April 14, 1931. W. O. GANGER 1,800,936

COLLAPSIBLE TUBE

Filed Feb. 19, 1929

Fig. II.

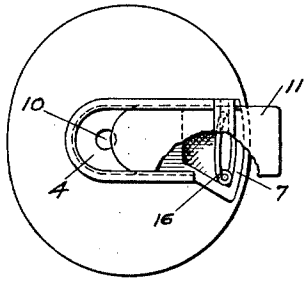


Fig. I.

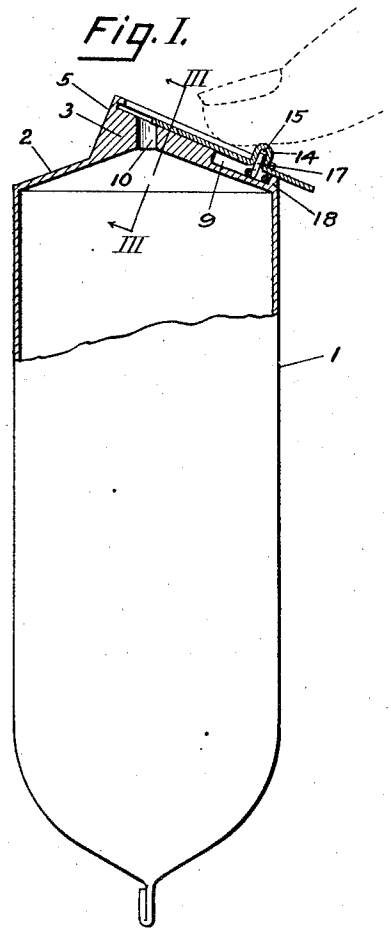


Fig. III.

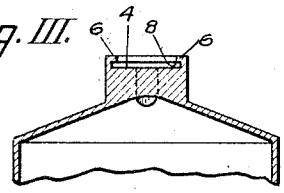
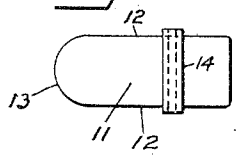


Fig. IV.



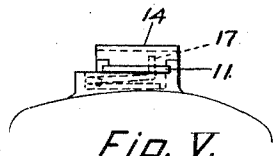


Fig. V.

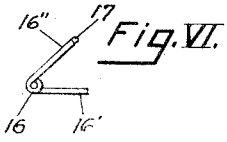


Fig. VI.

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Patented Apr. 14, 1931

1,800,936

UNITED STATES PATENT OFFICE

WILLIAM OREN GANGER, OF BULL RUN, OREGON

COLLAPSIBLE TUBE

Application filed February 19, 1929. Serial No. 341,107.

My invention has to do with collapsible containers or receptacles of the nature of tubes for pharmaceutical and toilet preparations. This invention partakes of improvements for the various devices used as stoppers, caps, valves and the like for such tubes. It is an improvement on the familiar and most common type of stopper for tubes of this class, such being a cap which threads to the neck thereof. The neck of the tube in this instance has an aperture or passageway for the emission of the substance contained in the tube. Such caps have a provoking habit of becoming lost. My invention, among other things, is intended to overcome this disagreeable feature.

My invention particularly relates to a device for closing the discharge aperture of a collapsible tube, and consists of a gate or blade which is slidably held in the neck portion thereof. The blade, in its normal or closed position entirely covers or closes such discharge aperture. Cooperating with the blade is a spring or similar device which constantly urges the blade to cover or close the discharge aperture, thus giving assurance that there is little likelihood of discharge of the contents of the tube. In addition thereto, its operation is very simple—the tube may be held in one hand, the thumb thereof sliding the blade to uncover the discharge aperture. The last feature is particularly desirable with regard to tubes containing shaving cream, dentifrice or like substances, as it allows the tube to be held in one hand, the discharge aperture being opened by the thumb thereof, the other hand being free to hold a shaving brush, tooth brush or other article to which the substance in the tube is applied. Therefore, the objects of my invention are at least threefold—

One object of my invention is the provision of a device for closing the discharge aperture of a collapsible tube, but which normally is not removable therefrom.

Another object of my invention is the provision of such a device, which, if not otherwise urged, will constantly close the discharge aperture of such tube.

An additional object of my invention is the provision of a device particularly adaptable for closing the discharge aperture of collapsible tubes, and one so constructed that the tube may be held in one hand, a finger or the thumb of such hand being sufficient to operate it.

Other objects will be apparent upon reading the description of the invention which follows, aided by the accompanying drawings, wherein

Figure 1 is a side elevation of a collapsible tube, partly in section to illustrate the invention;

Fig. 2 is a top plan view of the invention with parts broken away;

Fig. 3 is a cross section taken from the section line 3—3 of Figure 1, and looking therefrom in the direction the arrows point;

Fig. 4 is a plan view of the slide;

Fig. 5 is a rear elevation of my invention; and

Fig. 6 is a plan view of a spring utilized in my invention.

In the drawings, my invention is shown in connection with a collapsible tube 1. Tube 1, as is usual with this type of articles, is provided with a conical end 2, integral therewith.

Articles of this nature are usually provided with a cylindrical neck projecting from the center of the end. Such necks usually have a central passageway leading to the interior of the tube. They are usually threaded exteriorly to receive a cap interiorly threaded to correspond therewith. In this instance a cylindrical neck is not utilized, but instead, the end 2 is thickened somewhat to form a head 3. The head 3, considerably greater in length than breadth, extends from the end edge of end 2 to substantially beyond the center thereof, as shown in Figure 1. The top or upper surface 4 of the head is flat. Along two sides of the head and around the end 5, which is curved in this instance, is a continuous wall 6. This wall does not extend across the outer end 7 of the head, as it is not desirable that this end be higher than the top 4. A groove 8 is formed on the inner side of wall 6, and opens level with the top 4. A recess 9, which opens upwardly, is formed in the head adjacent the end 7 thereof. This recess is to hold a spring which will be hereafter de-

scribed. The tube 1 is provided with a discharge aperture 10 leading through the head 3, and having the mouth thereof flush with the top 4.

The foregoing completes the description of the construction of the tube. I will now describe the mechanism for closing the aperture 10 in the head. This consists of a blade 11 which slides upon the top 4 of the head. It is of sufficient width to allow the lateral edges 12 thereof to enter or ride in the grooves 8 of the side walls 6, which grooves form a guideway therefor. The inner end 13 of the blade is rounded to conform to the curvature of groove 8 at the inner end 5 of the head. Blade 11 has a buckled intermediate portion 14. This buckled portion is U-shaped in cross section, with the mouth thereof directed downwardly as shown in Figure 1. The buckled portion 14 provides a thumb grip for sliding the blade 11. Between the sides or legs of the buckled portion is a groove 15. Means are provided for causing the blade 11 to assume a normal position covering aperture 10, the rounded end 13 thereof within groove 8 at the rounded end 5 of the head. This consists of a spring 16. The spring 16 has two legs, 16′ and 16″ respectively, one of which, in this instance leg 16″, has an upwardly turned end portion 17. Spring 16 rests in recess 9, with the leg 16′ bearing upon the wall 18 of the recess, and the upturned end 17 extending into the groove 15 of the blade. The upturned end 17 is of sufficient length to prevent the leg 16″ entering groove 15. It will be seen from the foregoing that the spring 16 will urge the blade 11 inwardly so that the aperture 10 will be concealed thereby. Blade 11 ordinarily is not removable from the head 3; to uncover the discharge aperture 10 the blade is drawn but partially therefrom, complete withdrawal being prohibited by the spring 16.

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

1. An article of manufacture which comprises a collapsible tube, one end of said tube having an enlarged portion constituting a head, said head having a flat top, there being a discharge aperture leading through said head and opening out of said top, a continuous wall directed upwardly on two sides and one end of said top, there being a groove in said wall opening inwardly flush with said top, a blade slidably carried by said groove capable of covering said discharge aperture, said blade having a buckled intermediate portion to produce an elongated groove on its under side opening downwardly, a recess in said head, a spring in said recess, and said spring having a leg with an upturned end portion entering the groove in the aforesaid blade and urging said blade to constantly cover said discharge aperture.

2. An article of manufacture which comprises a collapsible tube, one end of said tube having an enlarged portion constituting a head, said head having a flat top, there being a discharge aperture leading through said head and opening out of said top, a continuous wall directed upwardly on two sides and one end of said top, there being a groove in said wall opening inwardly flush with said top, a blade slidably carried by said groove capable of covering said discharge aperture, a groove opening out of the undersurface of said blade, a recess in said head, a spring carried in said recess, and a leg on said spring partially extending into the last mentioned groove and urging said blade to cover said discharge aperture.

3. An article of manufacture which comprises a collapsible tube, one end of said tube having an enlarged portion constituting a head, said head having a flat top, there being a discharge aperture leading through said head the mouth of which is flush with said top, a continuous wall directed upwardly on two sides and one end of said top, there being a groove in said wall opening inwardly flush with said top, a blade slidably carried by said groove capable of covering said discharge aperture, a downwardly opening groove in said blade formed by buckling a portion thereof, and a spring having a leg portion seated in the last mentioned groove and designed to urge said blade to cover said aperture.

4. An article of manufacture which comprises a collapsible tube, one end of said tube having an enlarged portion constituting a head, said head having a flat top, there being a discharge aperture leading through said head and opening out of said top, a continuous wall directed upwardly on two sides and one end of said top, there being a groove in said wall opening inwardly flush with said top, a blade slidably carried by said groove capable of covering said discharge aperture, said blade having a U-shaped intermediate portion with the mouth thereof directed downwards, a recess in said head normally concealed by said blade, a spring in said recess, and said spring having a leg provided with an upturned end entering the mouth of the U-shaped portion, seating upon the walls thereof and constantly urging said blade to cover said discharge aperture.

WILLIAM OREN GANGER.