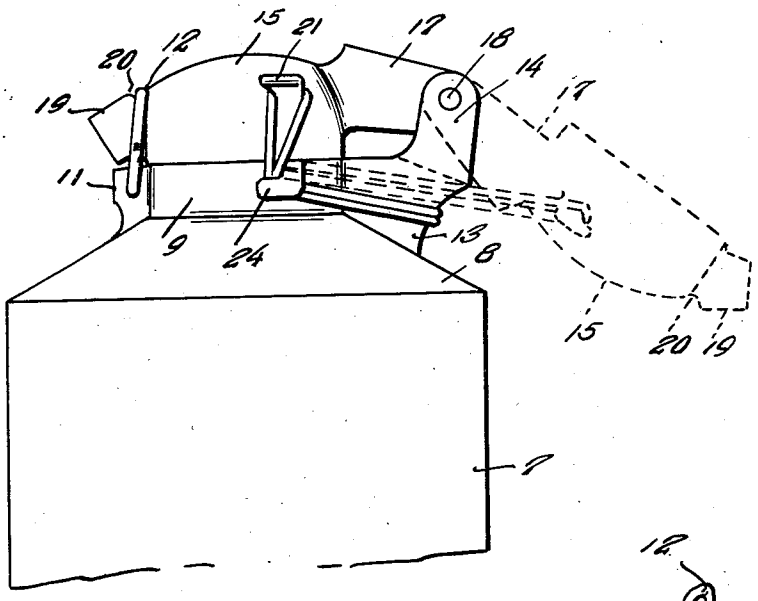
June 26, 1934. W. T. BORTHWICK 1,964,104

COLLAPSIBLE TUBE CLOSURE

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Fig. 1.



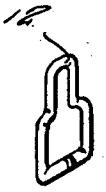


Fig. 6.

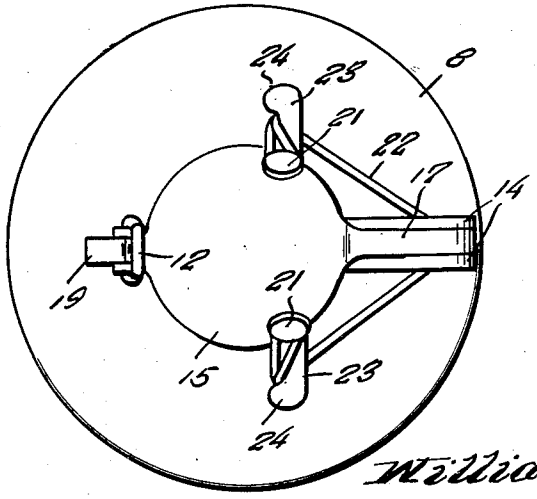


Fig. 2.

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Fig. 3.

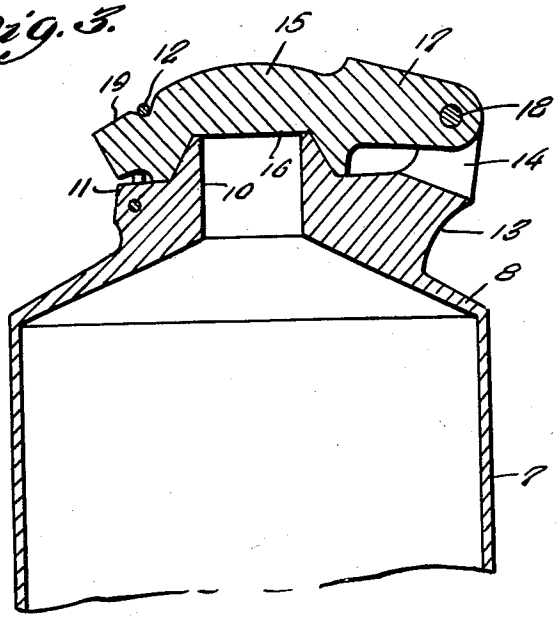


Fig. 4.

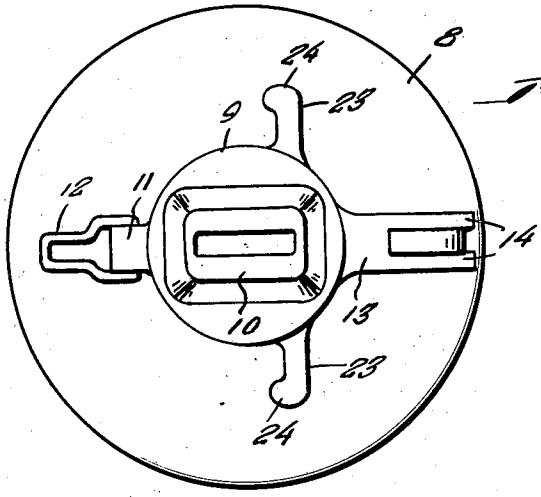
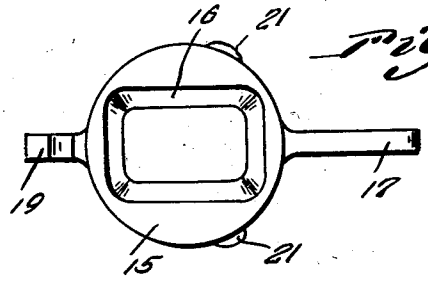


Fig. 5.



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UNITED STATES PATENT OFFICE

1,964,104

COLLAPSIBLE TUBE CLOSURE

William Thorne Borthwick, Fairfield, Va.

Application January 31, 1934, Serial No. 709,224

5 Claims. (Cl. 221—60)

This invention relates to closing devices for collapsible tubes such as are used for containing-ing and dispensing toothpaste, shaving cream and analogous chemical, medicinal, and/or pharmaceutical preparations.

Needless to say I am aware of the fact that numerous types of closures have been proposed for use and association with tubes of this classification. It follows, therefore, that my primary aim is to generally improve upon closing devices now known to me by providing one which, it is believed, is more aptly fitted for the purposes intended and possesses features which measure up to the requirements and in fact transcends in adaptability similar features in prior art devices.

Briefly stated I have evolved and produced a device characterized by simplicity and economy and depending for its novelty upon the adoption and use of a hinged swingable closing cap fashioned to fit with precision upon a coordinated feature of the discharge neck in order to provide the desired airtight closure.

One feature of the invention is predicated upon a hinged cap and associated discharge neck wherein the neck is formed with a beveled seating projection receivable in a cavity or recess formed in the bottom or under side of the cap in order to effect a dependable closing action.

Another feature of the invention is predicated upon the adoption and use of a swingable loop-like latch or catch mounted on the neck and detachably connectible with a cam-like keeper carried by the cap so as to securely lock or fasten the cap closed.

A further and more important feature of the invention is predicated upon the use of a rubber band and cooperating elements permitting the band to be associated with the hinged end portion of the cap in such a manner as to aid in keeping the cap closed and to hold the cap in a dependable open position while squeezing the contents of the tube for use.

Other features and advantages will become more readily apparent from the following description and drawings.

In the drawings:

Figure 1 is an elevational view of a collapsible tube embodying the features of the invention as perfected and coordinated in accordance with my inventive idea, the cap being shown closed in full lines and swung to open position in dotted lines.

Figure 2 is a top plan view of Figure 1.

Figure 3 is a sectional view.

Figure 4 is a top plan view with the cap removed.

Figure 5 is a bottom plan view of the cap per se.

Figure 6 is a perspective view of the link which serves as a cam-latch.

Referring now to the drawings by distinguishing reference characters and first to Figure 1 it will be observed that the collapsible tube is indicated by the numeral 7, this being of conventional design and including a conical discharge end portion 8. Formed integral with the end portion 8 is a centralized neck 9. This neck is somewhat circular in cross sectional dimensions as is evidenced from Figure 4. It will be observed however that the neck terminates in a beveled rectangular seating projection 10 which defines a substantially rectangular discharge slot through which the ribbon-like portion of cream or paste is ejected. On the front the neck is formed with a lug 11 to which the link 12 is swingably connected. This link serves as a fastener or latch. At a diametrically opposite point the neck is formed with an extension which may well be described as an adapter 13, this having its end portion bifurcated and the furcations 14 serving as attaching ears for the cap 15. The cap 15 resembles a dome and in its under side is formed with a rectangular recess or cavity 16 as shown in Figure 5 which serves to receive the seating projection 10. The beveled surfaces of these features 10 and 16 cooperate in forming an effective substantially airtight closure between the discharge neck and the cap. The cap is formed on one side with an attaching shank or arm 17 which is pivotally mounted as at 18 between the attaching ears 14. Diametrically opposite to the attaching arm the cap is formed with an integral extension 19 which is conveniently referred to as a retention element or keeper. As a matter of fact this keeper is formed with a notch 20 which forms a keeper seat for reception of the bight portion of the fastening link or latch 12. Obviously the latch is fashioned in shape to permit it to be conveniently attached to the anchoring lug 11 and to allow the bight portion to swing over the keeper 19. Moreover the parts are so proportioned that a slight downward stress is brought to bear upon the keeper through the instrumentality of the link in order to effect a tight closing action of the cap on the neck.

It will be observed in Figures 1 and 2 that the cap is formed with a pair of complemental buttons 21 which serve as anchoring elements for the ends of a rubber band 22. This rubber band is stretched around the adapter 13 which is so shaped as to aid in holding it in place and the end portions are attached to buttons

21. The intermediate portions pass over a pair of outstanding diametrically opposite guides 23 formed integral with the neck. If desired the free ends of the guides may be formed with knobs or the like 24 to facilitate maintenance of the adjacent portions of the rubber band. By anchoring the ends of the band on the cap, passing the intermediate portions over the guides and looping the band around the adapter 13 it is obvious that when the cap is closed the band aids in maintaining it closed. Moreover it serves as an automatic means to aid in swinging the cap to closed position as if it were a spring closed cap. Then too when the cap is swung to open position it swings down beyond "dead center" as shown in dotted lines in Figure 1 at which time the rubber band is sufficiently stretched as to exert the requisite tension on the cap and to hold it in this position. This prevents the cap from flopping loosely and interfering with the discharge of the contents of the tube.

This idea of the use of a rubber band as an accessory to aid in holding the closing cap open and to further aid in keeping the cap tightly closed is believed to be an innovation in this particular line of endeavor. It reveals the development of an appreciable structural refinement which, it is believed, is sufficiently ingenious and dependable to justify endorsement of the device by the trade and acceptance by the prospective purchaser. Novelty is therefore predicated upon the special adoption and coordination of the adapter 13, which serves not only as a retaining device for the rubber band but as the mount for the hinged caps. Then, too, the particular position and placement of the buttons 21 and their associated guides 23 and the manner in which they cooperate with the adapter and the rubber band are features believed to be unique.

Novelty is also thought to reside in the adoption and use of the centralized cylindrical neck 9 having the substantially rectangular beveled seating element 10 as a feature of distinction wherein said element is properly seated in a cavity 16 in the under side of the dome like circular cap 15. This provides the desired rigidity of construction and permits ductile metal to be adequately employed in securing requisite rigidity and firmness.

It is further thought that in addition to the feature of permanence of the closing cap it is a desirable contribution to the trade and art because it has a positive and dependable locking means consisting of the features 11, 12, 19 and 20.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in shape, size, and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

Having thus described my invention, what I claim as new is:

1. A structure of the class described, a collapsible tube provided with a discharge neck, a permanently attached hingedly mounted closing cap for said neck, the neck being provided with an anchoring lug, the cap being provided above said lug with an outstanding extension defining a keeper and said extension having a notch forming a keeper seat, together with a closing and fastening link pivotally attached to said lug and engageable with said keeper and its seat.

2. A device of the class described comprising a collapsible tube formed with a discharge neck, a closing cap for said neck, means hingedly connecting said cap with said tube, said cap being provided with a pair of oppositely disposed cooperating band anchoring buttons, and a rubber band attached to the tube and having its end portions looped over and connected with said buttons.

3. A device of the class described comprising a collapsible tube formed with a discharge neck, a closing cap for said neck, means for permanently and hingedly connecting said cap with said tube, said cap being provided with a pair of oppositely disposed cooperating band anchoring elements, and a rubber band attached to the tube and having its end portion looped over and connected with said elements, said neck being provided with a pair of outstanding guides located beneath said elements and the rubber band being trained over said guides.

4. A device of the class described comprising a collapsible tube formed with a discharge neck and a pair of attaching ears, a cap cooperable with said neck and having an arm pivotally fastened between said ears, said cap being provided with band anchoring buttons, said neck being provided with coordinated guides, and a rubber band associated with said ears having its free end portion connected detachably with said buttons and its intermediate portion engaged with said guides for the purposes described.

5. A structure of the class described including a discharge neck for a collapsible tube or the like, a hingedly mounted closing cap on said neck, the neck being provided with an anchoring lug, the cap being provided above said lug with an outstanding extension defining a keeper and said extension having a notch forming a keeper seat, together with a closing and fastening link pivotally attached to said lug and engageable with said keeper and its seat.

WILLIAM THORNE BORTHWICK.