May 19, 1936. G. LEONARD 2,041,252

CLOSURE DEVICE

Filed March 2, 1934

FIG. 1.

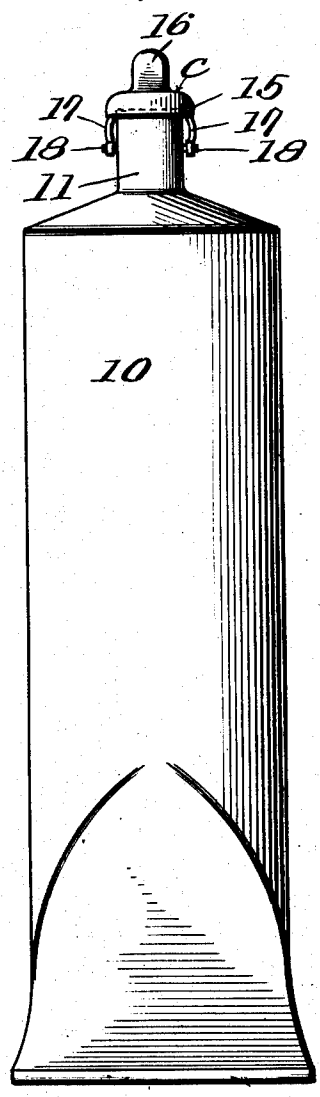


FIG. 2.

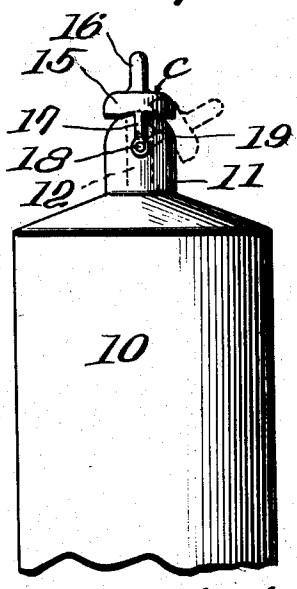
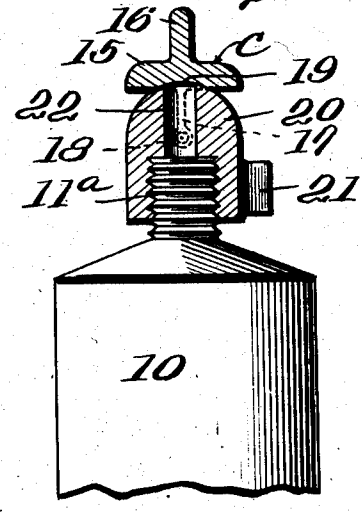


FIG. 3.



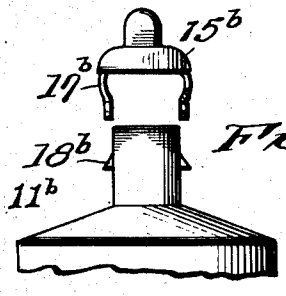


FIG. 4.

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CLOSURE DEVICE

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3 Claims. (Cl. 221—60)

This invention is a closure device for containers such as collapsible tubes, although not limited to this particular use.

Collapsible tubes for containing tooth paste, shaving cream, unguents, paints and the like, are usually closed by removable screw threaded caps. Such caps are constantly becoming lost, or if hurriedly replaced after removal, the threads frequently become crossed and make future removal difficult.

One of the objects of the invention is to provide a closure for containers of the type mentioned which will avoid the annoyances above referred to. A further object is to provide a closure which is so attached to the container, adjacent the mouth thereof, as to be easily manipulated to close and unclose the outlet of the container and yet not become separated from the container.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawing:—

Figure 1 is a side elevation conventionally illustrating a standard type collapsible tube with the invention applied thereto. Figure 2 is a fragmentary view at right angles to that of Figure 1, the dotted lines showing the closure in open position. Figure 3 is a detail view illustrating a slight modification. Fig. 4 is a side elevation of another modification.

Referring to the drawing, 10 designates a collapsible tube of any preferred form and adapted to contain any desired material, the same being provided with a reduced neck portion 11 through which the contents of the container are forced by collapsing the tube. The outer extremity of said neck is preferably curved as shown and is provided with a discharge orifice 12.

The closure C consists of a body member 15 provided with a flattened finger piece 16 and spaced apart resilient arms 17, which straddle the neck 11 and snap over the pins 18. It will be observed that the arms 17 are slightly bowed outwardly so that their resiliency tends to draw the closure C in an axial direction with respect to the orifice 12, thereby maintaining a tight frictional engagement between the closure and the neck while the parts are in closed position.

In practice, the closure member C is normally maintained in closed position over the orifice 12, the body 15 having its lower portion curved as indicated at 19 on an arc complemental to the curved end of the neck 11. The resiliency of the arms 17 is such as to maintain a frictional engagement between the member C and the discharge portion of the neck, in any adjusted position. By pushing against the hand piece 16 the closure may be so moved as to uncover the orifice 12, so that the contents of the container may be squeezed out in the usual way. After the desired amount is removed the container is closed by again moving the closure to the position indicated in Figure 1.

In the modification shown in Figure 3, a support member 20 is provided with an internal threaded portion complemental to the threaded neck 11^a of the standard type collapsible tube, wings 21 being provided to permit of the same being readily screwed upon the neck of the tube in lieu of the usual cap. Said support member is provided with an opening 22 which coincides with the outlet bore of the neck of the tube. Pivotally supported to the member 20 is a closure member C which is identical in all particulars to that illustrated in Figure 1.

In the form illustrated in Figure 4, the neck 11^b is provided with angular lugs 18^b over which the resilient arms 17^b may be snapped, said arms having suitable openings to receive the lugs and to permit the arms to pivot thereon.

The advantages of the invention will be readily understood by those skilled in the art to which it belongs. For instance, it will be particularly noted that the closure is always attached to the container and will not readily become lost, and yet the contents of the receptacle are prevented from accidental escape while the closure is in its operative closed position. It will be observed that in the forms illustrated in Figures 1 and 2, the neck of the receptacle is provided with an outer extremity of approximately semi-circular form, the curvature being on an arc having its center in approximately the same plane as the lugs 18, and that the longitudinal median line of the semi-circular portion coincides with a transverse diameter which lies intermediate between the lugs. The structure is practically the same in Figures 3 and 4, the arrangement being such that the resilient spring arms 17, by reason of the complemental shape of the recess 19, serve to maintain a constant frictional pressure between the recess portion of the cap and the semi-circular extremity of the neck or the carrier member, as the case may be. By reason of this frictional engagement, the cap may be held at any adjusted position within the range of its pivotal movement, because the tension of the spring arms is the same at all times during such movement.

Having thus explained the nature of the invention and described an operative manner of constructing and using the same, although without

attempting to set forth all of the forms in which it may be made, or all of the forms of its use, what is claimed is:—

1. The combination with a collapsible tube having a reduced neck provided with an axial bore, diametrically disposed lugs projecting outwardly from said neck, the outer extremity of the neck being of smooth arcuate contour, the center of the arc being in the same plane as said lugs, the longitudinal median line of said smooth arcuate portion being in the same plane as a transverse diameter of said neck crossing midway between said lugs, a closure member having its under face provided with an arcuate portion of relatively small area and complemental to the curvature of the extremity of said neck, and slidably engaging the surface of the latter, and spaced apart resilient arms carried by said closure member and lying close to said neck, said arms having removable pivotal engagement with said lugs, said arms and the complemental portions of the cap and the neck being so constructed and arranged as to provide sufficient friction to maintain said cap in any adjusted position within the range of its pivotal movement.

2. The combination with a collapsible tube having a reduced neck provided with an axial bore, diametrically disposed lugs of angular cross section projecting outwardly from said neck, the outer extremity of the neck being of approximately semi-circular form on an arc having its center at the same plane as said lugs, the longitudinal median line of said semi-circular portion being in the same plane as a transverse diameter of said neck lying midway between said lugs, a closure member having its under face provided with an arcuate portion of relatively small area and complemental to the curvature of the extremity of said neck and slidably engaging the surface thereof, and spaced apart integral arms depending from said cap, said arms being slightly bowed but lying close to the neck, the ends of said arms having openings for removable pivotal engagement with said lugs, said arms and the complemental portions of the cap and neck being so constructed and arranged as to provide sufficient friction to maintain said cap in any adjusted position within the range of its pivotal movement.

3. The combination with a collapsible tube having a reduced exteriorly threaded neck provided with a discharge orifice, a carrier member of circular cross section having a threaded bore complemental to the threaded portion of said neck and having an orifice coinciding with the orifice of the neck, diametrically disposed lugs projecting outwardly from said carrier member, the outer extremity of the carrier member being of approximately semi-circular form on an arc having its center in the same plane as said lugs, the longitudinal median line of said semi-circular portion being in the same plane as a transverse diameter of said carrier member lying midway between said lugs, a closure member having its under face provided with an arcuate portion of relatively small area and complemental to the curvature of the approximately semi-circular portion of said carrier member and slidably engaging the surface thereof, and spaced apart resilient arms connected to said closure member and lying close to said neck, said arms having removable pivotal engagement with said lugs, said arms and the complemental portions of the cap and the neck being so constructed and arranged as to provide sufficient friction to maintain said cap in any adjusted position within the range of its pivotal movement.

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