethylene, etc. Polyethylene, when used, may have the applicator material molded into, or fused into it. In those cases where the applicator material is affixed to the closure with an adhesive, it is recommended that a material other than polyethylene be used for best results.

The applicator surface 12 may be of any material which will readily spread the liquid. When it is used to rub the liquid over the surface to be treated, a high pile textile material which is not attacked by the liquid provides a satisfactory surface for spreading and rubbing the liquid into the material to be treated. For example, the applicator may be made of wool mohair plush similar to that used in carpeting. The pile 14 or top of the applicator provides an ideal spreading surface for a white liquid shoe polish. The backing 15 may be cemented to the dispensing closure 11 at 17 with any adhesive which will cause the applicator to remain fast. It may also be convenient to mold or fuse the applicator surface into the plastic closure when it is being formed or while soft. The applicator surface need not be of large area. The surface of the applicator may be flat or slightly arcuate as shown in Figures 4 and 6.

Our invention contemplates equipment in which the closure 11 having integral therewith the applicator 12 shall be used in engagement with a container 13 containing a liquid material 16. The closure is interlocked with the container so as to resist disengagement. The closure may be rotatable about the neck and axis of the container to effect opening and closing of the dispensing closure. The container and the closure may be equipped with matching indicia to show when the dispenser is open or closed. As shown in Figures 1 and 3 the closure 11 may be equipped with a raised arrow 18 to match a raised indicating marker 19 to show when the dispenser closure is in the open position. When the closure 11 is rotated 180 degrees it will align with indication marker 20 to indicate that the dispenser closure is in the closed position. It is not necessary to rotate the closure a full 180° to close the dispenser as closing is effected when the vertical passage 38 is no longer in registration with the hole 35. Thus the closed indicating marker need only be placed 45°, 90°, or some smaller angle than 180° from the open indicating marker. It is, of course, apparent that other means for informing the user when the dispenser is open or closed may be used.

One embodiment of the invention may be illustrated by reference to Figures 4, 5 and 6 of the drawings. In this embodiment of the device of the invention, the closure 11 is fitted over the relatively narrow neck 31 of the container bottle 13. The neck 31 is fitted with a close-fitting hollow plug 32 equipped with a flange 33 which extends to the external diameter of the lip 34 of the neck of the liquid container. The side of the neck of the container and the plug are pierced with a hole 35 by means of a sharp pointed instrument, by burning the hole through by means of a heated rod or drilling. Also, the hole may be molded into the neck of the container and hollow plug when these parts are being manufactured and the holes in each part aligned with each other when assembling the device. The closure 11 is equipped with a channel 36 leading to the orifice 37 and communicating with the vertical passage 38 of generally semi-circular cross-section which is designed to engage with the hole 35 in the container and plug. As a matter of expediency in molding the closure 11, the channel 36 may be straight rather than curved near the orifice 37 as shown in Figures 4 and 6 of the drawings. The channel 36 and vertical passage 38 are intended to permit dispensing of the liquid 16 while in registration with the hole 35 when the container 13 is inverted and squeezed. By this means the amount of liquid dispensed may be regulated by the extent to which the container is squeezed. When the proper amount of liquid has been dispensed, the closure may be rotated about the axis of the container until the arrow 18 is aligned with the closed indicator marker 20. It is not essential that the dispenser be closed before the liquid is applied to the surface, since liquid will normally be expelled only when the container is squeezed. Thus the closing may take place after application of the liquid to the surface. The expelled liquid is applied to the surface to be treated by spreading and rubbing with the applicator 12.

While in the closed position the dispenser closure will

resist leakage. The closure 11 may be effectively affixed to the neck 31 of the container and yet permit free rotation of the closure for 360 degrees around the axis of the closure. This may be accomplished by engaging a rabbet 39 in the closure 11 with an annular ring 40 about the neck 31 of the container.

The hollow plug 32 may be made of a large variety of materials which may be molded into the desired shape, such as polyethylene and other thermoplastic materials, thermosetting plastics, rubber, rubber compositions, etc. Polyethylene is particularly suitable.

The terms and expressions employed are used as terms of description and not of limitation, and it is not intended, in the use of such terms and expressions, to exclude any equivalents of the features shown and described or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

What is claimed is:

1. An apparatus comprising a flexible resilient container having a neck containing a passage through the side thereof, a closure rotatably mounted on said neck and having an applicator surface on one side thereof only and an internal passage extending from the side of said neck and terminating as an orifice in the top of the closure, said orifice being spaced from the applicator surface, the passage in the neck of the container and the internal passage of the closure being so constructed and arranged that upon rotation of the closure the passages align and thus permit fluid to flow from said container upon squeezing the same and when not aligned fluid is sealed within the container.

2. An apparatus comprising a flexible resilient container having a neck containing a transverse passage therein, a hollow plug fitting within the neck of said container and having a transverse passage in alignment with the passage in said neck, a non-removable closure rotatably mounted on the neck of said container having an applicator surface on one side thereof only and an internal passage extending from the outside of the neck of the container and terminating at the top of the closure as an orifice, said orifice being spaced from the applicator surface, the passages in the neck and the plug of the container and the internal passage of the closure being so constructed and arranged that upon rotation of the closure the said passages align and thus permit fluid to flow from the container upon squeezing the same and when the passage in the closure is not aligned with the passage in the neck of the container the fluid is sealed within the container.

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