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COMBINATION APPLICATOR AND CLOSURE

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FIG. 1.

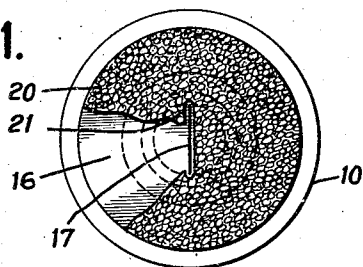
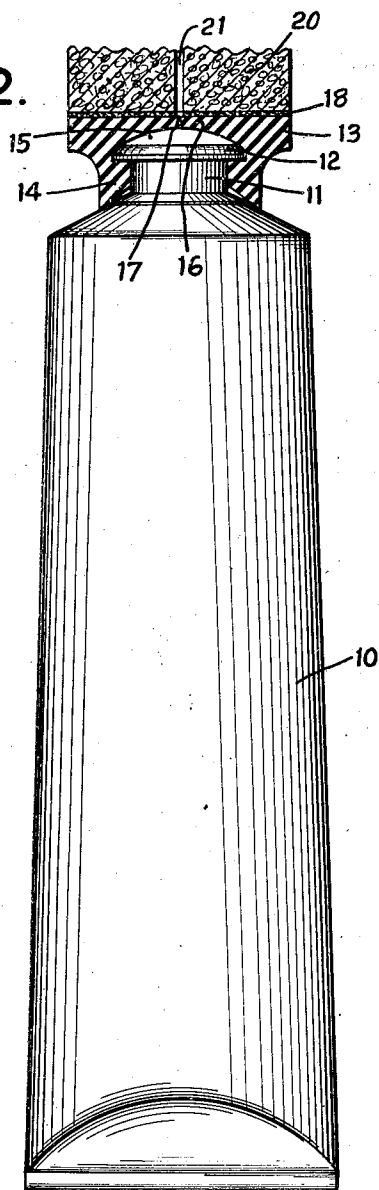


FIG. 2.



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COMBINATION APPLICATOR AND CLOSURE

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3 Claims. (Cl. 15—135)

This case relates to material applying and sealing means attached to a collapsible tube of material.

The object of the invention is to provide a simple, practical, and inexpensive combination applicator and tube closure attachable to a collapsible tube containing material to be applied by the applicator to an external object.

Further, the object is to provide such a combination applicator and tube closure in which the closure is constructed to serve as a one-way eject valve.

Still further, the object is to provide a combination applicator and material sealer and tube closure which may be constructed as a rigid assembly and attachable as a unit to a collapsible tube.

Other objects will appear from the following parts of the specification and from the drawing, in which:

Fig. 1 is a view of the tube and combination applicator and closure with the latter elements in section, and

Fig. 2 is a top view of the combination applicator and closure and collapsible tube.

Referring to the drawing, 10 is a collapsible tube containing a fluid or viscous substance. For the purposes of the disclosure, the tube will be considered as containing a viscous substance; for example, shoe cream. The neck 11 of the tube, defining the mouth or exit opening of tube, is flanged outwardly at the upper end to provide an outwardly turned lip or flange 12. A molded resilient rubber closure or cover 13 is formed with a collar 14 which is slipped over and past the neck flange 12 and springs into embracing coaction with the neck 11, thus interlocking with the latter to attach the closure to the tube. The closure 13 is releasably retained against removal from the neck and tube by the engagement of the bottom of flange 12 with the upper edge or shoulder of collar 14. Above the mouth of the tube, closure 13 is formed with a chamber 15 joining collar 14.

The lower end of the wall of chamber 15 is shaped to snugly engage the upper curved edge of the flange 12. Thus, there is a snug engagement of the collar 14 with neck 11, of the upper edge of collar 14 with the bottom of flange 12, and of the lower end of the wall of chamber 15 with the side of flange 12. Due to this snug fit of the aforementioned portions of resilient closure 13 with neck 11 and flange 12, a tight seal is provided between the mouth of tube 10 and the portions of the closure below the effective por-

tion of chamber 15. Thus, any material ejected from tube 10 will flow into chamber 15 and not tend to run down the sides of the flange 12 or neck 11.

The head or top 16 of closure 13 is formed centrally with a slit 17 which is tightly closed, due to the inherent resiliency of the closure material, in the absence of pressure against the bottom of the closure head. The head 16 has a substantially flat top, while its bottom, forming the roof of chamber 15, is dome-shaped or arched, with the portions defining and bounding the slit or fissure 17 inclining upwardly and oppositely towards the fissure or converging towards the fissure. Thus, the head 16, which may be termed a distensible diaphragm, is thinned at the fissure and relatively thick at the rim. When pressure is exerted against the bottom of head 16, the portions of the head divided by slit 17 expand, and slit 17 opens. Thus, if the walls of tube 10 are squeezed, material will be forced out of the mouth of the tube, into chamber 15, against the internal upwardly inclined fissure-defining portions of head 16, wedging said portions apart to distend or to open the slit 17, permitting the material to discharge through the slit 17 to the exterior of the closure. Upon relaxation of pressure on the walls of tube 10, the pressure of the ejected material on the bottom of head 16 of closure 13 will be relieved and the divided portions of head 16 will return to normal condition, and slit 17 will again close.

Thus, closure 13 normally serves completely to close tube 10 and shut off material flow while when material is squeezed out of tube 10, the slit 17 of the closure opens to permit emission of the material from the tube to the outside of the closure. Closure 13 may be said, then, to include a one-way eject valve for the material in the collapsible tube.

Rigidly fastened to the upper surface of head 16 of closure 13 by any suitable means as by a glue binder 18 is an applicator pad or a dauber 20 which may be of any desirable form or material. For the purposes of the disclosure, the applicator is shown as a spongy element which may be made of sponge rubber, velure, or the like. Centrally through the applicator 20 is formed a vertical channel 21 superposed on or in alignment with slit 17 of closure 13.

When the walls of tube 10 are squeezed, material flows into chamber 15 of closure 13, presses against the head 16 of the closure, opens valve slit 17, and is forced through the slit and through aligned channel 21 and deposited on applicator 20.

The applicator now supplied with the ejected material may then be used to apply the material to an external object. In using the applicator, tube 10 may be utilized and serve as a handle for the applicator as the latter is rubbed across or dabbed against an external object to apply the material to the object.

The combined, rigidly connected tube closure or seal and applicator, described above, is simply and economically made as a unit assembly and may be conveniently and easily attached to the tube. The advantages of the combined closure and applicator include elimination of the necessity for providing a separate applicator detached from the tube and which may be displaced, and elimination of the necessity for the user to handle the applicator itself with the attendant annoyance of having the material smeared on the hand and fingers of the user. The closure itself forms an effective and complete seal for the tube contents so that a separate closure cap or element is not necessary and at the same time the closure serves as a base and rigid support and carrier for the applicator.

While the invention has been disclosed in the illustrated and described form, it is to be understood that such variations, departures, or changes in the form or details thereof as are suggested by and fall within the spirit and body of the present invention are intended to be covered as indicated by the following claims.

I claim:

1. A combination applicator and closure for a substance-containing collapsible tube, comprising a hollow, resilient closure formed with a collar, embracing and attached to the neck of the tube, and having a wall extending across the mouth of the tube and cut through with a valvular fissure normally completely closed due to inherent resiliency of the closure material and adapted to entirely shut off substance discharge, said wall having inside surfaces converging towards the fissure and adapted to be wedged apart, by the pressure of substance squeezed from the tube, so as to open said fissure for enabling the substance to be discharged therethrough, and an applicator pad rigidly attached to the outside of said wall and provided with a fissure alined with said valvular fissure and through which the discharged substance may be deposited in the outside of said applicator pad to be applied thereto to an external object.

2. A combination applicator and closure for

a substance-filled collapsible container, comprising a one-piece, hollow closure attached to the open end of the container and having a diaphragm, of resilient material, extending across the open end of the container, the diaphragm being formed with relatively thick portions at the rim and a relatively thinner central portion cut through with a valvular fissure normally closed due to inherent resiliency of the diaphragm material and adapted to entirely shut off discharge through the closure of substance from the container, said thin, central portion of the diaphragm being readily distensible, by application of pressure exerted against the inside of the diaphragm by substance forced from the container by collapsing of the latter so as to cause the valvular fissure to open for discharging the substance therethrough, and an applicator pad having its base attached to the outside of the diaphragm and cut through with an opening or fissure alined with said valvular fissure and through which the discharged substance may be delivered to the external face or faces of the applicator pad, said thick rim portions of the diaphragm forming a firm foundation for the applicator pad while the latter is applying the delivered substance to an external object.

3. A combination applicator and closure for a collapsible tube containing a viscous substance and having an open neck, comprising a hollow one-piece molded closure of resilient material having a collar embracing and interlocked with the tube neck to attach the closure to the tube, said closure having a diaphragm extending across the tube opening, and cut through intermediately with a valvular fissure normally completely closed due to inherent resiliency of its bounding portions, the outside of the diaphragm being substantially flat and the inner surfaces of said bounding portions being inclined upwardly and oppositely towards the fissure to be wedged apart by pressure of the viscous substance squeezed out of the tube so as to distend said fissure for opening it to enable the substance to discharge therethrough, and an absorbent dauber having a substantially flat base attached to the outside of the diaphragm and cut through with an opening or fissure alined with the valvular fissure and through which the discharged viscous substance from the tube may flow to the outside of the dauber while, in its course, infiltrating the interior of the dauber.

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