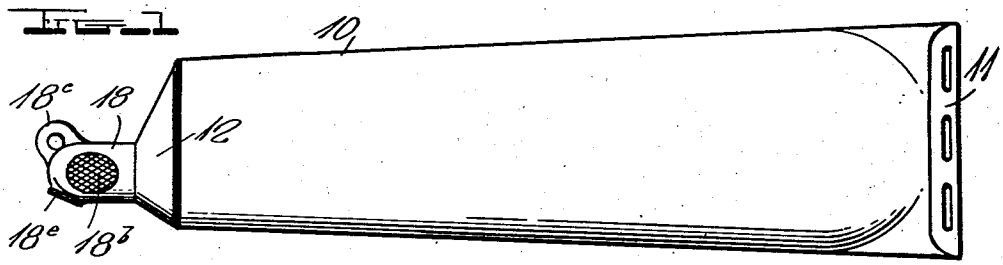
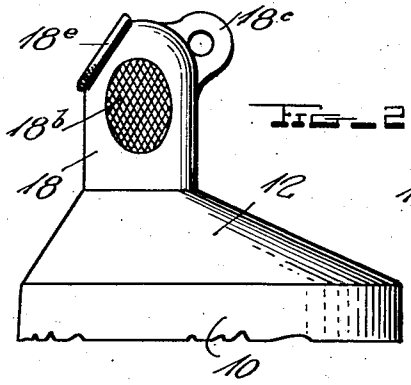
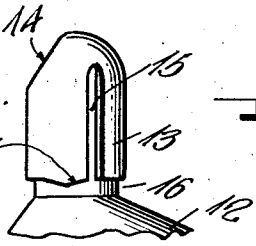
Sept. 4, 1934. F. P. PRENDERGAST 1,972,793

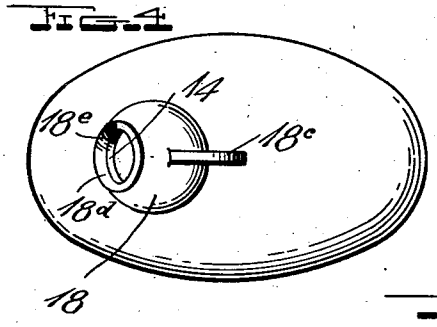
COLLAPSIBLE TUBE

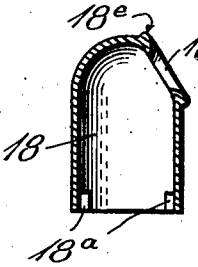
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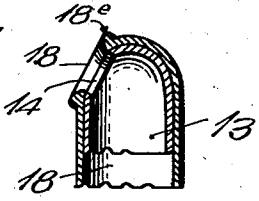


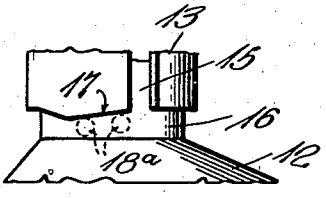


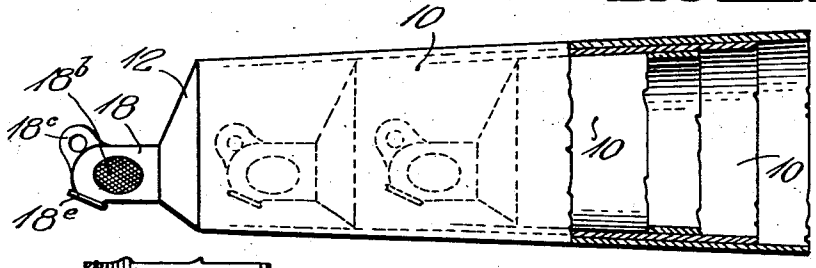


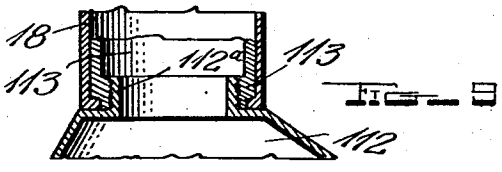












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Patented Sept. 4, 1934 1,972,793

UNITED STATES PATENT OFFICE

1,972,793

COLLAPSIBLE TUBE

Frank P. Prendergast, Dagus Mines, Pa.

Application May 19, 1932, Serial No. 612,307

6 Claims. (Cl. 221—60)

This invention relates to collapsible tubes and particularly to that type used in dispensing semi-fluid materials such as creams, shaving paste, glue, paint and ointments.

The collapsible tube in common use today is provided with a screw-cap which when removed is easily lost. The screw thread adjacent the delivery opening of the tube is rough and as used against the face as in using shaving creams, is disagreeable.

The primary object of this invention is the provision of an improved collapsible tube.

Other objects of this invention are to provide a collapsible tube which will (1) be useful as a spreader as well as a container, (2) make the tube contents available without removing the cap, (3) wipe the surplus material away from the tube opening, (4) have the cap ordinarily locked against accidental removal, but will be removable at will, (5) have a body tapered toward the delivery end with the widest portion at the filling end, thus facilitating shipment of the tubes prior to filling, (6) have its body portion oval shaped and (7) have its opening at one edge to facilitate emptying and spreading of the contents.

Other and further objects will be apparent to those skilled in the art from a reading of the complete specification and claims.

Referring to the drawing wherein is illustrated an embodiment of the invention:

Figure 1 is a side view of the complete tube.

Figure 2 is an enlarged view of the delivery end of the tube.

Figure 3 is a view illustrating the nesting arrangement of the tubes when being shipped empty.

Figure 4 is a top plan view.

Figure 5 is an enlarged elevation of the tube neck with the closure member removed.

Figure 6 is a cross section of the closure member on the same scale as Figure 5.

Figure 7 is an enlarged fragmental view of the lower portion of the neck showing the cam locking means.

Figure 8 is an enlarged cross-sectional view of the neck and closure member at the neck opening showing the opening of the closure member in registry with the opening of the neck.

Figure 9 is a fragmental view of a modified form showing the neck detachable from the body portion.

The same reference characters refer to the same or similar parts throughout the specification and drawing.

The numeral 10 designates the main body portion of the tube which when filled is provided with the binding strip 11 which is applied after the tube is filled. This main body portion is tapered toward the delivery end of the tube and is thicker along one axis of the cross section than along the other. This cross-sectional shape I refer to as elliptical as clearly illustrated in Figure 4. One purpose of the construction having the elliptical cross-section is to assist in folding up the end about the binder 11 as the contents of the tube are used.

At the delivery end 12 of the tube, I have illustrated a conical surface. On the end 12 and at one side and adjacent to one side of the tube, I provide a neck 13 which delivers the tube contents to the opening 14 as shown in Figure 5. This neck is provided with grooves 15 on opposite sides to receive the locking lugs of the closure member to be described. At the lower end of the neck 13 and adjacent the body member 10, I provide another groove 16 which registers with the grooves 15. At the upper edge of this groove 16 is a cam surface 17 which serves as a coacting means to draw the closure member in place as will be later described. The neck 13 is preferably made so that any plane drawn normal to its axis will intersect the neck to form a circle.

A closure member 18 is provided having an interior surface of a similar size and shape to the exterior surface of the neck 13. The lugs 18^a are provided on the interior of the closure member 18 and are of a size and shape to fit the grooves 15 of the neck 13. When in place, these lugs 18^a are in position to move in the groove 16 and engage the cam surface 17 already described. The closure member 18 is provided with knurled surfaces 18^b on opposite sides to provide gripping means and at the top is provided with an eye 18^c for the purpose of hanging the tube on a nail or hook. The closure member 18 is provided with an opening 18^d which is in position to, at will, register with the opening 14 of the neck 13. Adjacent the edge of the opening 18^d is a bead 18^e to prevent the edges of the opening 18^d from injuring the skin in case the tube is used for a toilet preparation and the contents are applied directly to the skin of a user as on the hands or face.

In Figure 9, I have illustrated in section the end 112 of a tube which has a short threaded neck 112^a. Screw-threadedly attached thereto is the neck 113 which except for its connection to the end of the tube, is constructed similar to the neck 13 already described. The closure member 18 fits the neck 113 as already described.

I will now describe the operation of this invention.

During the shipment of the empty tubes from the place of their manufacture to the factory where they are to be filled, it is desirable that they occupy as little space as possible. The shape as already described, lends itself to the nesting of the tubes, as shown in Figure 3.

When the tubes are being filled, the closure member 18 may be closed. After the tube is filled, the binding member 11 is applied and the finished tube is ready for the market. In applying the cap 18, the lugs 18^a are caused to register with the grooves 15. The closure member 18 is passed downwardly over the neck 13 until the lugs 18^a enter the groove 16. By grasping the knurled portions 18^b the closure member 18 may be turned, the lugs 18^a, engaging the cam surfaces 17. The coaction between the cam surfaces 17 on opposite sides of the groove 16 with the lugs 18^a, has a tendency to pull the closure member 13 downwardly and tightly seal the opening 14 against evaporation of the moisture content of the tube filling. When it is desired to use the substance within the tube, the closure member 18 is turned until the opening 18^d registers with the opening 14. The tube may be squeezed and the contents forced out. The bead 18^e makes it possible to use the tube and its opening as a spreader.

It will be noted that the position of the neck 13 at the side of the tube-end 12 and the opening 14 at the corresponding side of the tube neck 13, at an acute angle to the axis of the neck, makes it much easier to empty the tube and utilize it when and where desired. As the contents of the tube are used, the binder 11 is used as a stiffening member upon which to roll the tube body 10.

When through using, the closure member 18 is simply turned until the cam surface 17 are engaged by the lugs 18^a. This cuts off the stream at the opening 14, seals the latter and draws the closure member downwardly on its seat.

In the form shown in Figure 9, the tube may be sold separately from the neck 113 and closure member 18, these being dispensed separately, or the whole may be sold as an integral unit.

While I have illustrated and described in detail forms of my invention, it is to be understood that these are merely illustrative and that various modifications and changes may be made without departing from the spirit of the invention and within the scope of the appended claims.

Having described my invention what I claim and desire to secure by Letters Patent is:—

1. A flexible dispensing tube comprising a tapering body portion having an increased girth from its dispensing end toward the opposite end, the body portion having a delivery opening at its smaller end, the body portion being of an elliptical cross section, the delivery opening being at a point to one side of the axis of the tube and a closure member for the tube opening.

2. A flexible dispensing tube comprising a tapering body portion having an increased girth from its dispensing end toward the opposite end, the body portion having a delivery neck at its smaller end, an opening in the neck, a revolving closure member for the opening, the revolving closure member having an opening for registry with the opening in the delivery neck in one position and out of registry when in another position, and coacting means between the closure member and neck for holding the closure member over the neck opening when the latter is closed.

3. A flexible dispensing tube comprising a tapering body portion having an increased girth from its dispensing end toward the opposite end, the body portion having a delivery neck at its smaller end, an opening in the neck, a revolving closure member for the opening, the revolving closure member having an opening for registry with the opening in the delivery neck in one position and out of registry when in another position, and coacting means between the closure member and neck for tightly holding the closure member over the neck opening when the latter is closed, the body portion being of an elliptical cross section and tapered in size toward the delivery end.

4. A flexible dispensing tube comprising a body portion having an increased girth from its dispensing end toward the opposite end, a delivery neck extending from the body portion, a delivery opening extending from the delivery neck, the axis of the opening forming an acute angle with the axis of the tube, and a revolving closure member for the opening and having a slot for, at will, uncovering the opening.

5. A flexible dispensing tube comprising a body portion having an increased girth from its dispensing end toward the opposite end, a delivery neck extending from the body portion, a delivery opening in the neck, a closure member for the opening the closure member enveloping the neck, and cam means for drawing the closure member over the opening to tightly close the same.

6. A flexible dispensing tube comprising a body portion having an increased girth from its dispensing end toward the opposite end, a delivery neck having a screw-threaded connection with the body portion, an opening in the neck for delivery of the tube contents, a closure member for the opening and means for drawing the closure member tight over the opening when in its closed position.

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