

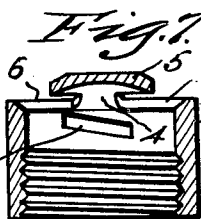
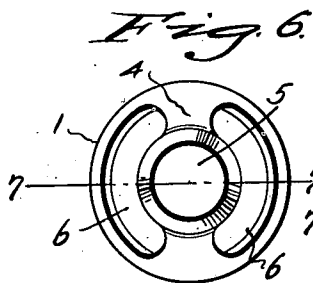
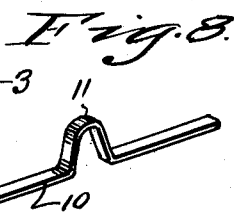
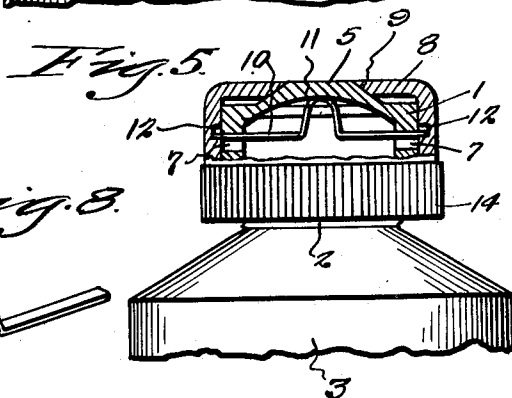
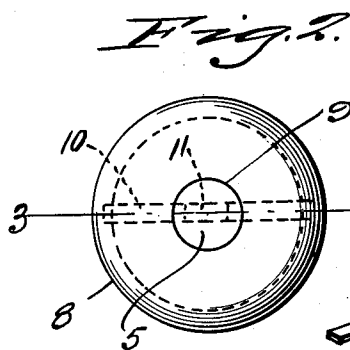
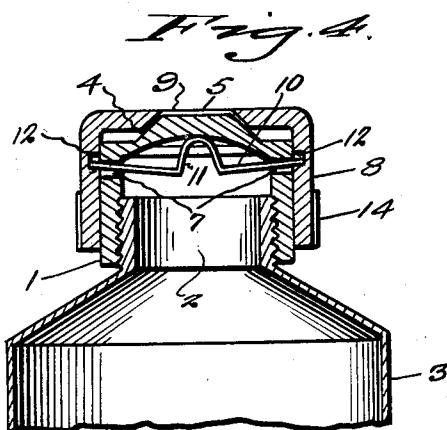
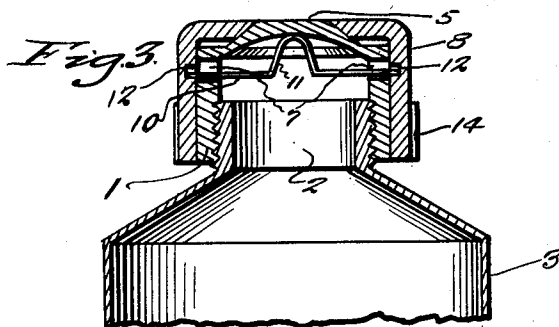
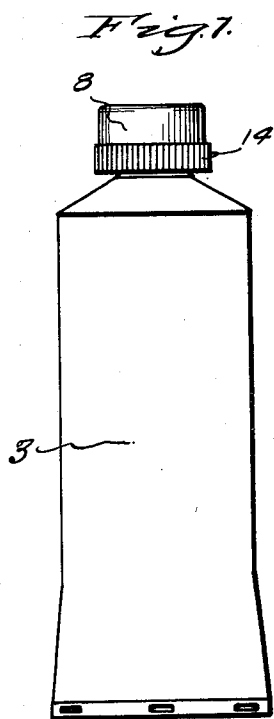
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E. A. WEKERLE

2,194,039

SELF-CLOSING CAP

Filed Nov. 9, 1938



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UNITED STATES PATENT OFFICE

2,194,039

SELF-CLOSING CAP

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of twenty-four and one-half per cent to Al
Jordan, and of fifty-one per cent to Russel
L. Tracy and James W. Collins

Application November 9, 1938, Serial No. 239,703

1 Claim. (Cl. 221—60)

The present invention relates to new and useful improvements in self closing cap or closures and has for one of its important objects to provide, in a manner as hereinafter set forth, a closure of this character which is adapted to be left on the tube at all times, thus preventing the dropping or loss thereof as frequently occurs with the usual removable screw cap of the type in widespread use at present.

Another very important object of the invention is to provide a cap or closure of the aforementioned character which is adapted to be automatically opened by pressure from the cream, paste, or other material in the tube when said tube is squeezed and which, when the pressure is released, will automatically close and seal said tube against leakage and the entrance of air.

Still another very important object of the invention is to provide an automatic collapsible tube closure of the character set forth comprising novel means whereby said closure may be positively locked in closed position when desired.

Other objects of the invention are to provide a collapsible tube closure of the character described which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, attractive in appearance and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in end elevation of a conventional collapsible tube, showing a closure constructed in accordance with the present invention mounted thereon.

Figure 2 is a top plan view.

Figure 3 is a vertical sectional view, taken substantially on the line 3—3 of Fig. 2.

Figure 4 is a vertical sectional view similar to Figure 3 but showing the device in open position.

Figure 5 is a view partially in elevation and partially in vertical section, showing the closure in closed position and locked.

Figure 6 is a detail view in top plan of the valve member.

Figure 7 is a vertical sectional view, taken substantially on the line 7—7 of Fig. 6.

Figure 8 is a detail view in perspective of the spring.

Referring now to the drawing in detail, it will be seen that the embodiment of the invention

which has been illustrated comprises a cylinder 1 of any suitable material which is adapted to be threaded on the usual neck 2 of a conventional collapsible tube 3. Extending across the upper end of the cylinder 1 is an integral bridge 4 the intermediate portion of which is formed to provide a raised valve 5. As best seen in Fig. 6 of the drawing, the construction and arrangement is such as to provide arcuate openings 6 for the passage of the cream, paste or other material in the collapsible tube 3. Below the ends of the bridge 4 the cylinder 1 has formed therein cam slots 7.

Slidably and rotatably mounted on the cylinder 1 is a cap 8 which is also of any suitable material. The top of the cap 8 has formed therein a discharge port 9 the walls of which are formed to provide a seat for receiving the valve 5 for closing said port. The lower portion of the skirt of the cap 8 is milled or otherwise roughened, as at 14, to facilitate obtaining a good grip thereon.

The reference numeral 10 designates a spring of suitable metal which closes the cap 8 and through the medium of which said cap, when desired, may be positively secured in closed position. The spring 10 comprises a raised, substantially U-shaped intermediate portion 11 which is engaged beneath the bridge 4 of the cylinder 1. The end portions of the spring 10 pass through the cam slots 7 in the cylinder 1 and are engaged in sockets or recesses 12 which are provided therefor in diametrically opposite sides of the cap 8. The spring 10 is under tension and yieldingly urges the cap 8 downwardly toward closed position at all times.

Briefly, the manner in which the device functions is substantially as follows:

With the cap 8 in closed position, as seen in Fig. 3 of the drawing, the end portions of the spring 10 pass through the upper portions of the cam slots 7 in contact with or adjacent to the lower walls of said cam slots. Now, when the collapsible tube 3 is squeezed in the usual manner the paste, cream or other material therein is forced therefrom through the passages 6 and the cap 8 is raised thereby to open position against the tension of the spring 10, as seen in Fig. 4 of the drawing, thus permitting the discharge of said cream, paste or other material through the port 9. When the pressure is released, the cap 8 is immediately returned to closed position on the valve 5 by the spring 10. During these opening and closing operations the end portions of the spring 10 swing upwardly and downwardly in the upper portions of the cam slots 7

between the upper and lower walls of said cam slots. When it is desired to positively lock the cap 8 in closed position, said cap is rotated in a direction on the cylinder 1 to swing the end portions of the spring 10 toward the lower ends of the cam slots 7. Thus, the end portions of the spring 10 are brought into engagement with the upper walls of the inclined cam slots 7 and the cap 8 is in this manner positively secured in lowered or closed position. If desired, the cap 8 may be provided with arrows, etc., to indicate the direction in which said cap is to be rotated for locking or unlocking same.

It is believed that the many advantages of a collapsible tube closure constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

A closure of the class described comprising a

cylinder adapted to be mounted on a collapsible tube, a cap rotatably and slidably mounted on the cylinder and having sockets in diametrically opposite sides of the skirt thereof, the top of said cap having a discharge port therein, an integral bridge extending across the upper end portion of the cylinder, a valve integral with the bridge and engageable with the port for closing said port when the cap is in lowered position, said cylinder having inclined slots in its periphery below the ends of the bridge, and a spring mounted in the cylinder and including a raised, substantially U-shaped intermediate portion engaged beneath the valve, the end portions of the spring passing through the inclined slots and engaged in the sockets of the cap for yieldingly urging said cap downwardly on the cylinder, said end portions of the spring being operable in the inclined slots and engageable with certain of the walls thereof for positively locking the cap in lowered position when said cap is rotated in one direction on the cylinder.

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