K. D. BRYSON.

COLLAPSIBLE TUBE.

APPLICATION FILED AUG. 14, 1913.

1,123,989. Patented Jan. 5, 1915.

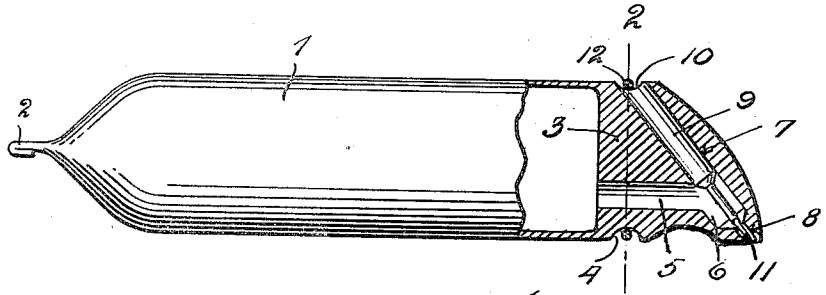


Fig. 1.

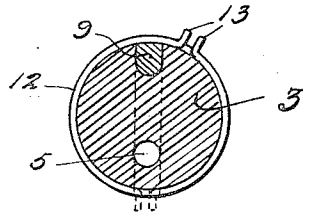


Fig. 2.

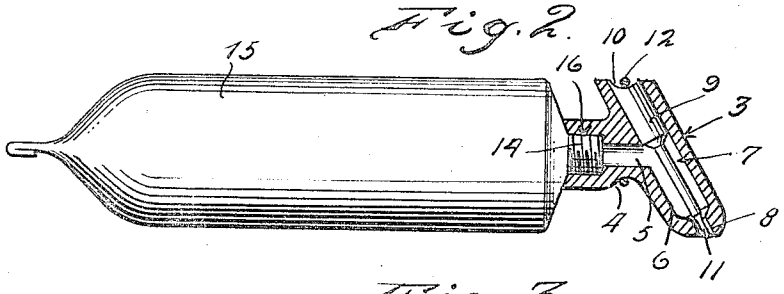


Fig. 3.

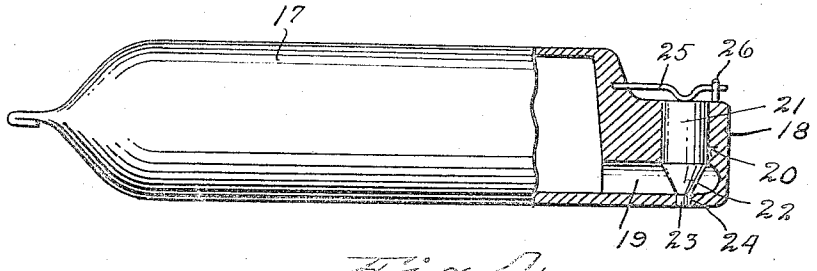


Fig. 4.

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COLLAPSIBLE TUBE.

1,123,989. Specification of Letters Patent. Patented Jan. 5, 1915.

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To all whom it may concern:

Be it known that I, KENNETH D. BRYSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Collapsible Tubes, of which the following is a specification.

My invention relates to collapsible tubes particularly adapted for the reception and dispensing of pasty or semi-fluid materials for toilet, surgical and other purposes, such as dental paste, cold cream, vaseline, paste, salves, etc.

Considerable has been done in this art, but heretofore the usual tube has been provided with either a screw cap closure, or a removable pin or plug. These various and well known forms have many obviously objectionable features. One is that the cap or pin must be removed manually before the contents of the tube can be discharged thus involving delay and annoyance. Furthermore the cap or pin is liable to be dropped whereupon it would collect dirt and germs, and also after the desired amount of the contents has been removed, a certain additional amount will exude from the tube causing a messy condition of the tube.

The object of my invention is to obviate these diagreeable features and to provide a collapsible tube having an improved nozzle which will automatically discharge the contents without any manipulation of the discharge end when pressure is applied to the tube, and which will automatically close when the pressure is removed leaving the end clean, and which also may be locked so that the contents cannot be accidentally discharged while in transportation or while in the pocket or traveling bag.

Other objects and advantages such as simplicity, efficiency, durability, inexpensiveness in manufacture and the general improvement of the art will be carefully brought out in the following specification and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of my tube showing the discharge nozzle in section, Fig. 2 is a cross sectional view thereof on the line 2—2 of Fig. 1, Fig. 3 is a view similar to Fig. 1 showing my novel form of nozzle adapted for connection with an ordinary tube provided with a threaded nipple, and Fig. 4 is a view similar to Fig. 1 of a modified form of the device.

Referring more particularly to the drawings and especially to the showing of Fig. 1, the numeral 1 designates a collapsible tube of pliable metal, rubber or other suitable material, which is closed at its end 2 in the usual manner. At its other end, the tube 1 is provided with a thickened portion 3 having an annular groove 4 formed therein. The portion 3 is also provided with a bore 5 and a cut out portion 6 communicating with a laterally inclined passage 7 which merges at one end into a reduced opening 8. A discharge plunger 9 is disposed within the passage 7 and is provided at its outer end with a groove 10 conforming with the groove 4, and is further provided at its inner end with a reduced extension 11 fitting within the opening 8. The plunger 9 is maintained in its normal position shown in Fig. 1 by a spring 12 disposed in the annular groove 4 and which is split and provided with outwardly extending lugs 13. The operation of this form of the device is as follows: The tube 1 having been filled with the proper material in order to discharge the contents upon a finger, toothbrush or other desired situation, it is merely necessary to press upon the tube, whereupon the material will be forced through the bore 5 and into the cut out portion 6 where it will press against the plunger 9. This pressure upon the inclined plunger will force it rearwardly against the resistance of the spring 12, thus allowing material to pass from the tube. As soon as the pressure on the tube 1 is removed, the spring 12 will force the plunger 9 inwardly, thus automatically cutting off the flow of material.

In order to lock the device to prevent the material from being discharged it is merely necessary to turn the spring 12 partly around the portion 3 by pulling upon the lugs 13. This movement will dispose the split in the spring at a point diametrically opposite the rear end of the plunger 9, thus preventing the spring from yielding and holding the plunger 9 rigid. This locked position is indicated by dotted lines in Fig. 2.

In Fig. 3 I have illustrated my improved

nozzle construction adapted for connection with the screw-threaded nipple 14 of an ordinary form of tube 15. In this form the portion 3 and its associated parts are made separate from the tube, and the portion 3 is provided with a screw-threaded recess 16 adapted to be threaded upon the nipple 14, and having the bore 5 in alinement with the orifice of the tube 15. The operation of this form of the device is identical with that of the form previously described. It will be observed that in this form the material of the portion 3 extending around the plunger 9 extends outwardly quite a distance from the center of the bore 5, thus making it a simple matter to discharge the contents of the tube quickly and accurately upon the desired situation and giving the device a pencil-like adaptability.

In Fig. 4 I have shown a modified form of the device. In this form the tube 17 is provided with the thickened portion 18 forming a nozzle casing. The portion 18 is provided with a recess or bore 19 and with an opening 20 within which is disposed the body portion of the plunger 21 which is provided with an annular beveled portion 22 terminating in a reduced extension 23 fitting within an opening 24 in the portion 18. The plunger is retained in its normally closed position by a spring 25 secured at one end to the portion 18 and provided with a downward bend in engagement with the rear end of the plunger 21. In order to lock the plunger against movement the free end of the spring 25 may be engaged within a hook or eye 26 secured adjacent the end of the portion or casing 18. The operation of this form is the same in principle as that of the forms previously described. Pressure upon the tube will cause the contents to press upon the annular beveled portion 22 of the plunger 21, thus forcing it rearwardly against the resistance of the spring 25. When the free end of the spring 25 is engaged within the hook or eye 26 it can not yield to an appreciable extent and therefore locks the plunger against movement. It will thus be seen that a tube has been provided which possesses material advantages over the old forms of tubes in use and which will recommend itself to the use of those desiring a sanitary, economical and convenient dispensing tube.

In Figs. 1, 3 and 4 of the drawings I have shown the upper end of the plunger flush with the top of the nozzle but in practice the upper end of the plunger may project slightly above the nozzle to facilitate movement of the plunger by pressing a finger gently upon it if the contents of the tube should happen to be of a heavy or gummy character and cause the plunger to stick.

Having thus described my invention what I claim is:

1. A collapsible tube comprising a pliable shell, a projecting nozzle casing formed thereon and provided with a passage, a plunger movable laterally through said casing and extending across said passage, and a spring for normally retaining said plunger in its closed position, said spring being movable to lock said plunger against movement.

2. A collapsible tube comprising a pliable shell, a nozzle casing connected therewith and provided with a longitudinal and a laterally extending passage, a plunger slidable in said lateral passage and presenting a surface inclined in relation to the axis of said longitudinal passage at the point of intersection of the plunger with the longitudinal passage, a spring for retaining said plunger in its normally closed position, and means for locking said plunger against movement.

3. A collapsible tube comprising a pliable shell, a nozzle casing formed thereon and provided with a passage, a plunger slidably mounted in said casing in inclined relation to said passage, and a spring surrounding said casing and extending across the rear end of said plunger for retaining said plunger in its normally closed position, said spring being movable to lock said plunger against movement.

4. A collapsible tube comprising a pliable shell, a nozzle casing attached thereto provided with a passage, a spring engaged plunger slidably mounted in said casing and extending across said passage; said plunger terminating in a substantially conically shaped end seated in a discharge opening communicating with said passage.

5. A collapsible tube comprising a pliable shell, a nozzle casing connected therewith and provided with a longitudinally extending passage communicating with the interior of said shell and a laterally extending passage communicating with said first named passage, and a spring engaged plunger slidable in said second named passage; said second named passage terminating in a discharge opening and having a portion of its wall between said opening and said first named passage cut away.

In testimony whereof I hereto affix my signature in the presence of two witnesses.

KENNETH D. BRYSON.

Witnesses:
ALBERT H. REYNOLDS,
T. R. KNOWLES.