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DISPENSER AND APPLICATOR

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Fig. 1

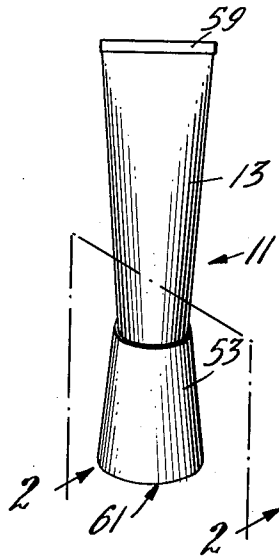


Fig. 2

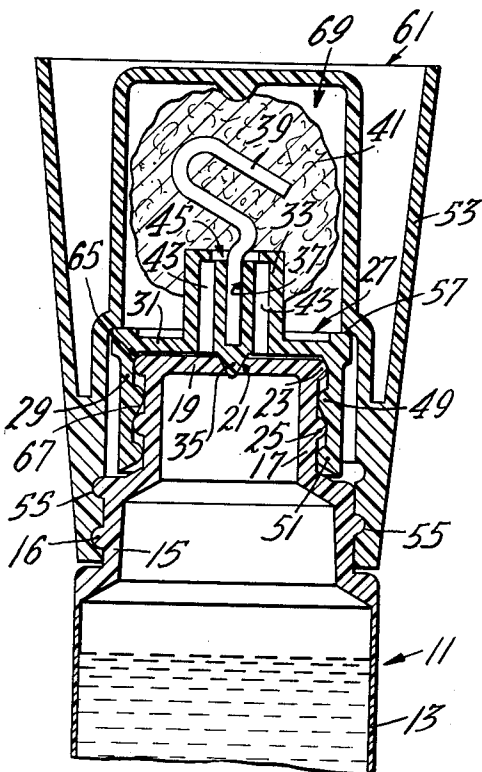
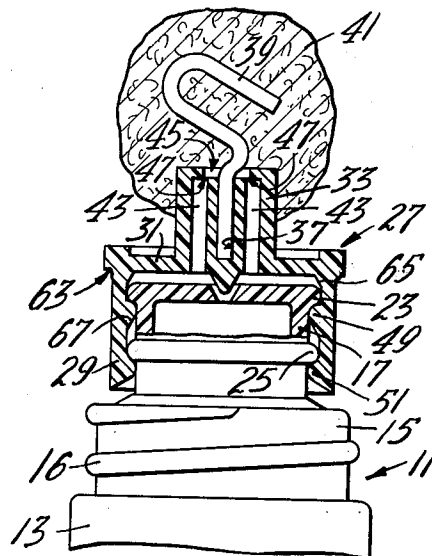


Fig. 3



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DISPENSER AND APPLICATOR

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This invention relates to applicators, and especially to applicators of the type adapted to be mounted on the mouth of a container containing the material to be applied.

In the application of liquid products of low viscosity, for example shoe treating liquids, it has been customary to provide an absorbent applicator separate from the liquid container, and to use the same by dipping it into the opened container mouth. While presenting a danger of spilling the contents while the container is open for use, this still appeared to be the most practical way of handling such materials because of the possibility of leakage during storage if an attempt were made to mount the applicator directly on the container as a more or less permanent closure with connections to feed the applicator directly.

An object of the present invention, therefore, is to provide an improved applicator-container assembly which both makes it unnecessary to open the container for use and also prevents any possibility of leakage of the contents during storage.

According to the present invention we provide a container having an orifice for dispensing its contents into an absorbent applicator, plus movable means supporting and connected to the applicator for opening or sealingly closing the orifice when moved to one or the other of two positions.

The present invention also includes an arrangement such that the movable means may be automatically actuated as well as sealingly clamped by the placement of a cover cap over the applicator.

Another feature of the invention is the provision of a container in which certain parts of the dispensing control can be embodied in portions formed integrally with the container by injection molding.

A further feature of the invention is the adoption of appropriate materials for the container parts and cover cap such that when the cover cap is in place the applicator will be substantially sealed against the drying out process which so frequently operates to the detriment of the usual applicator and renders its repeated use ineffective or, at best, awkward and inefficient.

Additional features and advantages will appear hereinafter as the description proceeds.

In the drawings:

FIG. 1 is a perspective view of the device of the present invention shown in normal stored position;

FIG. 2 is an axial section to a larger scale, taken substantially on line 2—2 of FIG. 1 with the device inverted from the position shown in FIG. 1 and showing the valve in closed position;

FIG. 3 is a view similar to FIG. 2, except that certain of the container parts are shown in elevation, the cover cap is removed, and the valve is in open position.

Referring to the drawing, numeral 11 indicates an applicator-container assembly according to the present invention, comprising a tubular body 13 of flexible or rigid material. In the preferred form the body 13 is of somewhat flexible plastic material such as polyethylene. Formed on one end of the body 11, preferably integrally associated therewith as by injection molding, is a neck structure which includes a large neck base 15 provided

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with an external thread 16 and a dispensing and valve retaining head 17. These parts of the neck provide a stepped formation as shown, the base 15 being somewhat smaller than the body 13, and the head 17, in turn, smaller than the base 15.

The head 17 is closed by an end wall 19 in the center of which is a small dispensing orifice 21, the surfaces of which also constitute a valve seat. The exterior surface of the head 17 embodies two retaining rings 23 and 25 whose purpose will presently appear.

A valve and actuator assembly 27 is, in the present form, constituted by a single molded element which includes the skirt 29, the web 31, and an upstanding boss 33. On the central interior surface of the web 31 is a small projection 35 corresponding in position to opening or valve seat 21 and serving as a valve for cooperation therewith. The assembly 27 also serves as an applicator holder for centrally of the boss 33 is formed a socket 37 which serves to frictionally mount a post 39 on which is carried the customary absorbent applicator ball 41. The actuator assembly 27 also includes conduits for leading the product to the applicator 41, consisting of one or more off-center passages 43 which extend from the bottom of boss 33 to a point near the top. A central depression 45 on the upper surface of the boss slightly overlaps the ends of passages 43 to form tiny metering orifices 47 (FIG. 3) which are placed, as shown, so as to be in intimate association with the applicator 41. The orifices 47 are preferably restricted in relation to the viscosity of the product to be dispensed. The degree of restriction is such that the liquid in the container can normally pass the orifices rather slowly under ordinary gravitational impetus, or, if desired, so that, in a case where the wall of container 13 is flexible, gentle squeezing of the container wall can be used to apply the required amount of product to the applicator 41.

On the interior surface of skirt 29 are formed locking rings 49 and 51 designed to have an interference fit with and to snap over the retaining rings 23 and 25 respectively on head 17 to hold the actuator assembly connected to the head. As will readily be seen, the proportions are arranged so that the actuator assembly 27 can slide on the head 17 between the two terminal positions illustrated in FIGS. 2 and 3, and the inside diameters of the locking rings 49 and 51 are designed to have a snug sliding fit on the outer surface of the head 17 so as to frictionally retain the parts in whichever position they are placed until an intentional change is made.

The actuator assembly is preferably molded of substantially rigid, but somewhat resilient plastic material, e.g. polyethylene, for reasons which will presently appear.

An overcap 53 is formed with internal threads 55 for cooperation with threads 16 on neck base 15. The overcap also includes an interior shoulder 57 positioned at a level such that when the overcap is placed and threaded home on the threads 16, the shoulder will strike the periphery of the actuator assembly 27 and force the same downwardly until the valve 35 is tightly seated in orifice 21, the shoulder 57 also maintaining a tight sealing engagement with actuator assembly periphery.

Since the preferred form of the invention uses a container in which the neck, including a neck base 15 and head 17, is molded integrally with the end of a plastic tube, it is convenient to mount the tube on a mandrel for performing this operation, thus leaving an open end which may be most conveniently closed by a flat seal 59 (FIG. 1) after filling. Accordingly, we preferably form the overcap 53 with a broad end surface 61 so that it may act as a base for conveniently supporting the container during storage, as illustrated in FIG. 1.

In operation, with the parts in the position shown in FIG. 2 and the opposite end of the body open, the body is filled with a liquid to be dispensed, such as shoe treat-

ing compound and sealed as at 59. Such a container can be safely stored and shipped since the dispensing orifice 21 is effectively sealed.

When a user desires to employ the applicator, he removes the overcap 53, grasps the actuator assembly 27 by the skirt 29 and forces it upward to the FIG. 3 position, thus lifting valve 35 from orifice 21. To this end the actuator may be formed with a finger ledge 63 (FIG. 3) which offers a better purchase and reduces the possibility for soiling the users hand by accidental contact with the applicator 41. The container is then inverted and, lightly squeezed to deliver a portion of its contents to the applicator 41. As will be seen, the liquid contents passes through orifice 21, through passages 43, through metering orifices 47 and thence into the body of absorbent applicator 41 where it may conveniently be applied to any desired surface such as the user's shoe, using the container body 13 as a handle.

To return the container to storage condition, the user merely applies the overcap 53 and screws it home on threads 16. When he does so, the shoulder 57 in the overcap strikes the upper surface of the web portion 31 of actuator 27 at its periphery and slides the actuator to its lowermost position as seen in FIG. 2. This moves the valve 35 into sealing engagement with the surfaces of orifices 21 to prevent the possibility of any further dispensing of the contained product. In the preferred form of the invention shown, the actuator also is formed with internal conical surfaces 65 and 67 one or both of which wedge against the corresponding retaining ring 23, 25 simultaneously with the closing of the valve to provide auxiliary sealing means. Moreover, the shoulder 57 makes a firm sealing contact with the rim of the actuator 27 so that the applicator is hermetically sealed in a chamber 69 to prevent the product absorbed therein from becoming dry and the applicator correspondingly useless prior to the next opening. It is important, then, to have the actuator of suitable slightly resilient material to permit it to snap into place over the retaining rings 23, 25 to cause its valve 35 to seal effectively in the orifice 21, and to provide for effective sealing at the conical surfaces 65, 67 and especially at the point of contact with overcap shoulder 57.

While the foregoing description has proceeded in terms of the preferred form in which a portion of the mechanism is formed integral with the container, it will be appreciated that the principle can also be effectively applied in cases where the operating parts are all separately formed and then attached to a preformed container.

It is also noted that, although the description relates primarily to a dispensing device which serves an absorbent applicator for spreading a liquid product on a surface, certain features of the structure are of more general applicability and may be availed of for general dispensing purposes even in the absence of an applicator without exceeding the scope of the invention herein.

From the foregoing it can be seen that we have provided a liquid dispensing container and applicator well suited for economical handling and filling by the product manufacturer and designed, moreover, for uncomplicated and reliable operation in the hands of the user, both during application of the product and when being closed and sealed in preparation for storage.

While, in order to comply with the statute, the invention is described in language which is rather specific as to structural features and arrangements, it is to be under-

stood that the invention is not limited to the specific details shown, but that the means herein disclosed comprises the preferred of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the scope of the language employed in the appended claims.

We claim:

1. A dispenser for liquids, comprising a container having a tubular body portion and a stepped integral head portion provided with a centrally apertured end wall and an externally threaded first reduced diameter section and a second section of lesser diameter than said first section having an external retaining ring formed thereon, an intermediate cap member including a roof portion and a depending skirt portion having a retaining ring formed internally thereon and engageable with the external ring on said second section of said head portion to provide a snap-in-place connection therewith and to limit axial movement of said cap member relative to said head portion, said roof portion being provided with an elongated embossment having interiorly thereof a depending probe receivable in said central aperture in said head portion end wall when said intermediate cap member is in its closed position, said probe member being surrounded by axially extending passageways in said embossment communicating with said head portion aperture, an applicator sponge supported by said embossment, and an overcap including an internally threaded skirt portion engageable with said first reduced diameter section of said head portion and a central dome-like portion integral with said skirt portion and enclosing said applicator sponge, said dome-like portion being provided with an annular abutment shoulder engageable with the periphery of said roof portion of said intermediate cap member and effective during threading of said overcap upon said head portion to move said cap member relative to said head portion and depress said probe into said aperture in said head portion end wall to thereby close said aperture while also causing said external and internal retaining rings to abut and thereby provide a complete tight container.

2. A dispenser of the character defined in claim 1, in which the overcap skirt portion is seated upon the juncture of said container body and head portions when threaded thereon, and also in which the intermediate cap skirt portion is seated upon said first reduced diameter section of said head portion when said probe closes said passage in said end wall of said head portion.

3. A dispenser of the character defined in claim 1, in which a pair each of external and internal retaining rings are provided to limit both upward and downward movement of said intermediate cap member upon said container head portion.

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