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G. W. BAILEY

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CLOSURE FOR CONTAINERS

Filed July 24, 1931

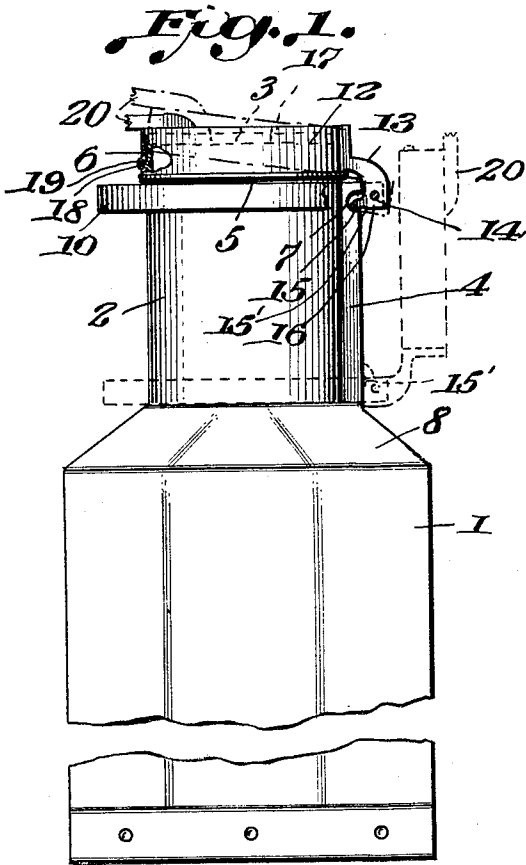
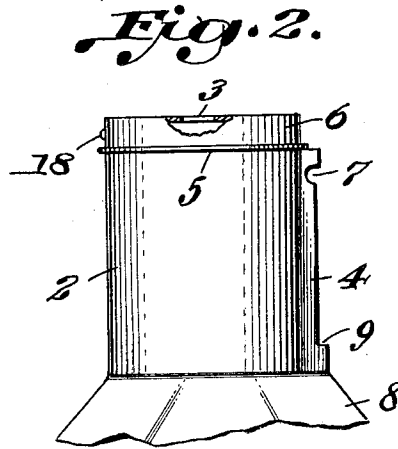
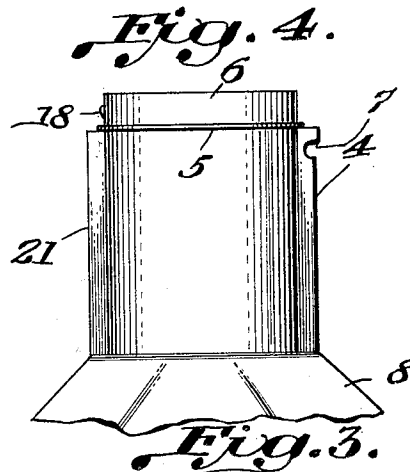
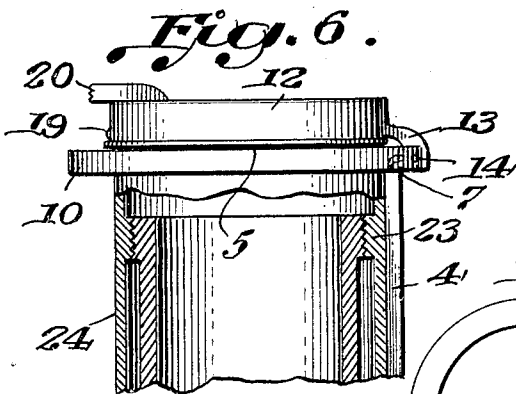
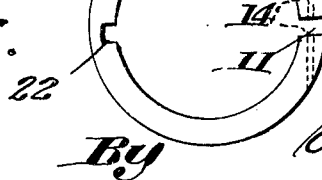
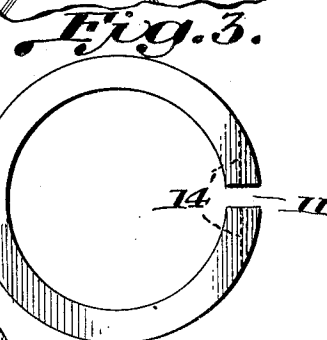


Fig. 5.



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UNITED STATES PATENT OFFICE

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CLOSURE FOR CONTAINERS

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Collapsible tubes intended to contain toothpaste, shaving cream, cold cream, vaseline, and other paste-like or semi-fluid materials have commonly been provided with detachable screw caps. Caps of this character have to be removed to afford access to the contents of the tube and such caps are frequently dropped and lost or mis-placed, beside which they are difficult to screw on accurately and easily because the threads become crossed in attempting to replace the cap.

The object of my invention is to provide an improved cap for use on any collapsible tube or like containers, such as commonly employed for containing and dispensing toothpaste, shaving cream, cold cream, vaseline, and other semi-liquid ingredients, which will be adapted for opening and closing in a semi-automatic manner, when manipulated by the user, without possibility of detachment of the cap from the neck or nozzle of the collapsible tube.

My invention insures against loss or misplacing the cap and also insures rapid and easy opening and closing thereof, while affording a tight and satisfactory closure which prevents the escape of the contents of the collapsible tube, when the tube is packed in a traveling bag or other container with other articles, and at other times.

It will be understood that the principle involved in the present invention is not limited to use in connection with collapsible tubes and to illustrate the use of the device in other connections, I have shown and described how the invention may be used as a cap for an automobile radiator. Other uses will be apparent from the following description of the invention.

In the accompanying drawing:

Figure 1 is a side elevation, partly broken away, full lines showing the cap closed and dotted lines showing it open;

Fig. 2 is a similar view of the nozzle alone, showing a modification;

Fig. 3 is a plan view of the operating ring employed on the forms shown in Figs. 1 and 2;

Fig. 4 is a side elevation of a modification, the ring and cap being removed;

Fig. 5 is a plan view of the ring employed in connection with the form shown in Fig. 4; and

Fig. 6 is a part side elevation, part sectional view showing the invention applied to an automobile radiator nozzle.

The collapsible tube to which my improved cap is shown as applied, appears at 1 and has a neck or nozzle 2 which is provided in its end with an orifice 3 through which the toothpaste, shaving cream, cold cream or the like may be extruded on pressing the tube 1, as usual.

The neck or nozzle 2 is provided with a rib 4 extending longitudinally thereof and terminating at a circumferential flange 5 located near the end of said nozzle, leaving a free end part 6 on said nozzle which is adapted to enter the improved cap.

The guide key rib 4 has a cross notch or indentation 7 disposed near the outer end of said rib to co-operate with means on the improved cap. The walls of the notch 7 are straight and the rib is slightly elevated between the notch and the flange 5, the purpose of which will be described later. The inner end of the rib 4 may extend to the shoulder 8 of the tube 1, as shown in Fig. 1, or said rib may be provided with a shoulder 9, as shown in Fig. 2, the purpose of these constructions being to arrest the operating ring for the cap during the opening movement of the device.

Slidable on, and snugly fitting the neck or nozzle 2 is an operating ring 10 which has a notch 11 that receives the rib 4 so that during the sliding movements of the ring 10, said ring is guided on the tube, prevented from turning or binding thereon, and the swinging means for the cap is thereby directed to the notch 7.

A cap 12 has a short lever or arm 13 which is pivoted to the ring 10 by a wire or pin 14 whose ends are held in holes 14' drilled in the ring, as shown by dotted lines in Figs. 3 and 5. Lever 13 has an extension or toe 15 which is adapted to enter the notch 7 when the ring 10 is moved almost to the outer end of the nozzle 2, for the purpose of camming the cap 12 down into position where it is adapted to telescope over the outer end 6 of

the nozzle. The lower face of the toe 15 is curved at 15'.

The lever 13 has a surface 16 which is adapted to slide or ride on the face of the rib 4 when the ring is drawn toward the tube 1. This sliding action positively holds the cap 12 parallel to the nozzle 2 and out of the way so that the dispensing end of the nozzle can be used. When the ring 10 is drawn outwardly, the tip 15, and the curved face 15' of the lever, due to engagement with the wall of the notch 7, "cam" the lever and swing the cap 12 downwardly to close the dispensing end of the nozzle; that is to say, the reciprocating movement given to this manipulative ring causes the cap to be alternately actuated into and out of its closure position.

The cap is of shell-like construction and adapted to telescope over the end 6 of the nozzle.

Preferably, there will be provided a suitable cork inner face or gasket 17 for the cap to effectually seal the end of the nozzle.

It is desirable to provide a snap catch or locking device to hold the cap 12 in closed position. Such device may comprise a nib 18 on the part 6 and an indentation 19 on the cap.

When the cap is closed, it preferably rests against the outer face of the flange 5, which flange also serves as a stop when the ring 10 approaches its outermost or extreme travel position, as previously explained.

A suitable finger piece or projection 20 is provided on the cap to enable it to be readily released prior to sliding the ring 10 toward the tube 1. When the slidable ring 10 is placed intermediate either of its extreme travel positions, the toe 15 will ride on the top face of the key 4 and thus interlockingly hold the hinged cap 12 against tilt around its pivot 14.

In Figs. 4, 5, I have illustrated the manner in which an additional rib 21 may be provided on the nozzle or tubular neck 2, in diametrically opposite disposition to the rib 4 for the purpose of balancing the ring to lessen the tendency of the ring to bind on the nozzle 2. The ring 10, if such construction be employed, will have an internal notch 22 to slide on the rib 21 just as the notch 11 slides on the rib 4.

In Fig. 6, I have illustrated the manner in which the principle of the invention may be applied to the nozzle or nipple of an automobile radiator, for while I am aware that present-day practice calls for flat caps for automobile radiators, nevertheless the present invention is well adapted for use as a quick-opening and closing radiator cap. The only change which need be made is to provide on the interior of the device an internally screw threaded ring or part 23 which will screw on the threaded nipple on the radiator, said nipple being received within the

tubular part 24, which corresponds to the nozzle 2. In this form of the invention, the construction is the same as previously described and operates in the same manner.

What I claim is:

1. In a closure for the nozzle of a container, the combination with a nozzle having a rib, of a member slidable on the nozzle and having means co-operating with said rib, and a cap hinged to said slidable member and provided with means adapted to co-operate with the rib to swing the cap so that it will serve as a closure for the orifice of the nozzle, or, for disposition in open position relative to said nozzle-orifice.

2. In a closure for the nozzle of a container, the combination with a nozzle having a longitudinal rib, of a ring slidable on said nozzle and being guided by said rib, said rib being provided with a camming notch, and a cap provided with a lever hinged to said ring and bodily carried by, and shiftable with, said ring, said lever having a part which is in contact with the rib and maintains the cap alongside the nozzle when the ring is retracted, said lever being provided with a projection which is adapted to co-operate with said camming notch to effect opening or closing of the cap when the ring is in a given position of its travel.

3. A container provided with a tubular neck having an orifice therethrough, an actuating member slidably associated with the neck and arranged for reciprocative manipulation therealong, a cover pivotally carried by said member and arranged to close said orifice, said cover being equipt with cam means positively urging said cover into its closure position when said member approaches one limit of its reciprocative travel, and guide means confining the movement of the slidable member lengthwise of the longitudinal neck axis and which means restrains the cap against movement around said axis.

4. A container provided with a tubular neck having an orifice therethrough, a manipulative member slidably carried by the neck for reciprocative movement axially therealong, guide means locking said member against rotary movement about the neck axis, a cap hinged to said member and serving as a closure for the orifice, said cap being provided with an actuating toe, and abutment means associated with the neck and arranged to operatively engage said toe when the member is brought toward one limit of its reciprocative travel.

5. In a closure for a container, the combination with a neck having an orifice therethrough, of a manipulative member slidably associated with the neck, key means guiding said member lengthwise of the neck, and a cap pivotally mounted upon and bodily carried along with the manipulated member, said cap in one extreme of its travel being adapted

to telescope over an end of the neck and serving as a closure for the orifice thereof and which cap is equipt with toe means arranged to glide upon said key for cap retaining purposes when the manipulative member is placed intermediate its extreme travel positions.

6. In a closure for a container, the combination with a tubular neck having an orifice at its end, of a manipulative member slidably mounted for reciprocative movement lengthwise of the neck axis, guide means locking the member against rotary movement about said axis, said means being provided with a transverse notch, a cap for closing said orifice hinged to the slidable member, said cap being provided with toe means that is cooperatively received by the notch and alternately urges said cap into its respective open and closed positions in unison with the reciprocative member movements, and supplementary fastening means disposed between the neck and cap for releasably securing the latter in its closed position.

In testimony whereof I affix my signature.
GEORGE W. BAILEY.