May 14, 1929. G. W. FULLERTON 1,713,043

CONTAINER

Filed Oct. 11, 1926

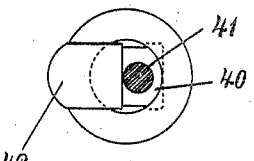


FIG 10

FIG 8

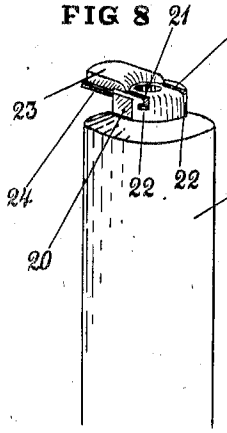


FIG 1

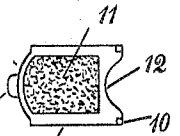


FIG 2

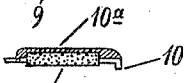


FIG 3

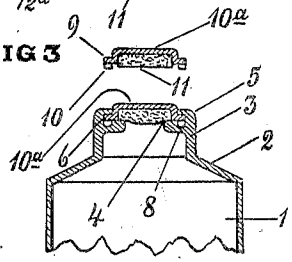
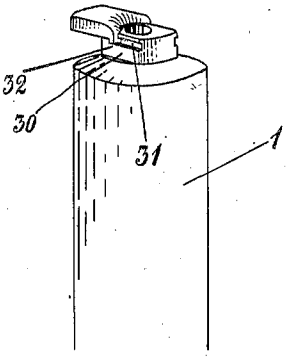


FIG 4

FIG 9



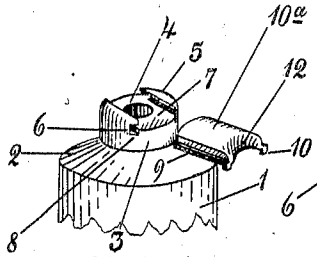


FIG 5

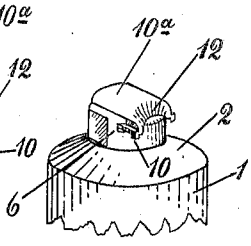


FIG 6

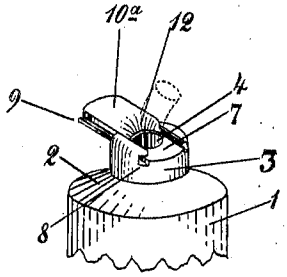


FIG 7

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Patented May 14, 1929. 1,713,043

UNITED STATES PATENT OFFICE.

GEORGE W. FULLERTON, OF CINCINNATI, OHIO.

CONTAINER.

Application filed October 11, 1926. Serial No. 140,735.

My invention relates to the provision of closure for collapsible tubes such as are used largely in the trade for tooth paste, artists paints, medicinal compounds, glue and library paste and the like. My invention is not limited, however, to tubes of which the body is collapsible.

It is my object to provide a closure which can be readily formed in a die, and which is simple to operate and will not be removed in use, but only opened by a simple sliding motion. It is further my object to provide a simple mode of sealing the opening in the neck of the tube utilizing the soft nature of the metal of the neck and cap to establish a frictional grip between the parts, with sufficient resilience in the sealing member to insure a tight fit over the top of the tube.

One of my main objects is to do away with the threaded cap of the prior art, and to permit the partially sliding cap, thus accomplishing the advantage of non-removability, by cutting out the sliding cap into a partial circle, thus exposing the circular opening in the tube fully, without moving the slide away from the tube. Also, the cut away portion is an indication to the user of the side of the sliding cap that he should push against in opening the tube.

I show several modes of accomplishing my objects, and will specifically describe each, and point out the novelty therein, which novelty will be stated in the appended claims.

In the drawings:—

Figure 1 is a bottom plan view of the preferred form of cap.

Figure 2 is a central longitudinal section of the cap.

Figure 3 is a central cross section thereof.

Figure 4 is a like section to Figure 3, taken through the upper end of a tube with the cap in place.

Figures 5, 6 and 7 are perspectives showing the tube, neck and cap in their various positions.

Figures 8 and 9 are perspectives of two modifications of the preferred form taken with the cap in the same position as in Figure 7.

Figure 10 is a diagram showing how the structure of my invention could be modified to accomplish my objects without having the cut in edge of the sliding cap, namely, by offsetting the mouth of the tube neck.

I have illustrated a collapsible tube at 1, with the top 2 terminating in a central neck 3, the orifice or mouth thereof being indicated at 4. In the preferred form of device, in forming the neck of the tube, suitable dies are provided to form two opposed ribs 5 along the top edges of the neck, which are undercut to form grooves 6. Also the top face 7 of the neck is formed with a pair of grooves 8 below the grooves or channels 6, said grooves terminating part of the way across the cap, in such a position as to control the point of removal of the cap from the mouth, in use of the tube as will become apparent as the description proceeds.

The cap itself is formed of a stamping or died out piece of metal having the flanges 9 to fit into a slide in the grooves 6, and said flanges will terminate at one end of the cap with the tongues or tips 10, which will depend into the channels or grooves 8, when the main flanges lie in the grooves 6 of the tube neck.

The cap has a recessed body 10^a, such that a piece of cork 11, or some other suitable sealing element, can be cemented into the cap and will ride over the flat top of the tube neck. If desired, the tongue 12^a may be formed on the cap and bent down after the tube is filled to prevent removal of the cap.

In use, as illustrated in Figures 5, 6 and 7, when the tube is filled, the cap is slid into place (Fig. 6) in such a position that the cork member will be compressed over the flat top of the tube neck and will project into the mouth of the tube as illustrated in Figure 4. The cork should be thick enough to accomplish this.

The one end of the cap is formed in a concave curve, as indicated at 12. The user, when he wishes to employ the contents of the tube, slides the cap by pushing against the concave end thereof to the position shown in Figure 7. This is as far as he can push the cap, because the tongues 10 will come to the ends of the grooves 8. At this position, the concave of the cap will clear the circular mouth of the tube neck, and the contents of the tube will be free for being extruded by a collapsing of the tube.

When the user desires to close the tube again, he presses against the projecting end of the cap, and thrusts it as far as the finger will apply pressure when set against its edge, and this will bring the cap to fully closed position as shown in Figure 6.

It will be noted that the metal of the tube neck and of the cap will be soft, as is the practice in the collapsible tube art, and that the friction of the metals on each other will keep the cap from falling off, as will also the extra thickness of the sealing cork.

As shown in Figure 8, the grooves may be formed without any ridges along the edges of the neck. Thus the neck 20 of Figure 8 may be formed with suitable dies to have the channels 21, 21, and the under cut partial channels 22, 22. The cap will then have, as shown, the same main body portion 23, with the cork sealing member, and the same lateral ribs 24, to slide in the channels 21. The added tongues for controlling the position of the cap and preventing its being removed when in use, will project into the partial under cut grooves, thus extending laterally, instead of depending, as in the preferred form.

Or as in Figure 9, the channel may be formed by making the neck of the tube flat at the sides as indicated at 30, into which sides are cut the partial channels 31. The cap will be formed so as to cover the neck and depend over its sides, and will have merely the tongues 32, which engage in the partial grooves or channels 31. In this form, the tongues serve the double function of holding the cap down, and preventing its being shifted to a position in one direction, far enough to fall away from the neck.

In Figure 10, the diagram shows the top of the neck of the tube at 40 and the mouth in the neck at 41. The mouth is offset from the center of the neck, and thus the cap 42, which may be mounted in any one of the ways described, does not require to be concavely indented at its one end in order to clear the mouth when only partially slid along the top of the neck.

It will be evident that my invention embraces certain distinct features common to all forms shown, and that other parallel ways of working out the particular problem involved, come within the scope of my invention. In all of my forms, however, the sliding cap will be used, which is of particular advantage in collapsible tubes, since the sliding of the cap keeps the top of the neck clean at all times, and acts to preserve a self-cleaned seat, thus preventing accumulation of solidified material in the mouth of the tube.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In combination, a collapsible tube having a neck with a mouth communicating with said tube, channels in said neck, a cap, means on said cap to engage said channels, said channels being terminated so as to block said means on the cap thus preventing removal of the cap from the neck in one direction and being open in the other direction, said cap being so shaped as to clear the mouth in the neck when moved until the said means on the cap are blocked from further movement in the channels.

2. In combination, a container having a neck with a mouth communicating with said container, a closure cap, said neck having channels therein, open at one end for insertion of the cap, means on the cap to engage the channels, so that the cap will slide thereon, said channels being terminated at one side of the neck at least sufficiently to block removal of the cap therefrom, and said cap having means thereon arranged to be bent down so as to engage the neck, on the side opposite to the open end of the channels thus preventing removal of the cap from the neck at the open end of the channels.

3. In combination, a container having a neck with a mouth communicating with said container, channels in said neck, a cap, means on said cap to engage said channels, said channels being terminated so as to block said means on the cap thus preventing removal of the cap from the neck in one direction and open in the other direction, said cap being so shaped as to clear the mouth in the neck when moved until the said means on the cap are blocked from further movement in the channels.

GEORGE W. FULLERTON.