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3,414,360

SEALING MEANS FOR APPLICATOR

Filed Feb. 1, 1966

FIG. 1

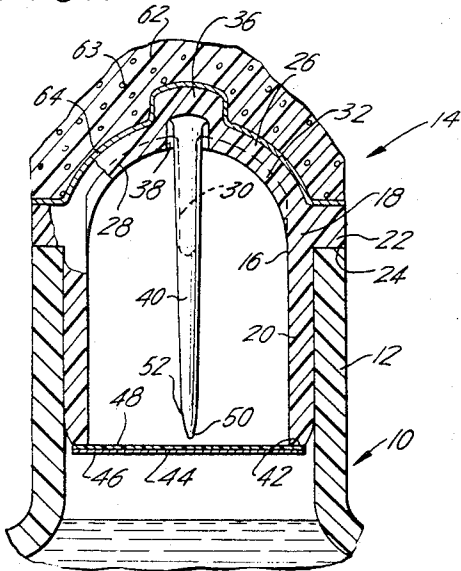


FIG. 2

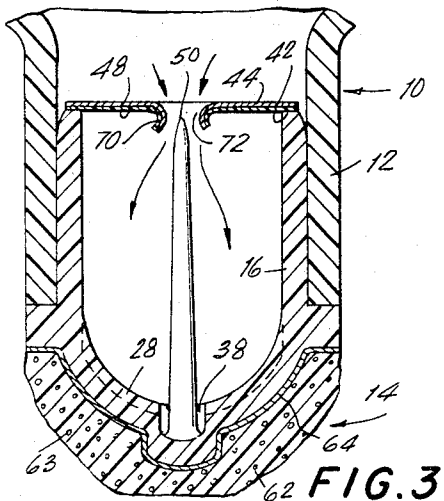
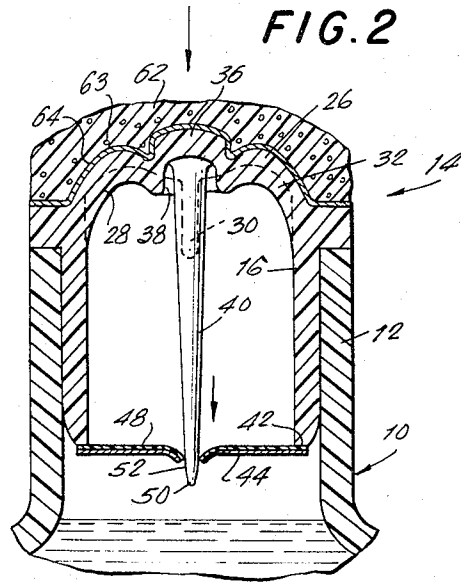


FIG. 3

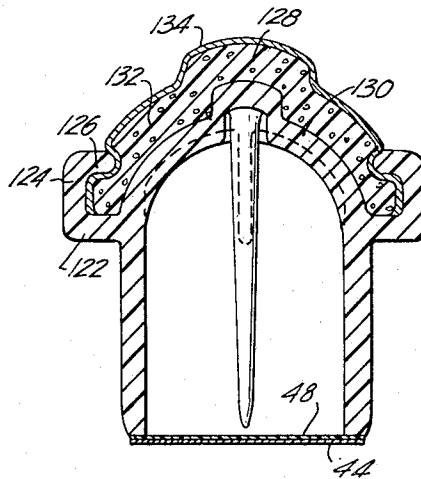


FIG. 5

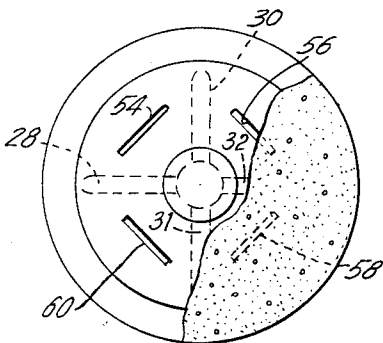


FIG. 4

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SEALING MEANS FOR APPLICATOR

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ABSTRACT OF THE DISCLOSURE

An applicator comprising a body including a retainer ring provided with an imperforate frangible seal. The retainer ring has a resilient cover support opposite from the seal. A plunger is carried by the support for penetrating and breaking the seal upon depression of the support.

This invention relates to a fluid applicator or dauber especially adapted for use in applying cosmetics, medications, shoe polish, and other fluids, and more particularly to a device of this character adapted to provide an initial seal for a container of fluid to prevent evaporation or loss of contents, while the container is being merchandised.

In the past daubers have been produced which facilitate the application of various types of fluid by providing a cover or head that is formed of a fluid absorbent material. However, this type of applicator usually is provided with a valve mechanism to control fluid flow to the cover and such applicator is generally not air or gas tight. If the fluid to be dispensed is volatile and thereby subject to evaporation, some of the contents of the container may be lost even prior to the initial use. This is disadvantageous when extended shelf life of the container is desired for facilitating marketing and distribution in retail stores. It is, of course, possible to provide a suitable additional cap which will provide for an accurate seal, but this may be expensive or undesirable.

It is therefore the primary object of the present invention to provide for a dauber or applicator for applying fluids which will provide for an initial seal prior to first use of the applicator and which eliminates the necessity for a fluid tight cap.

A further object of the invention resides in the provision of an applicator provided with a body including a retainer ring having a projecting portion carrying an imperforate frangible primary seal, which is adapted to be penetrated and broken by a plunger upon an initial depression of the cover and wherein some control of fluid flow may still be achieved by the plunger in conjunction with the broken seal during use thereof.

The construction of this invention features an applicator wherein a primary seal of aluminum foil, paper or the like has bonded thereto a polyethylene film for bonding to the lowermost edge of a projecting portion of an applicator retaining ring adapted to be inserted in the neck of a container. This seal is adapted to be penetrated by a plunger which has a conical end portion for co-operating with the seal inwardly thereby properly permitting for fluid flow in a controlled manner beyond the seal.

Another feature of the invention provides for fluid flow through a cover support which is not only of a novel resilient construction provided with radial ribs but which has slots extending at 45 degree angles to the ribs so that the slots are not closed by depression of the cover support, and which cover support has appended thereto a novel secondary seal.

Still further objects and features of the invention reside in the provision of an applicator provided with sealing means that is simple in construction, inexpensive to manufacture, capable of being used on various sized con-

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tainers or the like for dispensing fluids of various viscosities and volatilities in a convenient and effective manner.

These, together with the various ancillary objects and features of the present invention which will become apparent as the following description proceeds, are attained by the sealing means for an applicator, a preferred embodiment of which is illustrated in the accompanying drawing, by way of example only, wherein:

FIG. 1 is a vertical sectional view through the neck of the container having the embodiment of the applicator constructed in accordance with the concepts of the present invention installed therein;

FIG. 2 is a sectional view similar to FIG. 1, but showing the applicator after the cover support has had an initial depression;

FIG. 3 is a sectional view showing the applicator in an inverted position during normal use after initial use thereof;

FIG. 4 is a top plan view of the applicator with portions broken away; and

FIG. 5 is a vertical sectional view of a modified form of the applicator.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 is used to generally designate a container having a neck 12 in which the applicator, generally designated by reference numeral 14, is adapted to be inserted. The applicator 14 includes a body 16 having a retaining ring 18 and provided with a projecting portion 20. The body 16 is provided with a peripheral flange 22 which rests on the shoulder 24 formed by the lip of the neck 12. The body further includes a dome-shaped cover support 26.

The entire body 16 is formed of a suitable synthetic plastic material, such as polyethylene, polyurethane or the like, and the cover support 26 is resilient and flexible. The cover support is provided with four ribs 28, 30, 32, and 34 which extend from the inner surface of the cover support 26 downwardly toward the projecting portion 20. These radial ribs extend normal to each other and terminate outwardly of the center of the cover support 26. The upper portion of the cover support is upwardly extended at 36 forming a recess 38 in the under-surface of the cover support. Preferably integrally formed with the upwardly offset portion 36 of the cover support is a plunger 40 which extends through the recess 38 and thence downwardly.

Bonded to the lowermost peripheral edge 42 of the projecting portion 20 is a two-ply membrane 44 consisting of an outer ply 46 of aluminum foil, paper or the like and an inner ply 48 of polyethylene film. The two-ply membrane 44 forms an imperforate primary seal which may be spin welded or otherwise bonded to the shoulder 42. The plunger 40 has a pointed conical end 50 which normally is situated immediately adjacent the membrane 44 and upon depression of the cover support 26 is adapted to penetrate and break the membrane. The plunger 40 is tapered downwardly so that the conical head 50 is adapted to penetrate the membrane 44 upon initial depression as shown in FIG. 2.

The cover support 26 is provided with four slits 54, 56, 58, and 60 therein, each of which slits are disposed at a 45 degree angle to the next adjacent rib 28, 30, 32, or 34. Bonded to the cover support 26 is a cover 62 having a thick outer layer of foamed synthetic plastic or rubber like material 63 and an inner layer of a thin and frangible film of plastic material 64 used for bonding the foam rubber layer 63 to the cover support 26 and for providing a secondary seal for the slits 54, 56, 58 and 60. It has been discovered that with the slits located as shown at a 45 degree angle relative to the ribs, initial depression of the raised portion 36 of the cover

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support and the cover support will open the slits and break the film 64 closing the slits and allowing fluid flow through the slits when the cover support 26 is depressed, yet which will substantially close the slits when the cover support is released.

In use, after initial depression of the cover support as shown in FIG. 2, upon initial release of the cover support, the conical head 50 will function in conjunction with the peripheral edge 70 as a fluid flow limiting mechanism, while the film 64, even though slit, upon initial depression will function as at least a partial seal upon release of the cover support.

In FIG. 5 there is shown a modified form of the invention in which the device may employ a flange 122 provided with an upwardly extending portion 124 which is swaged at 126 to hold the cover 128 in position. The cover need not be bonded to the cover support 130 and may be of a two-ply type including a layer 132 of coarse polyurethane foam and an outer layer 134 of nylon knitted brushed fabric.

A latitude of modification, substitution and change is intended in the foregoing disclosure, and in some instances, some features of the invention will be employed without a corresponding use of other features. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the spirit and scope of the present invention.

I claim:

1. An applicator comprising a body including a retainer ring having a projecting portion, an imperforate frangible seal across said projecting portion, a resilient cover support integral with said body at the opposite

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end of said body from said seal, a plunger carried by said support and having an end portion normally disposed immediately adjacent said seal for penetrating and breaking said seal upon depression of said support, means in said support permitting fluid flow therethrough, and a cover means secured to said support, said support including a plurality of ribs extending from a portion adjacent said plunger towards said seal and radially outwardly, said means including a plurality of slits each arranged substantially at a forty-five degree angle towards at least one of said ribs.

2. An applicator according to claim 1, wherein said support is provided with a raised central portion forming a recess in the undersurface thereof, said plunger being integral with said raised central portion.

3. An apparatus according to claim 2, wherein said seal is a two-ply membrane including a film of polyethylene, said plunger having a conical head.

4. An apparatus according to claim 3, wherein said cover means includes a frangible film sealing said slits forming a secondary seal.

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LAWRENCE CHARLES, *Primary Examiner.*