Jan. 9, 1940. F. L. KATES 2,186,644

CLOSURE FOR COLLAPSIBLE TUBES

Filed Sept. 17, 1938

Fig. 1.

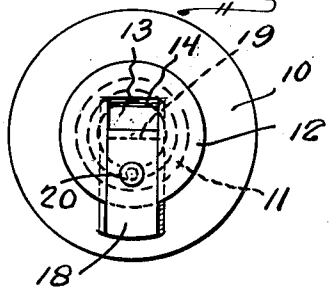


Fig. 5.

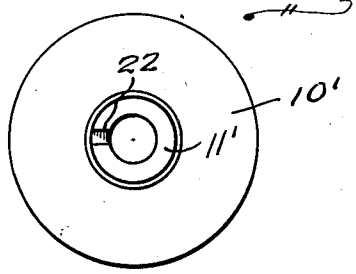


Fig. 2.

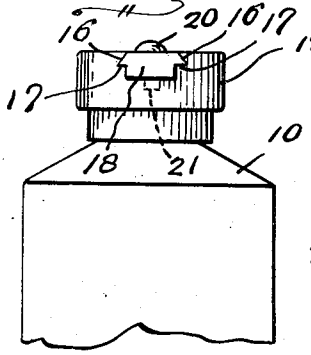


Fig. 6.

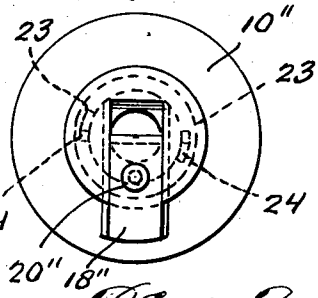


Fig. 9.

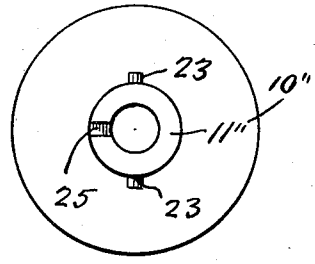


Fig. 3.

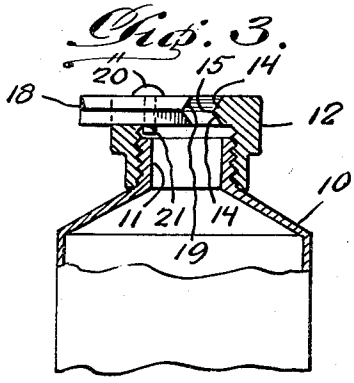


Fig. 7.

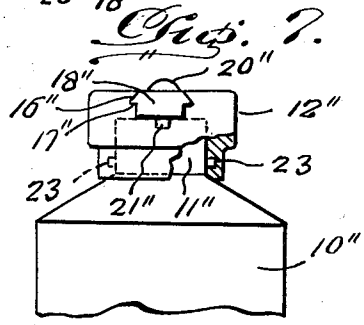


Fig. 10.

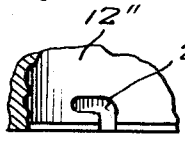


Fig. 8.

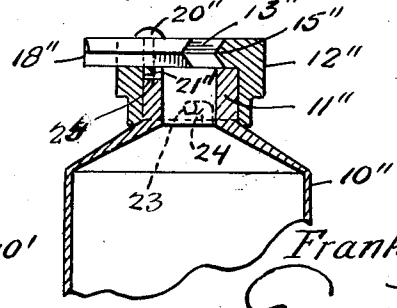
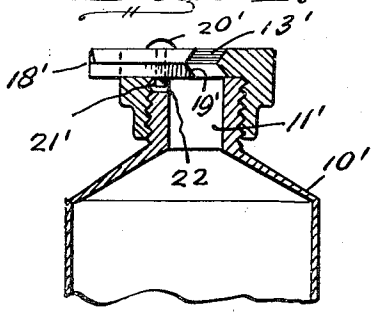


Fig. 4.



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CLOSURE FOR COLLAPSIBLE TUBES

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Application September 17, 1938, Serial No. 230,482

7 Claims. (Cl. 221—60)

This invention relates generally to collapsible tubes such as are used for shaving cream, tooth paste, etc., and more particularly to a closure therefor by means of which the necessary or desired amount of the contents of the tube is severed therefrom as it is forced from the tube in the usual manner.

The invention comprehends a cap structure for tubes of the above mentioned character, the cap remaining permanently associated with the neck of the tube and constructed to provide an opening of predetermined size through which a portion of the contents of the tube is projected, and subsequently severed and allowed to fall onto the brush or the like, so that the latter at no time is brought into contact with the tube.

In carrying out the invention, I contemplate a cap structure having an elongated slot in the top thereof, normally closed by a suitable slide, which when moved to partially uncover the slot defines an opening through which a portion of the contents of the tube is projected, and when moved to its normally closed position, severs the projected portion of the contents for use.

In accordance with the present invention, one end wall of the slot and the adjacent end of the slide are designed to quickly and effectively sever the ejected portion of the contents of the tube without waste or an accumulation of paste or the like about said ends, the latter also being designed for interfitting association to provide a perfect air and leak-proof connection with the slide in its normally closed position.

Another object of the invention resides in mounting the slide on the cap in a manner to provide a leak-proof structure about the edges of the slot, and to prevent casual displacement of the slide from its normally closed position under any circumstance.

One of the chief characteristics of the invention resides in the use of a headed element carried by the slide for the two-fold purpose of facilitating movement of the slide, and also limit the movement of the slide in one direction, so that an opening of predetermined dimension is always provided, irrespective of the thickness of the neck of the tube with which the cap is associated, and through which opening a portion of the contents of the tube is adapted to be forced in the usual manner, and subsequently severed for use.

The nature and advantages of the invention will be better understood when the following detail description is read in connection with the accompanying drawing, the invention residing in the construction, combination and arrangement of parts as claimed.

In the drawing forming a part of this application like numerals of reference indicate similar parts in the several views and wherein:

Figure 1 is a top plan view of a tube and closure cap therefor, showing the slide in its opened position.

Figure 2 is a fragmentary side elevation of the tube and cap therefor.

Figure 3 is a similar view partly in section.

Figure 4 is a view similar to Figure 3 of a slightly modified form of the invention.

Figure 5 is a top plan view of the tube illustrated in Figure 4 with the cap removed.

Figure 6 is a view similar to Figure 1 of another modified form of the invention.

Figure 7 is a fragmentary side elevation of Figure 6 partly in section.

Figure 8 is a vertical sectional view through Figure 7.

Figure 9 is a top plan view of the tube.

Figure 10 is a fragmentary view of the cap.

In the embodiment of the invention illustrated in Figures 1 to 3 inclusive, 10 indicates the body of any well known type of collapsible tube including a threaded neck portion 11.

The closure embodying the subject matter of the present invention includes a cap 12 which of course may be constructed of any suitable material, and also vary in size and shape without departing from the spirit of the invention. In this embodiment of the invention the cap 12 is threaded onto the neck 11 of the tube until the lower end of the cap tightly engages the latter to provide an air-tight closure, it being borne in mind that once the cap is associated with the neck of the tube, it is never removed therefrom. The top wall of the cap is as shown slightly spaced from the adjacent end of the neck 11 of the tube, and is provided with an elongated slot 13 which opens at one side of the cap, and which also includes an end wall. This end wall has its opposite sides beveled as at 14 to provide a comparatively sharp edge 15, this end wall of the slot being substantially V-shaped in cross section for purposes to be presently set forth. The cap is also formed with a substantially dove-tail groove above the slot, the opposed longitudinal edges of the groove being beveled as at 16 and extending upwardly and outwardly from the flat shoulders or surfaces 17 as shown.

Mounted in said groove is a slide 18 normally closing the slot 13 and adapted to be shifted to uncover the slot to permit a portion of the con-

tents of the tube to be dispensed through said slot when desired. The inner end of the slide 18 is formed with a substantially V-shaped groove 19 to accommodate or receive the sharp beveled end wall of the slot 13 when the slide is fully closed. Obviously, by reason of this construction a perfectly tight air and leak proof connection is provided between the active end of the slide and the cap 10. After the slide has been shifted to partially uncover the slot 13, and the necessary or desired amount of the contents of the tube forced through the slot, the slide is moved to its closed position, during which time the projected portion of the contents of the tube is severed by the slide and the sharp edge 15 of the end wall of the slot. This severed portion of the contents of the tube is allowed to drop onto a tooth brush, shaving brush or the like, so that none of said articles are at any time brought into contact with the tube. This, of course, promotes sanitation, especially where more than one person makes use of the tube. As the slide assumes its closed position the sharp edge 15 of the end wall of the slot cooperates with the slide to clearly sever the projected portion of the contents of the tube, without waste or resultant accumulation of paste or the like in the groove of the slide, which might otherwise interfere with the proper closing of the latter.

As hereinabove stated, one of the chief characteristics of the present invention resides in the utilization of a single element by means of which the slide can be easily shifted, as well as limited in its movement to an open position, thus always assuring an opening of predetermined size through which the contents of the tube can be projected from time to time, and this irrespecitve of the thickness of the neck of the tube with which the cap is associated. For this purpose I preferably employ a headed pin which is passed through the slide 18, with the head 20 thereof reposing on the slide, while the shank 21 of the pin projects beneath the latter for the purpose to be presently described. The head 20 in addition to directly engaging the slide is also preferably rounded to eliminate sharp corners or projections so that it cannot be easily engaged by any object with a resultant casual opening of the slide, while the tube is being moved or shifted from place to place when not in use. However, the head 20 of the pin provides a sufficient surface to be engaged either by the thumb or finger to readily effect movement of the slide. Manifestly, the shank 21 of the pin is disposed to engage the side of the cap 10 and thus limit the movement of the slide to its open position. In this particular embodiment of the invention the pin moves above the neck of the tube as clearly illustrated in Figure 3 for the purpose just mentioned.

In a slightly modified form of the invention illustrated in Figures 4 and 5, the tube 10' is provided with the usual threaded neck 11', while threaded on the neck is a cap of the same construction hereinabove described. The cap is provided with an elongated slot 13' in the top thereof which is normally closed by the slide 18'. Passed through the slide is a headed pin which serves the same two-fold purpose of facilitating movement of the slide, as well as limiting the movement thereof in one direction, the head 20' of the pin reposing upon the slide, while the shank 21' projects beneath the latter.

In collapsible tubes of the class in question, the neck portions thereof are sometimes made of varying thickness, and the closure caps are sometimes threaded tightly on the neck portion to engage the end thereof to provide an air and leak proof closure, such as illustrated in Figure 4. Consequently, when the closure cap for such tubes, constructed in accordance with the present invention, is threaded tightly on the neck portion of the tube to engage the end thereof, said neck portion is provided with a notch 22 to permit passage of the pin 21' as the slide 18' is shifted to uncover the slot, so that the pin 21' can engage the cap and limit the movement of the slide in one direction. In this connection it is to be noted that in both forms of the invention illustrated in Figures 3 and 4 the shank of the pin engages the side of the cap, and thus an opening of a predetermined size is provided through which the contents of the tube is projected, and this irrespective of the thickness of the neck portion of the particular tube.

In Figures 6 to 10 inclusive, I have illustrated another modified form of the invention, wherein the collapsible tube is indicated generally at 10'' and includes a smooth comparatively thick neck portion 11''. The closure cap is indicated at 12'' and is adapted to be slipped upon the neck portion 11'' of the tube and held associated therewith in a manner to be presently described. The closure cap in this form of the invention is constructed exactly the same as hereinabove described in connection with Figures 3 and 4, the cap having a slot 13'' which is normally closed by the slide 18''. Also passed through the slide is the headed pin to serve the two-fold purpose hereinabove described, the head 20'' reposing on the slide while the shank 22 projects beneath the slide as illustrated in Figure 8. The neck of the tube is provided with a notch 25 through which the shank of the pin passes to permit the shank to engage the cap and thus limit the movement of the slide in one direction.

The only difference between this form of the invention and the construction hereinabove described resides in the manner in which the cap in its entirety is associated with the neck of the tube. In this connection the cap is provided with slots 24 at diametrically opposite points to receive lugs 23 which project laterally from the neck of the tube as shown in Figure 9. By virtue of this construction the cap is slipped on the neck of the tube with the lugs 23 positioned in the slots 24, after which the cap is slightly turned to hold the cap immovably associated with the neck.

While it is believed that from the foregoing description the nature and advantages of the invention will be readily understood, I desire to have it known that I do not limit myself to what is herein shown or described, and that such changes may be resorted to when desired as fall within the scope of what is claimed.

What is claimed is:

1. A closure for collapsible tubes, comprising a cap adapted to be tightly fitted on the neck of the tube and having a slot in the top thereof, a slide carried by the cap, normally closing said slot and adapted to partially uncover the latter, and a headed pin passed through the slide, the head of the pin reposing upon the slide and lying substantially flush therewith and utilized to shift the slide, and the shank of the pin cooperating with the cap to permit the slide to uncover the slot a predetermined distance irrespective of the thickness of the neck of the tube.

2. A closure for collapsible tubes, comprising a cap associated with the neck of the tube and

having a slotted top slightly spaced from the adjacent end of said neck, a slide carried by the cap, normally closing said slot and adapted to partially uncover the latter, and a headed pin passed through said slide, with the head of the pin reposing on the slide substantially flush therewith and utilized to facilitate movement of the latter, and the shank of the pin being movable above the neck of the tube and adapted to engage the cap to limit movement of the slide in one direction.

3. A closure for collapsible tubes, comprising in combination with a tube having a notch in the neck portion thereof, a cap tightly fitted on said neck and engaging the end thereof, and having a slot in the top, a slide carried by said cap, normally closing said slot and adapted to partially uncover the latter, and a pin projecting from the under side of the slide and adapted to pass through said notch and engage the cap to limit the movement of the slide in one direction.

4. A closure for collapsible tubes, comprising in combination with a tube having a notch in the neck portion thereof, a cap tightly fitted on said neck and engaging the adjacent end thereof, and having a slot in the top, a slide carried by said cap, normally closing said slot and adapted to partially uncover the latter, and a headed pin passed through the slide with the head of the pin reposing thereon and utilized to facilitate the movement of the slide, and the shank of the pin adapted to pass through said notch and engage the cap to limit the movement of the slide in one direction.

5. The combination with a collapsible tube having a neck, of a closure therefor including a cap associated with the neck and having a slot in the top thereof, one wall of said slot presenting a V-shaped edge, a slide carried by the cap, normally closing said slot, and having a correspondingly shaped groove in one end to receive said V-shaped edge to sever a portion of the contents of the tube forced through said slot, and also provide a leak proof connection with the slide fully closed and a headed pin passed through the slide and adapted to engage said cap to limit the movement of the slide in one direction.

6. The combination with a collapsible tube having a neck, of a closure therefor including a cap associated with the neck and having a slot in the top thereof and a substantially dove-tail groove, a slide designed to operate in said groove, normally closing said slot and adapted to partially uncover the latter, one end wall of the slot presenting a V-shaped edge, and the adjacent end of said slide having a correspondingly shaped groove for engagement with said V-shaped edge to provide a leak proof connection with the slide fully closed.

7. The combination with a collapsible tube having a neck, of a closure therefor including a cap associated with the neck and having a slot in the top thereof, a slide carried by the cap, normally closing said slot and adapted to partially uncover the latter, one wall of the slot presenting a V-shaped edge, the adjacent end of said slide having a correspondingly shaped groove in one end for interfitting engagement with said V-shaped edge to provide a leak proof connection with the slide fully closed, and a headed pin passed through the slide, the head being utilized to facilitate movement of the latter, and the shank thereof cooperating with the cap to limit the movement of the slide in one direction.

FRANKLIN L. KATES.