March 20, 1934. L. GOLDBERGER 1,951,510

COLLAPSIBLE TUBE CLOSURE

Filed Jan. 24, 1933

Fig. 1.

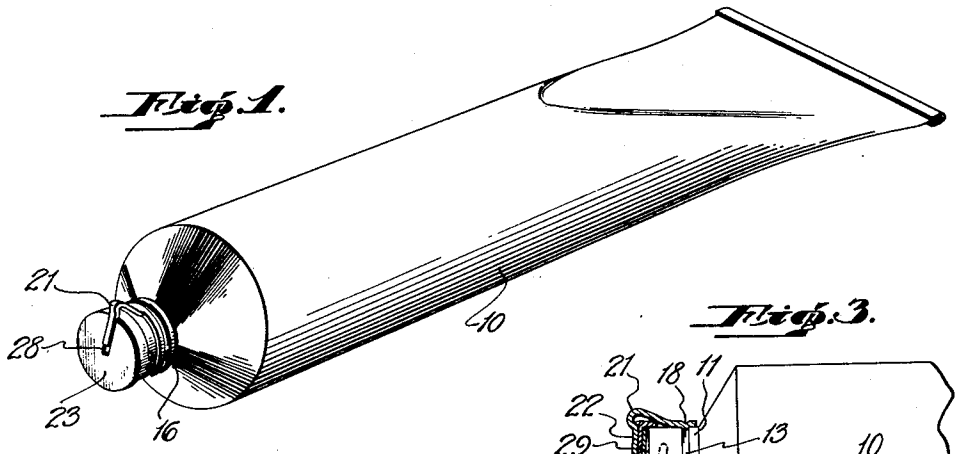


Fig. 3.

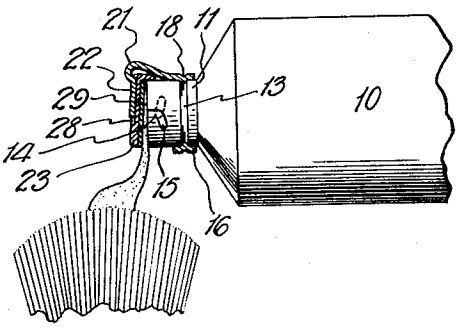


Fig. 2.

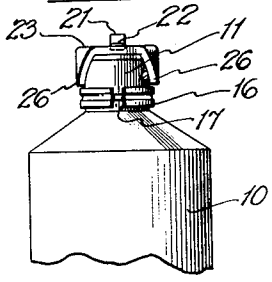


Fig. 4.

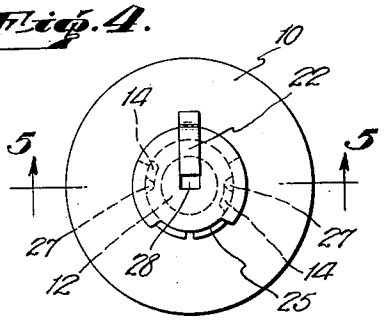


Fig. 6.

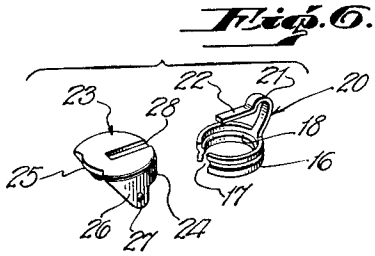


Fig. 7.

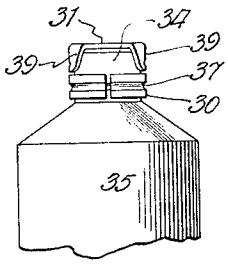


Fig. 8.

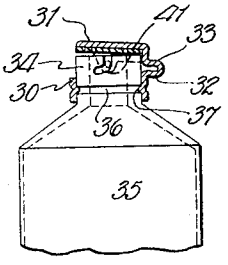


Fig. 5.

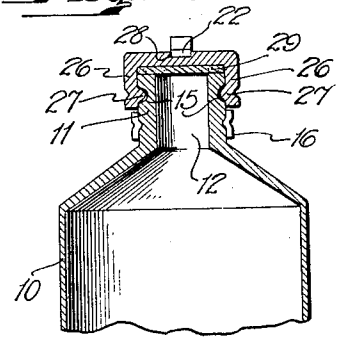
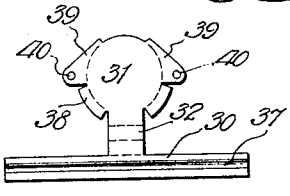


Fig. 9.



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1,951,510

UNITED STATES PATENT OFFICE

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COLLAPSIBLE TUBE CLOSURE

Leo Goldberger, Cedarhurst, N. Y., assignor of one-half to Joseph Simon, Cedarhurst, N. Y.

Application January 24, 1933, Serial No. 653,249

6 Claims. (Cl. 221—60)

This invention relates to collapsible tube closures, and constitutes an improvement over the structure set forth in my copending application, Serial No. 600,296, filed March 21, 1932.

One of the features of the invention resides in a closure cap for attachment to the neck of a collapsible tube, and which automatically opens to dispense a paste like substance upon the compression of the tube contents, and which likewise closes to seal the tube discharge orifice upon release of the compression.

Another feature is to provide an automatic collapsible tube closure which is captively connected to the neck of a tube container, and which when in closed position may be turned to lock the closure against accidental opening during shipment, which opening might otherwise occur causing spillage of the contents.

A further object of the invention is the provision of a collapsible tube closure device which is simple of construction, inexpensive of manufacture, and positive of operation.

With these and other objects in view, the invention resides in the certain novel construction, combination and arrangement of parts, the essential features of which are hereinafter fully described, are particularly pointed out in the appended claims, and are illustrated in the accompanying drawing, in which:

Figure 1 is a perspective view of the invention in use upon a collapsible tube container.

Figure 2 is a fragmentary front elevational view.

Figure 3 is a sectional elevational view showing the closure device in open position.

Figure 4 is an end elevational view with the cap in a closed position.

Figure 5 is a vertical sectional view on the line 5—5 of Figure 4, but showing the cap in locked position against accidental opening.

Figure 6 is a perspective view of the closure cap in separated condition.

Figure 7 is a front view of a modified form.

Figure 8 is a vertical sectional view of the form shown in Figure 7, but illustrating the cap in a partially opened position.

Figure 9 is a plan view of the blank from which the cap of the modified form is constructed.

Referring to the drawing by reference characters, and especially to the preferred form shown in Figures 1 to 6 inclusive, the numeral 10 designates the compressible body of a conventional type of collapsible tube container, one end of the body being provided with a reduced annular neck 11, the outer end of which is flat and opening onto the outer end and communicating with the interior of the body 10 is a discharge orifice 12. The neck 11 is formed with an annular groove 13, and opening onto the outer edge of the neck are diametrically disposed bayonet slots 14, the branches 15 of said slots being angularly disposed and extending in opposite directions as best seen in Figure 3 of the drawing.

Fitting onto the neck 11 is an annular resilient collar or band 16, the same being split as at 17, and provided with an inwardly extending annular rib 18. By providing a split collar, the same may be easily slid onto the neck 11 to cause the rib 18 to seat in the annular groove 13, and due to the resilient nature of the collar, the collar snugly fits the neck and the rib and groove connection permits turning of the collar, but prevents accidental separation of the collar from the neck.

Formed integral with the collar 16 and also of a resilient springy material is a flat spring member 20, the same having a kink or loop 21 formed therein and terminating in a bill or finger 22.

Fitting against the flat open end of the neck 11 is a closure cap 23 having a depending flange 24, the said flange being cut away at the front of the cap as at 25. The cap is also provided with diametrically disposed ears 26 having inwardly extending teats 27 struck therefrom. The outer face of the cap is provided with a groove 28 of a width and depth to freely receive the bill or finger 22 of the spring member 20. After the collar is fixed to the neck of the tube, the closure cap 23 is placed against the open end of the neck and the finger or bill 22 seats in the groove 28 of the closure cap which spring action of the member 20 serves to normally hold the cap in a closed position against the neck 11. The inner end of the cap is provided with a cork gasket 29 to effect a positive sealing of the discharge orifice 12 when the closure cap is in closed position.

When the closure cap 23 is fitted to the neck, the same is applied so that the inwardly extending teats 27 are receivable in the bayonet slots 14 so that by imparting a partial rotation to the cap or collar, the teats may be moved to the angular branches 15 of the said bayonet slots, thus causing the closure cap to be drawn tight against the open end of the neck and to lock the cap against accidental opening during shipment without possible spillage of the contents of the tube. Assuming that the cap is in locked position and it is desired to release the

same for automatic opening, it is only necessary to impart a slight rotation to the cap or band, whereupon squeezing of the body 10 of the tube container will cause a compression of the contents of the tube which compressed contents force the closure cap 23 to the open position shown in Figure 3 against the action of the spring member 20. Thus the contents will flow from the front end 25 of the cap in a ribbon like form. During the opening of the cap, the flange 24 tends to confine the discharge of the contents of the tube to prevent the same from oozing out around the cap and furthermore the said flange acts as a fulcrum on which the cap swings during its pivotal movement. Upon release of the squeezing pressure applied to the body 10, the spring member 20 automatically returns the closure cap to a closed position. If desired, the kinked portion 21 of the spring member 20 may be utilized as a manipulating member for imparting a turning movement to the collar and closure cap when turning the same to locked and unlocked position.

In Figures 7 to 9, inclusive, I have illustrated a slightly modified form of my invention wherein the neck band or collar and closure cap are formed from a single piece of material, the blank being shown in Figure 9 of the drawing. In this form, 30 designates the neck band and 31 the closure cap, the band and cap being connected by a spring portion 32, the same being kinked as at 33 to increase the springy qualities of the same. The neck 34 of the collapsible tube container 35 is formed with an annular groove 36 for receiving the inwardly extending rib 37 formed on the collar or band 30. The cap 31 is constructed similar to the closure cap 23 of the preferred form, with the exception that the slot in the outer face of the cap has been eliminated. The cap 31 includes the side flanges 38 and oppositely disposed ears 39 formed with inwardly extending teats 40. The teats 40 are engageable in oppositely disposed bayonet slots 41 of a construction similar to the slots 14 of the preferred form.

The function of the modified form is substantially indentical to that of the preferred form, and the only difference resides in the fact that the neck encircling collar and cap member are formed integral. The locking of the closure cap in closed position by the bayonet slots and teats 40 is the same as before explained and the manner in which the contents of the tube are dispensed is also the same. The closure cap when in released position will automatically open when the contents of the tube are squeezed or compressed and the said cap automatically closes upon the release of the squeezing action.

Whereas I have shown and described what I deem to be the most practical embodiments of my invention, I wish it to be understood that such changes as come within the scope of the appended claims may be resorted to if desired.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States, is:—

1. In combination, a collapsible tube container having a neck and a discharge orifice opening through the outer end thereof, a closure device comprising a collar turnably mounted on said neck, a cap fitting against the outer end of said neck and turnable with said collar, a spring integral with said collar and acting upon the cap to normally hold the same in a closed position, and releasable cap locking means operable and inoperable upon turning of said cap in opposite directions relative to said neck, said releasable cap locking means comprising angular slots provided in said neck, and inwardly extending elements provided on said cap and disposed in said angular slots.

2. In combination, a collapsible tube container having a neck and a discharge orifice opening in the outer end thereof, a closure device comprising a collar turnably mounted on said neck, a cap turnably fitting against the outer end of said neck, a resilient spring carried by said collar and bearing against said cap to normally hold the same in closed position, and releasable interlocking means between said cap and said neck opeable and inoperable upon the turning of said cap in opposite directions while in a closed position, said releasable interlocking means comprising bayonet slots formed in said neck, and teats formed in said cap and receivable in said bayonet slots.

3. In combination, a collapsible tube container having a neck and a discharge orifice opening through the outer end thereof, a closure device comprising a cap fitting against the outer end of said neck and provided with a flange partially surrounding said neck, a groove provided in the outer face of said neck, a collar mounted on said neck, and a flat spring carried by said collar and freely fitting into said groove.

4. In combination, a collapsible tube container having a neck and a discharge orifice opening through the outer end thereof, a closure device comprising a cap fitting against the outer end of said neck and provided with a flange partially surrounding said neck, a groove provided in the outer face of said cap, a collar mounted on said neck, and a flat spring carried by said collar and freely fitting into said groove, said collar and said cap being turnable relative to said neck, and releasable locking means for securing said cap in closed position.

5. A closure device for collapsible tubes comprising a collar adapted to be mounted upon the neck of a collapsible tube, a spring formed integral with said collar, a closure cap, and a groove provided in the outer surface of said closure cap in which said spring freely fits when said collar is mounted on the neck of a tube whereby said cap is yieldingly retained in closing position.

6. A closure device for collapsible tube containers comprsing a single blank of resilient material cut and bent to provide an attaching collar, a closure disk, a spring loop portion connecting said closure disk to said attaching collar, a flange provided on said closure disk and partially surrounding the same, and inwardly extending diametrically opposed pintles struck out from said flange and adapted to be received in bayonet slots provided in the neck of a collapsible tube container.

LEO GOLDBERGER.