Oct. 8, 1935. D. P. LOOMIS 2,016,678

TUBE CLOSURE

Filed Dec. 11, 1934

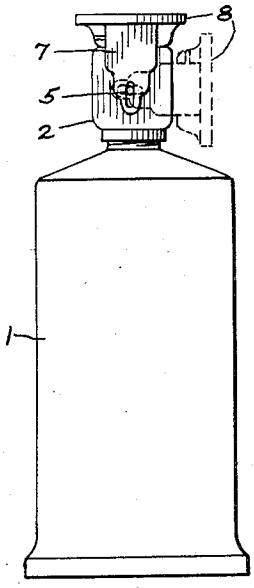


Fig. 1.

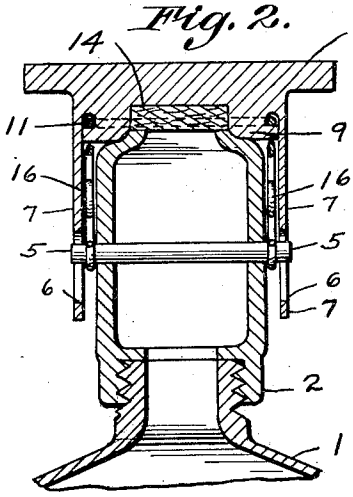


Fig. 2.

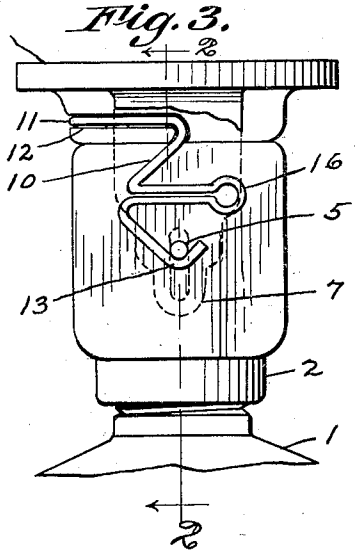


Fig. 3.

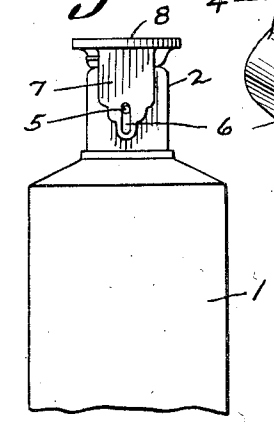


Fig. 4.

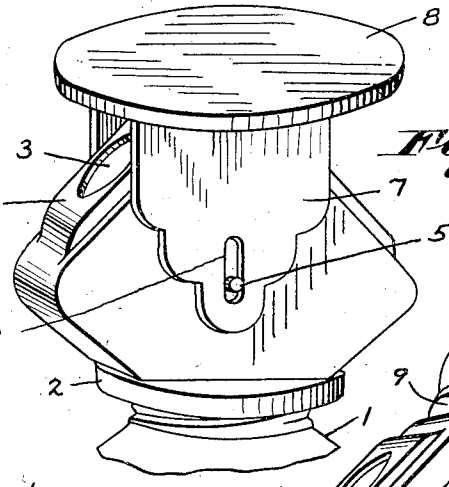


Fig. 5.

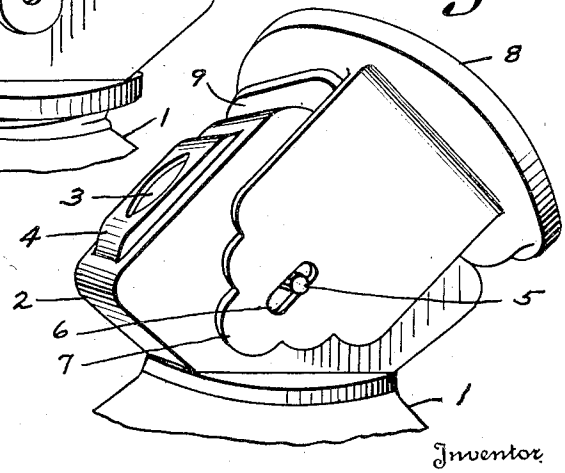


Fig. 6.

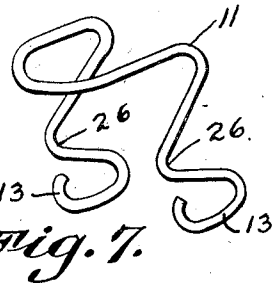


Fig. 7.

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TUBE CLOSURE

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Application December 11, 1934, Serial No. 757,003

4 Claims. (Cl. 221—60)

This invention refers to collapsible tubes and more particularly to a closure for the same. It has among its objects, to provide a closure for collapsible tubes that will eliminate the usual screw top type and its lack of permanent attachment; to provide an arrangement in the device that will enable it to be easily operated for closing and opening; to provide for a sanitary and effective method of closing; to provide with arrangements preventing rolling or upsetting of the tube in an undesirable manner; that will tend to close if laid in a position that may cause leakage; and other objects that will become apparent as the invention is more fully set forth.

While collapsible tubes have been heretofore provided with closures other than those of the screw cap type, such are usually loose and are hard to handle. In this device the closure may be conveniently operated with the same hand that holds the tube. It opens and closes quickly and fully. It consists of an arrangement that is held in place with a spring that holds the closure tight, but not so much as to prevent it being easily pushed over to either side, and when opening, to lift away from the orifice of the tube so the paste or fluid in it will not be scraped or pushed over the side wall of the tube and make it unsightly and unsanitary.

In the drawing, which shows a modification of this invention:—

Figure 1 is a side elevation of a collapsible tube with a closure embodying this invention.

Figure 2 is a sectional view taken along line 2—2 of Figure 3.

Figure 3 is a detail of the closure with parts broken away to indicate the interior construction and position of the spring.

Figure 4 is a side elevation of the device with its cap formed directly on the tube body.

Figure 5 shows the closure in modified construction, in perspective.

Figure 6 indicates the closure indicated in Figure 5, in another step of the opening.

Figure 7 is a detail of a modified form of spring to be used in the closures.

Similar reference characters refer to similar parts throughout the drawing.

In the drawing 1 represents a conventional collapsible tube for containing tooth paste, shaving cream, lubricants, paints, printer's ink, paste, mucilage and many other substances of a viscous nature. It has a closure having a neck body 2 which has the usual orifice at 3 in a raised mouth portion 4. Pins 5 are provided in the side of the neck and are engaged by the sides of a slot 6 of the closure cap in arms 7 placed on two sides of the neck. The arms are preferably flat and connect with a flattened top 8 that fits over the mouth and orifice when properly positioned, the underside 9 being provided with a suitable recess portion and liner 14 that will fit over the mouth and close it securely.

Spring 10 is securely held to the cap by having its upper end hook 11 caught in a suitable hole or depression 12, while the end hooks 13 engage on the pins 5, thus keeping the closure cap under tension. The slots 6 are elongated to give the cap a suitable travel. The location of the pins permits the cap in its rotation from closed to open position, to pass over and away from the raised mouth portion 4 and to travel in the elongated slots 6 as indicated in Figures 5 and 6. The use of the modulated spring 10 keeps the cap under tension permitting this action effectively. The spring also serves to snap the cap down quickly to its two positions of "open" and "closed", when released and keep it from assuming intermediate positions. This prevents the paste from the tube being splashed around.

The operation is performed by the person holding the tube in his hand, pushing his thumb against the edge of the cap, and causing the cap to rise and turn over towards the side it is pushed towards. The spring 10 that has kept the cap closed, expands sufficiently to permit this, and the clearance in the slots enables the pins to take this travel. When brought sufficiently out of line with the mouth, the spring pulls down in a direction at right angles to that of the axis of the mouth in order to retrieve it to its shortest length, the principle of such pulling being something similar to that of "on and off dead center". This allows free unobstructed emission of the fluid from the tube when the latter is squeezed, and keeps the caps from loosely bouncing around. the round top of the cap enables it to set squarely on the neck and be kept on the tube straight, and also prevents it from rolling on a flat or smooth surface.

The modified forms provide for an orifice in an angular position but operate the same, while the spring in Figure 7 is provided with a knee 26 instead of the parallel stem-and-circle form 16 indicated in Figure 3.

While two forms of the invention are indicated in the drawing, it is not desired to limit this application for patent to these particular forms or in any other way otherwise than limited by the prior art, as it is appreciated that other forms of

construction could be used that would employ the same principles and come within the scope of the appended claims.

What is claimed is:—

1. A closure of the class described comprising in combination a neck having a plurality of pins mounted on the exterior thereof, a cap mounted over the neck having depending arms with slots that engage over the said pins, said cap having an orifice-closing element for closing the neck mouth, and a tension spring mounted on the pins having its central body portion engaged around a portion of the cap to keep the latter in tension contact with the mouth of the neck.

2. A closure for collapsible tubes and arranged to be mounted on the same, and of the class described, comprising in combination, a neck body having a pin running therethrough and extending out of the same, and provided with a mouth passage and orifice for the egress of the contents of the tube which the closure is mounted on, a cap mounted on the neck body having depending arms with elongated slots therein in registry with the end portions of said pin and held on thereby, said cap having a recess and liner therein for covering the said mouth, and a tension spring connecting the underside of the cap and pin together for keeping the cap down on the mouth and yet permitting the cap to be raised against such tension and opened quickly when pushed after raising and brought to a position out of line with the mouth of the neck.

3. A closure unit for attachment to the neck of a collapsible unit, comprising in combination, an orificed neck body having means for attaching it to the neck of a collapsible tube, a pin passing through the wall of the said body and having its end portions projecting therethrough, a flattened top cap having means for closing the orifice in the said body, arms pending from the said top and having slots adapted to receive the pin end portions and elongated to permit travel thereon and to also permit the said top to be given an arcuate travel over the orifice and means for resiliently biasing or urging the cap to either open or closed position depending on the position of the cap relative to the orifice.

4. A closure unit for attachment to the neck of a collapsible tube body, comprising in combination, a neck body having means for attachment to the neck of a collapsible tube and provided with openings for an orifice and for registering and leading with the mouth of the neck, a top cap arranged with means for closing the orifice in the said body and adapted to slide over the top of the body when operated in opening and closing, arms pending from the top and having slots therein, a pin passing through the said body having its end portions extending therethrough and through the arms at the slots thereof, a spring mounted on the pin end portions and against the wall of the body and under the walls of said arms and engaging with the said top and pulling same down towards the pins.

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