

Aug. 18, 1936.

R. BINGHAM

2,051,513

DISPENSING CAP FOR COLLAPSIBLE TUBES

Filed April 1, 1935

Fig. 1

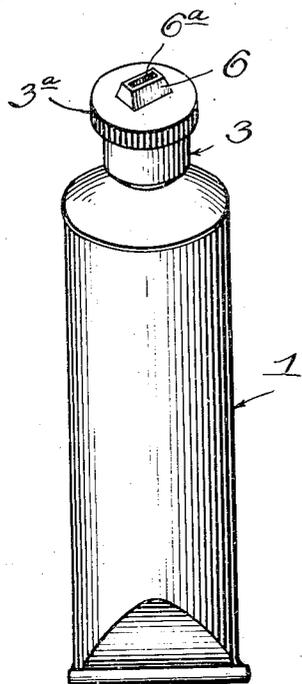


Fig. 2

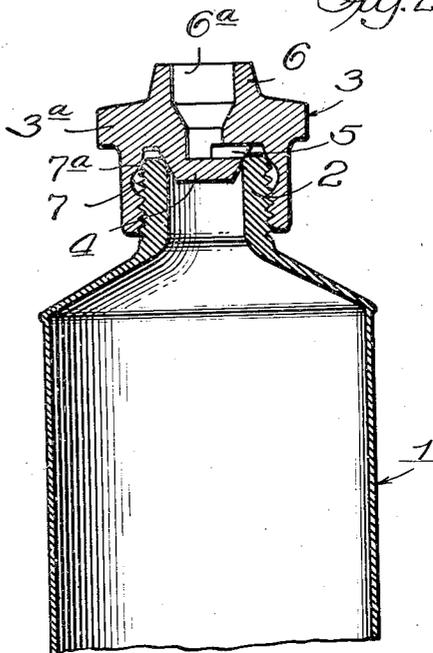


Fig. 3

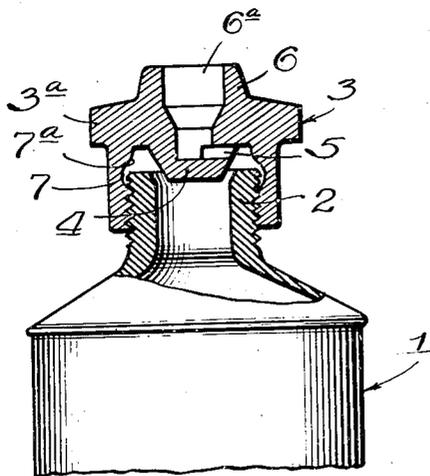
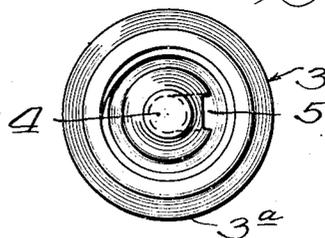


Fig. 4



Witness:
Chas. R. Koursh.

Inventor,
Richard Bingham,
Offield, Kell & Co., Patent Attys.

UNITED STATES PATENT OFFICE

2,051,513

DISPENSING CAP FOR COLLAPSIBLE TUBES

Richard Bingham, Chicago, Ill.

Application April 1, 1935, Serial No. 14,011

1 Claim. (Cl. 221-60)

This invention relates to improvements in dispensing caps for collapsible tubes, and more particularly to an improved cap for collapsible tubes which will permit the contents to be extruded without completely removing the cap.

A cap of the character indicated would be especially applicable to tubes from which small quantities of the contents are dispensed at frequent intervals, as for instance, tooth paste, shaving cream and like preparations, and having as its object the avoidance of the common annoyance of continually dropping or losing the cap.

And a further object of the invention is to incorporate the dispensing feature into screw caps having the standard threaded connection with the tube, thus permitting the ready substitution of one for the other without altering the tubes in any essential particular.

A preferred embodiment of the invention is disclosed in the accompanying drawing in which

Figure 1 is a perspective view of a collapsible tube equipped with a dispensing cap.

Figure 2 is an enlarged view in vertical section through the cap and tube showing the former in closed position.

Figure 3 is a view similar to Figure 2 with the cap partially unscrewed for dispensing the contents of the tube.

Figure 4 is a plan view of the cap removed from the tube.

So far as the container 1 is concerned, it may be any standard collapsible tube of soft metal having a threaded neck portion 2 at one end through which the contents are forced in the act of squeezing the body thereof. The cap 3 is generally similar to the standard screw cap, being made of metal or of some moulded composition such as "Bakelite", and consisting of an annular body portion 3^a, a thick annular top wall with knurled edges, and a depending skirt portion 3^b forming the cavity to receive the neck 2 of the tube. The cavity formed within the cap is slightly deeper than the length of the neck 2 and enlarged somewhat at its inner end beyond the internal threads which extend throughout substantially one-half the depth of the cavity, and mesh with the threaded neck 2 as shown in Figure 2.

Extending axially into the cavity from the body of the cap is an integral tapered or inverted cone-shaped projection 4 terminating in a flat end approximately midway of the depth of the cavity. This projection is in reality a tapered valve member coacting with the entrance to the passage through the neck of the tube to prevent the discharge of the tube contents when the cap is

screwed down tightly. To this end the entrance to the tube is preferably beveled to provide a seat for the tapered valve member 4, which engages therewith in the closed position of the cap substantially midway between its base and its end.

Formed in the tapered projection 4 is a passage 5 communicating with the cavity in the upper portion of the cavity through a laterally facing opening above the point of seating contact with in the end of the tube neck. From its entrance opening the passage extends radially inward to the center of the cap and thence turns and continues axially and upward through the body, terminating in a short tapered discharge nozzle 6 at the center of the top face of the cap. The discharge opening at the end of the passage is preferably elongated into the form of a slot 6^a, although this is merely to give the contents a ribbon-like form when discharged therefrom.

The manipulation of the tube with the novel dispensing cap applied thereto will be understood from the following: With the cap screwed down it is obvious that the tube will be tightly sealed against the discharge of its contents by the valve-like projection 4 seating in the end of the neck 2. However, with a slight turn of the cap in a direction to unscrew it, the projection will be unseated, thus allowing the contents to be squeezed into the cavity surrounding the projection, thence into the passage 5, and finally from its discharge nozzle 6. And when the desired quantity has been discharged, a slight turn of the cap in the opposite direction closes the valve, so to speak, and the tube is again sealed.

From this it is apparent that the cap need not be removed in order to discharge the contents from the tube, but merely given a slight turn in a direction to unscrew the cap sufficiently to unseat the valve member. Manifestly, then, the threaded connection is essential to bring about the valve action, but not needed otherwise except as a means for initially applying the cap to the tube. However, there is nothing to prevent the user from removing the cap by continuing to unscrew it either from habit or lack of knowledge that the contents can be dispensed by merely a slight turn of the cap. This possibility, then, suggests the desirability of providing some means for locking the cap against complete removal after its initial application to the tube, or at least of increasing the difficulty of unscrewing the cap beyond a certain point in order to remind the user that the cap is not intended to be removed. Bearing in mind that threads on the neck of the

tube are cut in a relatively soft metal, whereas the threads on the cap are of a much harder material, it would be possible to upset the threads at the outer end of the neck, so that having applied the cap initially, considerable force would be required to remove it completely.

An effective means of preventing the complete removal of the cap would be to shape the enlarged portion at the base of the cavity so as to provide an internal groove or undercut 7 of a rounded contour in cross-section just above the internally threaded portion of the cap. Thus in applying the cap to the tube initially it will screw down readily until it reaches a point just short of its fully tightened position, whereupon the endmost threads on the tube neck strike the shoulder 7^a formed by the groove 7 and with the final turn of the cap to screw it tight to its seat, the endmost threads are jammed down against the next thread after the manner shown in Figure 3, thereby preventing the threads of the cap from passing the jammed threads should an attempt be made to remove the cap entirely. This expedient, of course, would not prevent the cap from being unscrewed if sufficient force were applied, but it would serve as a reminder that the cap is not in-

tended to be removed, and it would certainly prevent the accidental or thoughtless unscrewing of the cap from the tube.

Needless to say, the same results and advantages may be obtained by designing the caps in ways other than herein disclosed, and hence the invention contemplates any construction which will permit the contents of the tube to be dispensed through the cap when the latter is unscrewed sufficiently to permit the contents to escape from the tube.

I claim as my invention:

A dispensing cap for collapsible tubes and like containers, comprising a body having an internally threaded cavity adapted to receive the threaded neck of said tube, and a tapered closure member extending centrally from the bottom of said cavity and adapted to seat in the entrance to said neck when said cap is screwed down, the outer surface of said cap communicating with the cavity through a longitudinal passage in said closure member, having a transverse opening located above the neck-engaging portion thereof, said cap terminating at the top in a nozzle-like projection.

RICHARD BINGHAM.