W. P. BURBAGE.

CLOSURE FOR COLLAPSIBLE TUBES.

APPLICATION FILED APR. 29, 1916.

1,229,029. Patented June 5, 1917.

Fig. 1.

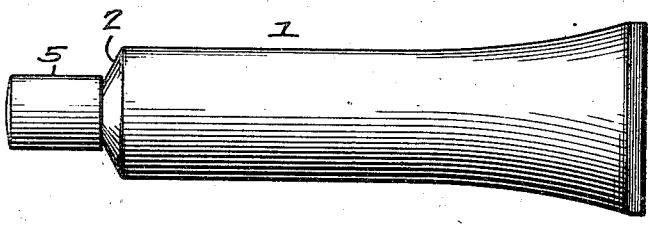


Fig. 2.

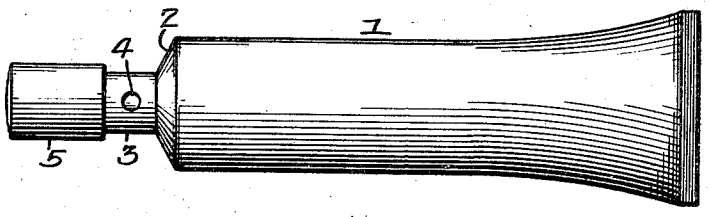


Fig. 3.

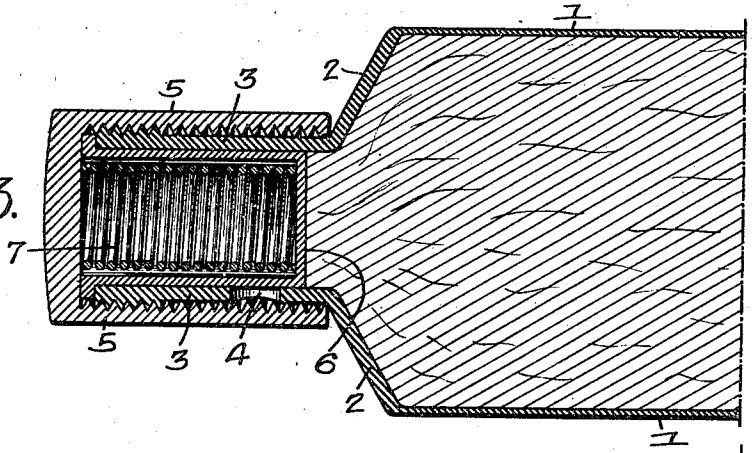
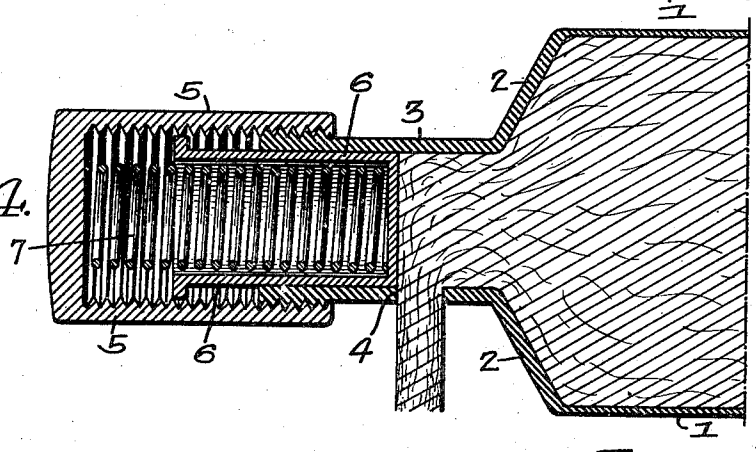


Fig. 4.



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CLOSURE FOR COLLAPSIBLE TUBES.

1,229,029. Specification of Letters Patent. Patented June 5, 1917.

Application filed April 29, 1916. Serial No. 94,437.

To all whom it may concern:

Be it known that I, WILLIAM P. BURBAGE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented a Closure for Collapsible Tubes, of which the following is a specification.

One object of my invention is to provide a device which shall automatically act to close the delivery opening of a container such as those commonly used to hold tooth paste, shaving cream and the like;—the arrangement of parts being such that the likelihood of contamination of the contents or of the structures adjacent said delivery opening by dirt, etc., shall be reduced to a minimum.

I further desire to provide an automatically acting device for use with manually collapsible tubes of the general character above noted which, in addition to including a valve opened by pressure exerted on the contents of the tube by compression of the body thereof, shall possess a cap whereby the delivery opening may be covered after said valve has automatically acted to cut off communication between it and the interior of the tube.

Another object of the invention is to provide a form of sanitary closure in which the various parts are so arranged as to effectually prevent contamination of the device in the vicinity of the delivery opening.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which,

Figures 1 and 2 are elevations of a collapsible tube showing the cap in its closed and open positions respectively; and

Figs. 3 and 4 are longitudinal sections of the tube on an enlarged scale, showing its interior parts in the positions occupied respectively before and while pressure is exerted on the collapsible tube.

In the above drawings 1 represents a container which in the present instance has the form of a tube of metal foil provided at one end with a head 2 made of comparatively stiff metal and having its other end rolled up to a greater or less extent depending upon the quantity of material which it contains. Mounted on and forming a continuation of the head 2 is a tubular projection 3 forming a nozzle having a delivery opening 4 in one side and externally threaded adjacent its outer extremity. Mounted on this nozzle is an internally threaded cap 5 which when screwed onto it as far as possible, closes or extends over the delivery opening 4, the inner edge of said cap being preferably bent or projected inwardly to a greater or less extent so as to prevent its complete removal from the nozzle 3, although permitting it to be unscrewed to the position shown in Fig. 2.

Mounted within the cylindrical passage in the nozzle, is a valve in the shape of a cylindrical plunger 6 normally forced inward by a spring 7 toward the comparatively narrow neck at the inner end of said passage;—it being noted that this valve normally occupies such a position as to completely cut off communication between the interior of the container 1 and the delivery opening 4. If, however, it be desirable to secure some of the plastic or viscous material from within the container 1, the cap 5 is unscrewed to the position shown in Fig. 2, thus uncovering the opening 4.

If now sufficient pressure be exerted on the walls of the tube 1, the resulting pressure transmitted through the material in said tube to the piston or valve 6 will cause this to move outwardly in the nozzle against the action of the spring 7 until it uncovers the delivery opening 4, whereupon the material will be discharged in the form of a ribbon, etc., through said opening, depending upon its outline. When sufficient of the paste or other material has been secured, the pressure on the tube is stopped, whereupon the pressure of the spring 7 on the valve 6 forces this inwardly so that it covers the opening 4, the more or less flexible walls of the tube yielding sufficiently to permit of the entrance of the paste, etc., from the nozzle 3 under the action of the valve.

Thereafter the cap 5 may be again screwed on the nozzle into position to cover the delivery opening, so that not only is there no possibility of dirt or foreign material getting into said opening so as to contaminate the contents of the tube, but in addition the cap effectually prevents such foreign material coming into contact with and adhering to the external surface of said nozzle 3 in the vicinity of the opening.

When the device is in frequent use, the cap is allowed to remain in its outer position and the automatic valve is depended upon to normally close the delivery opening.

Obviously the moving of the cap 5 to its inner or closed position so holds the plunger

and spring that it is impossible for said plunger to be forced into such a position as to uncover the delivery opening 4 before the cap is unscrewed, although the moving outwardly of said cap so lessens the force exerted by the spring 7 that the ordinary pressure used in collapsing the wall of the tube is sufficient to drive the valve back against the action of said spring.

I claim;—

1. The combination of a container having a collapsible wall and a nozzle formed with a side delivery opening; a plunger slidable in the nozzle; a cap movable to cover or uncover the opening at will; a spring operative between the plunger and said cap; and means for preventing the plunger from moving out of the nozzle into the container.

2. The combination of a container having a collapsible wall and a nozzle formed with a side delivery opening; a plunger slidable in said nozzle under the pressure exerted by the contents of the container when its wall is collapsed to uncover the opening; means on the plunger for preventing it from passing out of the nozzle into the container; a cap mounted on the nozzle and movable to cover or uncover the delivery opening at will; and a spring operative between the plunger and the cap.

3. The combination of a container having a collapsible wall and an externally threaded nozzle having a side delivery opening; a sleeve slidably mounted in the nozzle, closed at its inner end and having an outwardly extending flange at its outer end whereby it is prevented from moving out of the nozzle into the container; a cap threaded on the nozzle and of a length capable of being screwed up to cover the delivery opening at will; with a spring mounted between the closed end of the sleeve and the cap.

WILLIAM P. BURBAGE.