June 26, 1951 D. V. O'KEEFE ET AL 2,558,314

TUBE CAP HAVING A SPRING-BIASED PIVOTED CLOSURE

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Fig. 1

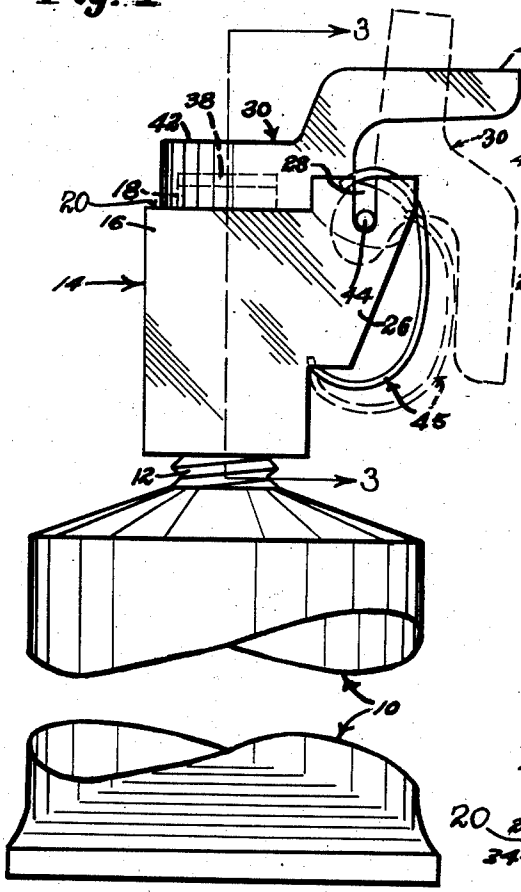


Fig. 2

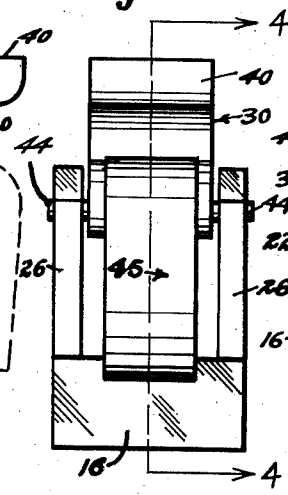
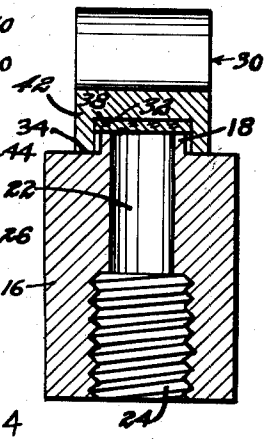


Fig. 3



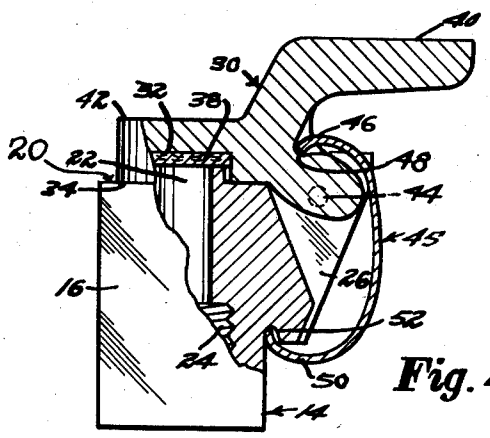


Fig. 4

Marion C. O'Keefe Inventors
and Donald V. O'Keefe
By Arthur H. Sturges
Attorney

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TUBE CAP HAVING A SPRING-BIASED PIVOTED CLOSURE

Donald V. O'Keefe and Marion C. O'Keefe, Omaha, Nebr., assignors of one-third to Edgar W. Lakin, Omaha, Nebr.

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1 Claim. (Cl. 222—517)

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This invention relates to tube caps for toothpaste tubes, shaving cream tubes, cold cream and other dispensable materials that are customarily sold in tubes and jars.

It is well known that toothpaste tubes are normally made of soft metal whereby the threads formed on the neck of such tubes become worn due to continued usage whereby air is allowed to enter the tube and harden the contents. Such former caps also allow a greater supply of material out of the tube that can be immediately used since the flow of paste cannot rapidly be shut off. Also through inadvertence such caps are misplaced and frequently become lost causing the toothpaste to harden and become wasted.

It is therefore an object of this invention to provide a tube cap which is adapted to rapidly open and close the spout of the tube as desired and which is permanently secured to the tube in a manner whereby the cap cannot become lost.

Another object of the invention is to provide a tube cap which can be used on successive tubes or jars whereby the cost of the needed caps is negligible.

Another object is to provide a tube cap of superior quality for increasing the sale of toothpaste due to the cap's novel and attention-attracting features.

Another object of the invention is to provide a device for the purpose described which is sturdy and durable in construction, reliable and efficient in operation, and relatively simple and inexpensive to manufacture, assemble and utilize.

Other and still further objects and advantages of the invention will become apparent from the following detailed description of a preferred embodiment thereof.

In the drawings:

Figure 1 is a side elevation of the tube cap and tube, the latter is shown broken away for purposes of illustration. The open position of the cap is shown in dotted lines;

Figure 2 is a rear elevation of the tube cap;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1 and showing the interior construction of the cap; and

Figure 4 is a partial sectional view taken on line 4—4 of Figure 2.

Referring to the drawing for a more particular description there is shown at 10 a tube of the general nature for which the cap 14 of this invention is used. The tube 10 has a threaded neck 12 which is customarily sold with a detachable cap in position thereon. This threaded cap will be discarded and a cap 14 substituted therefor.

The cap 14 has a rectangular main body portion 16 formed integrally with an annular ring 18, shown in dotted lines in Figure 1, centrally positioned upon the upper body surface 20. An

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aperture 22 extends from the ring vertically downward through the body portion 16. The lower end of the aperture 22 is provided with threads 24 complemental in size with the threaded neck 12 of the tube 10 whereby the tube and cap may be threadedly secured together.

Two vertically disposed spaced apart tang members or wings 26 are integrally formed on an extension offset from one side of the main body 16 and are each provided with the vertically extending pivot pin slots 28 which are in axial alignment transversely with each other.

The upper portion or closure cap 30 is provided with a circular depression 32 formed in the under surface 34 and is of slightly larger diameter than the annular ring 18 of the lower body portion 16. A cork washer 38 is positioned in the depression 32 whereby at times when the upper cap portion 30 is in its closed position, as shown in full lines in Figure 1, the annular ring 18 abuts the cork washer 38 sealing off the upper end of the vertical aperture 22.

The upper cap portion 30 is provided with an outwardly extending thumb lever 40 above a lower pivot arm 42 both formed integrally with the cap portion 30.

Transversely disposed pivot pins 44 extend outwardly from the sides of the lower pivot arm 42 and are received in the vertical pivot pin slots 28 of the tang members 26.

A tension spring 45, substantially C-shaped in side view, is received at its upper end 46 in a cavity 48 provided between the thumb lever 40 and the lower pivot arm 42. The lower end 50 of the spring is received in a similar cavity 52 provided under the lower end of the tang members 26.

Both cavities 48 and 52 are positioned inwardly or farther toward the main body portion than are the pivot pins 44 when the upper cap portion 30 is in its down or closed position.

When the upper cap portion 30 is in its open or dotted line position as shown in Figure 1, the upper cavity 48 is then positioned outwardly from the pivot pins 44 whereby the spring 44 is continually under tension and it will tend to maintain the upper cap portion 30 in closed position when the cap is fully closed and will also tend to keep the cap 30 in an open position when it is fully open.

In operation, the cap 12 is substituted for the conventional threaded cap which is discarded.

In order to open the tube, the thumb lever which is ordinarily held in a closed position by the tension of the spring is depressed past the dead center position of the spring. Thereupon the tension acts to hold the cap in an open position bearing against the spring as shown in its dotted line position in Figure 1.

From the foregoing description it is thought

to be obvious that a tube cap constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice, except as claimed.

We claim:

In a collapsible tube cap, the combination which comprises an elongated body of rectangular-shape in cross section, having a bore extended continuously therethrough with internal threads in the lower end of the bore for receiving the threaded neck of a collapsible tube and having a ring around the bore and extended from the opposite end, said body having an extension on one side with a longitudinally disposed recess in the outer surface providing wings at the sides, said wings having aligned bearing slots extended inwardly from the upper ends and said extension having a transverse cavity in the lower end positioned at the intersection of the lower end surface of the extension with the adjoining side surface of the body, a closure cap positioned on the upper end of the body and having an upwardly offset thumb lever extended horizontally outwardly in a plane parallel to the face of the closure cap, said closure cap having a recess in the under surface positioned to receive the ring on the upper end of the body and a downwardly extended pivot arm spaced from and below the thumb lever, and said pivot arm having aligned pins integral therewith, extended from the sides thereof, and positioned in the slots in the upper ends of the wings thereby pivotally mounting the closure cap on the body, said pivot arm having a spring retaining cavity in the upper surface positioned at the intersection thereof with the offset section of the thumb lever, and a flat spring C-shape in longitudinal section embracing the pivot arm and extension and positioned with the upper end in the cavity of the pivot arm and the lower end in the cavity in the lower end surface of the extension whereby the spring urges the closure cap to the closed position and, passing below the center of the pins of the pivot arm, retains the closure cap on the body with the cap in the open position.

DONALD V. O'KEEFE.
MARION C. O'KEEFE.

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