Feb. 23, 1937. R. TOMITA 2,071,867

SELF RETAINING CLOSURE FOR COLLAPSIBLE TUBES

Filed July 8, 1936

Fig. 1.

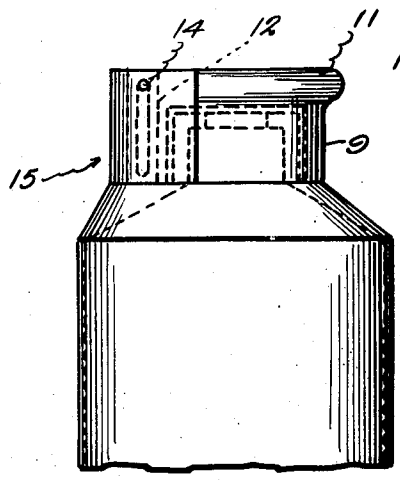


Fig. 2.

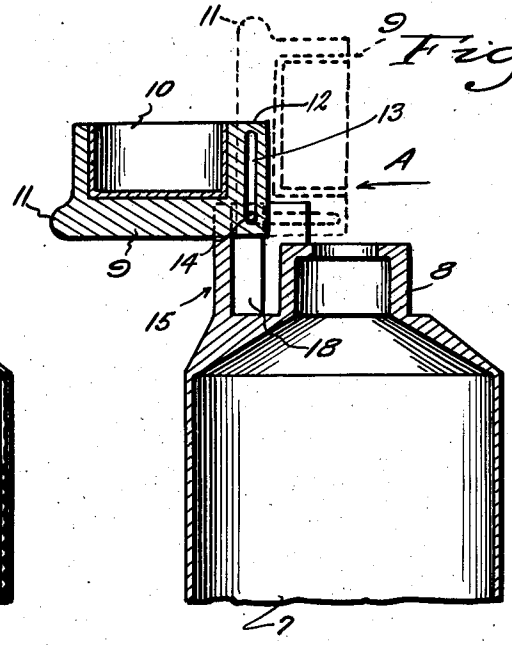


Fig. 3.

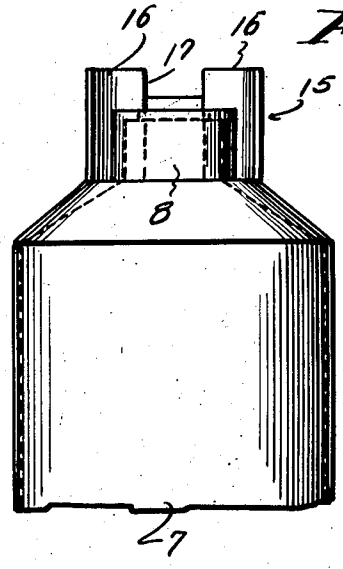


Fig. 5.

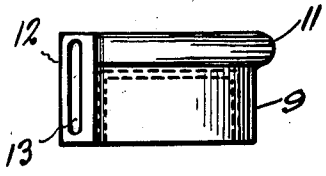


Fig. 4.

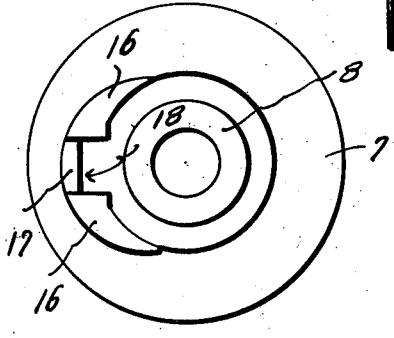
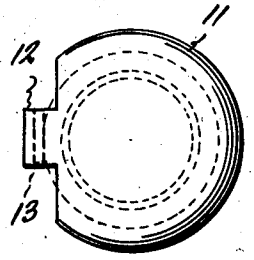


Fig. 6.



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Patented Feb. 23, 1937 2,071,867

UNITED STATES PATENT OFFICE

2,071,867

SELF RETAINING CLOSURE FOR COLLAPSIBLE TUBES

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Application July 8, 1936, Serial No. 89,616

4 Claims. (Cl. 221—60)

This invention relates to the broad classification of closures, and has more specific reference to a unique and distinctively different closing cap for glass bottles and the like, but primarily adapted for use in connection with so-called collapsible tubes of the type used for dispensing shaving cream, toothpaste and similar goods.

There is a long sought need for the provision of an efficient and otherwise adequate closing cap of the type which is permanently attached to the container so as to obviate the use of bodily detachable caps. Admittedly, permanently anchored caps in this line of endeavor are not broadly new. Under the circumstances my primary aim is to generally improve upon known structures of this classification by providing a self-adapting and reliable arrangement more aptly fitted for the purposes intended and otherwise appropriate to accomplish the desired results in a highly practicable and satisfactory manner.

In general terms, the preferred embodiment of the closure comprises a suitable cork or similarly lined cap to fit in a hood-like fashion over a cylindrical discharge neck on the collapsible tube, the cap being of a combined slidable and hinged type to facilitate easy opening and closing, and effective closing, when in its final closed state.

Specifically, the invention relies for novelty on the use of an upstanding concentric arcuate adapter element which is formed with a central guideway having a fulcrum pin fixedly mounted at the upper end thereof, there being a hinged sliding cap provided with a slotted rib cooperable with the guideway and pin in the manner and for the specific purposes hereinafter described.

Other features and advantages of the invention will become more satisfactorily apparent from the following description and the accompanying illustrative drawing.

In the drawing, wherein like numerals are employed to designate corresponding elements or details throughout the views:

Figure 1 is an elevational view showing a collapsible tube equipped with a closure and mounting therefor constructed in accordance with the principles of the present inventive conception;

Figure 2 is a fragmentary sectional view showing the cap and mounting structure a little more in detail and illustrating how the cap is swung up to a predetermined vertical position, after which it may be tilted over on the pivotal connection to horizontal tube-opening position;

Figure 3 is a fragmentary face view, that is, a view observing Figure 2 in a direction from right to left, the cap being removed for clearness of illustration;

Figure 4 is a top plan view of the arrangement depicted in Figure 3;

Figure 5 is a detail elevational view of the special rib-equipped cap per se;

Figure 6 is a top plan view of said cap, which view is based on Figure 5.

Referring now to the drawing by distinguishing reference numerals, it will be observed that the conventional collapsible tube is denoted by the numeral 7. The upper conical end thereof is formed with a centralized, upstanding, cylindrical discharge neck 8 to accommodate the correspondingly shaped closing cap 9. The closing cap 9 is suitably lined, as indicated at 10, and provided with a marginal, outstanding, finger-gripping bead or flange 11 to facilitate operation. One side of the cap is somewhat flattened, as shown in top plan view in Figure 6, and on this side is formed an outstanding rib 12 which is of a length substantially equal to the vertical height of the complete cap as a unit. Said rib is provided with a longitudinal hinging retention and guide slot 13. The slotted rib is slidable and pivotally mounted in a guideway 18 formed centrally in the upstanding arcuate attaching unit 15. This unit 15 may be said to be eccentrically arranged, yet concentric with respect to the discharge neck 8. It rises to a point above the extreme discharge end of said neck where it is centrally notched, as indicated at 17, to define a pair of extensions or furcations. It simultaneously forms a seat or ledge as well as a keeper for the flattened, ribbed side of the cap when the cap is swung to the full line open position shown in Figure 2.

If we assume that the cap is closed, as shown in Figure 1, it is evident that it simply fits down over the discharge neck 8 in a more or less conventional manner. To open it, the user simply catches hold of the bead 11 and pulls the cap bodily upward. At this time the slotted rib 12 rides up in the guideway 18 until the extreme lower end of the slot 13 comes into engagement with the fixed cross-pin 14 in the upper end of said slot. Then a further lift and a side throw-over twist of the cap permits it to be bodily swung through an arcuate path to the open position shown in full line in Figure 2. At this time the hinged end portion thereof rests on the stop-forming shoulder 17. It is evident that to close the cap it is necessary to first lift it up to the approximate dotted line position as shown in Figure 2. Then it is shifted bodily and at right

angles to the direction of the arrow A, at which time the fulcrum pin becomes lodged in the opposite end of the slot, that is, the end opposite to that shown in full line in Figure 2. Continuing to swing the cap around in this arcuate path, it is properly aligned with the neck 8, and it may be dropped bodily down to the closing position, at which time the rib 12 rides down in the aforementioned accommodation groove 18.

It is believed that the foregoing gives a sufficiently comprehensive statement of the invention, specifically and broadly, to enable a clear understanding to be had of the novelty as well as the hereinafter asserted claims defining said novelty.

I claim:

1. In a structure of the class described, a collapsible container having a centrally disposed projecting discharge neck substantially cylindrical in cross sectional form, an integral adapted member mounted on the container in eccentric relation with respect to said neck, said adapter member extending beyond the discharge end of the neck and being provided with a retaining and fulcrum pin located beyond said discharge end, a cap including a rim portion fitting telescopically over said neck, said rim portion being provided with a slotted rib having slidable and pivotal connection with said pin, said slot constituting stop elements in conjunction with the pin so as to allow the cap to be lifted from closed position and bodily slid on the pin to occupy an out of the way open position.

2. In a structural assemblage of the class described, a collapsible tube embodying a central discharge neck cylindrical in cross sectional form, a segmental eccentrically disposed adapter member mounted on the tube for coaction with said neck, said adapter member extending beyond the discharge end of the neck and being provided with a channel-shaped groove, a stop and fulcrum pin mounted in said groove at a point outwardly of the extreme discharge end of said neck, a cap including a rim fitting over the discharge neck, said rim having a rib slidable in said groove, and said rib having a longitudinally elongated slot through which said pin extends in the manner and for the purposes described.

3. In a structure of the class described, in combination, a container having a discharge neck formed on one side with an upstanding arcuate concentrically arranged adapter, said adapter being bifurcated between its vertical ends and formed on its inner side with a vertical guideway, a fixed retention and hinge pin in said guideway, and a closing cap, said cap having a marginal longitudinally slotted rib workable in the guideway and pivotally attached to said pin.

4. In a structure of the class described, a container having a centralized discharge neck, an integral segmental adapter member disposed on one side of said neck and located in approximate concentric relation thereto, said adapter being formed with a groove constituting a vertical guideway, and further having a keeper notch in registry with said guideway, a rigid anchoring guide pin mounted in the outer end portion of said guideway, a cap adapted to fit completely over said neck, said cap being provided with a marginal longitudinally slotted rib, said rib being pivotally connected with said pin and cooperable progressively with the keeper notch and guideway in the manner and for the purposes described.

RIOE TOMITA.