Sept. 21, 1926. 1,600,718

F. F. B. CHAPMAN

COLLAPSIBLE TUBE

Filed April 22, 1926

Fig. 1

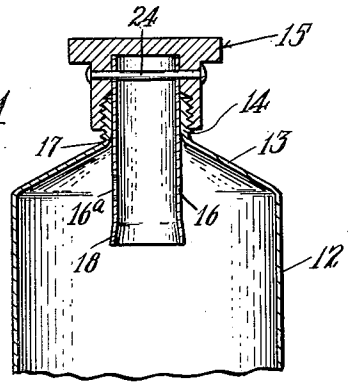


Fig. 2

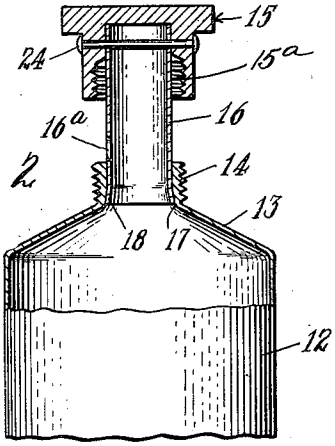


Fig. 3

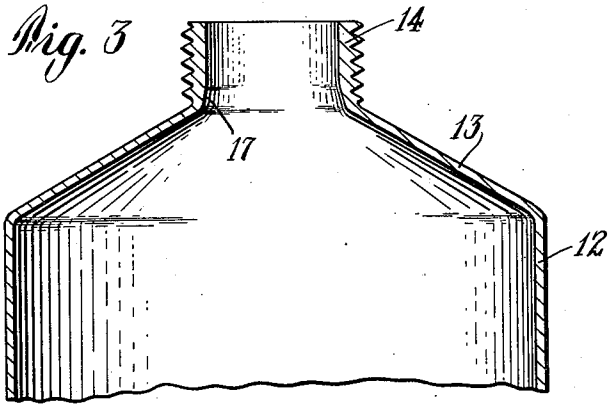


Fig. 4

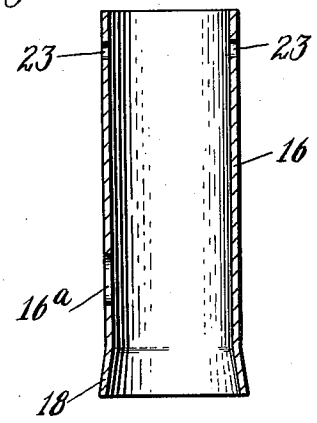
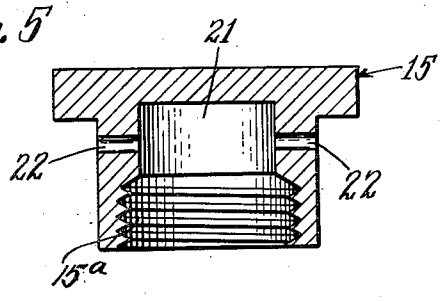


Fig. 5



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UNITED STATES PATENT OFFICE.

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COLLAPSIBLE TUBE.

Application filed April 22, 1926. Serial No. 103,784.

This invention relates to a collapsible tube charged with plastic material such as tooth paste, and provided with a rigid externally threaded mouth and an internally threaded cap adapted to be screwed upon the mouth and close the bore thereof, a collapsible tube thus characterized being a well known article of manufacture.

The chief object of the invention is to prevent the loss of the cap when it is unscrewed from the mouth, and the well known disadvantages resulting from such loss.

I attain this object by attaching to the cap one end of an inner tube which extends through and is longer than the mouth bore and is movable in the bore and provided with a lateral dispensing outlet between its ends, and is formed at its inner end to cooperate with stop means in the mouth to limit outward movement of the inner tube, the inner tube rotating with the cap when the latter is being screwed on and off the mouth, and being movable outward by the unscrewed cap to an extent limited by said stop means, so that the dispensing outlet is exposed and the inner tube constitutes at once a dispensing conduit and a cap confiner preventing loss of the cap.

Of the accompanying drawings forming a part of this specification,—

Fig. 1 is a sectional view of a portion of a collapsible tube embodying the invention, the mouth being closed;

Fig. 2 is a view similar to Fig. 1, showing the mouth open;

Figs. 3, 4 and 5 are enlarged sectional views of the collapsible tube, the inner tube and the cap.

The same reference characters designate the same parts in all of the figures.

The wall 12, the breast 13, and the mouth 14 shown by the drawings are constructed as usual in collapsible tubes, the mouth being rigid and provided with an external screw thread and a smooth bore. The cap 15 is adapted in the usual way to be screwed to the mouth and close the bore thereof, the cap being provided with an internal screw-thread 15^a to engage the external thread of the mouth.

In carrying out my invention I attach to the cap 15 one end of a separately formed inner tube 16 which is preferably of aluminum. The inner tube is longer than the neck 14, and has a sliding fit in the bore thereof. Between the ends of the inner tube is an orifice 16^a constituting a dispensing outlet. The mouth 14 is provided with stop means preferably formed by a tapered zone 17 forming the inner end portion of the bore, the greatest diameter being at the inner extremity of the bore. The inner end of the inner tube 16 is provided with stop means adapted to cooperate with the stop means in the neck in limiting outward endwise movement of the inner tube, the stop means on the inner tube being preferably a tapered enlargement 18 of the inner end portion of the tube, adapted to abut against the tapered zone 17 of the mouth bore as shown by Fig. 2.

When the cap is screwed upon the mouth, the inner tube projects into the collapsible tube as shown by Fig. 1. When the cap is unscrewed, the inner tube rotates with it. The length of the inner tube is such that after the cap is unscrewed the cap and the inner tube are movable outward to the position shown by Fig. 2, this movement exposing the dispensing outlet 16^a so that plastic material in the collapsible tube may be forced through the inner tube and outlet. The inner tube and cap are prevented by the stop means from moving outward from the position shown by Fig. 2, so that the inner tube constitutes a confiner preventing loss of the cap. The stop means formed by the tapered bore zone 17 and the tapered enlargement 18 of the inner tube permits the location of the inner end portion of the inner tube wholly within the neck bore when the inner tube is in dispensing position, so that the last remnant of the charge in the collapsible tube may be forced into the inner tube, none being left unused in the collapsible tube.

The cap 15 is preferably provided with a central recess 21 of smaller diameter than the internal thread 15^a, said recess receiving and closely fitting the outer end portion of the inner tube, and with orifices 22 in the wall of said recess. The outer end portion of the inner tube is provided with orifices 23 coinciding with the orifices 22. The inner tube may therefore be attached to the cap by a pin 24 forced into said orifices. The pin may be removable so that after the collapsible tube is exhausted the inner tube may be disconnected from the cap and drawn inwardly from the mouth bore, the collapsible tube being cut away or

opened at its inner end to permit this. The inner tube and cap may then be assembled with another collapsible tube, so that the inner tube and cap are not necessarily discarded when the life of the collapsible tube to which they were originally applied is ended.

I claim:

1. A collapsible tube having a rigid externally threaded smooth bored mouth, an inner tube longer than the mouth and having a sliding fit therein, the inner tube having a lateral dispensing outlet between its ends, the mouth and inner tube being provided with stop means limiting the outward movement of the tube and permitting the outward projection of the tube from the mouth, a cap formed separately from the inner tube and provided with an internal screw thread formed to engage the external thread of the mouth, and with an internal central recess of smaller diameter than the internal thread, and formed to receive the outer end portion of the inner tube, and means for retaining the inner tube in said recess and causing movement of the inner tube with the cap.

2. A collapsible tube as specified by claim 1, the said stop means being embodied in a tapering enlargement of the inner end portion of the mouth bore, and a tapering enlargement of the inner end portion of the inner tube adapted to enter the bore enlargement, the arrangement being such that when the tube enlargement is in the bore enlargement the inner tube is wholly within the neck bore outside the storage space in the collapsible tube and adapted to receive the last remnant of a charge therein.

3. A collapsible tube having a rigid externally threaded smooth bored mouth, an inner tube longer than the mouth and having a sliding fit therein, the inner tube having a lateral dispensing outlet between its ends, the mouth and inner tube being provided with stop means limiting the outward movement of the tube and permitting the outward projection of the tube from the mouth, a cap formed separately from the inner tube and provided with an internal screw thread formed to engage the external thread of the mouth, and with an internal central recess of smaller diameter than the internal thread, and formed to receive the outer end portion of the inner tube, the cap being provided with a pin inserted in coinciding orifices in the recess wall of the cap and the inner tube, and separably attaching the latter to the cap.

In testimony whereof I have affixed my signature.

FRANK F. B. CHAPMAN.