

Nov. 6, 1923.

C. N. KELLEY

1,472,845

SELF CLOSING TUBE

Filed Dec. 27, 1921

Fig. 1.

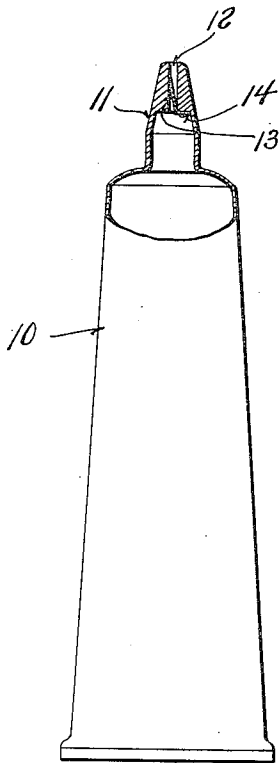


Fig. 2.

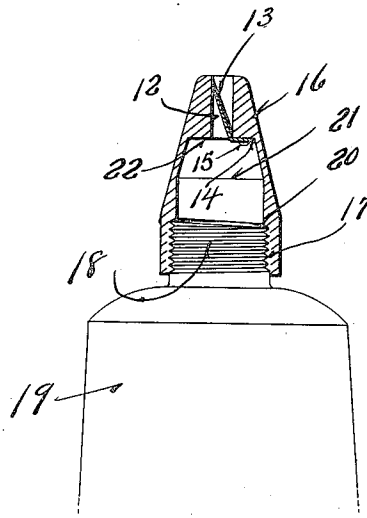


Fig. 3.

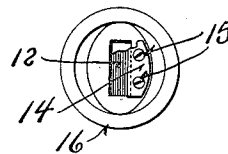
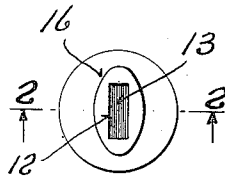


Fig. 4.



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Patented Nov. 6, 1923.

1,472,845

UNITED STATES PATENT OFFICE.

CHARLES N. KELLEY, OF MADISON, WISCONSIN.

SELF-CLOSING TUBE.

Application filed December 27, 1921. Serial No. 524,964.

To all whom it may concern:

Be it known that I, CHARLES N. KELLEY, a citizen of the United States, and resident of Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Self-Closing Tubes; and I do hereby declare that the following is a full, clear, and exact description thereof.

10 The invention relates to means for closing the opening in a collapsible tube on the discontinuance of pressure thereon.

Hitherto in the use of collapsible tubes, such as contain toothpaste and the like, difficulty has been experienced because of the necessity for removing the threaded cap before feeding the paste and repositioning it after the feeding operation. This procedure is inconvenient. Again the cap is oftentimes lost or the threads are mutilated, and the exposed paste projecting thru the feeding orifice becomes hardened.

It is the object of the invention to obviate these inconveniences by the provision of a device which will act automatically on the cessation of pressure on the tube to close the outlet opening. This device remains permanently in place, and in order to feed the contents of the tube, it is normally only necessary to press the same.

An important object is the facilitating of the ready outflow of the contents of the tube.

35 An additional object is the provision of an exceedingly simple structure and easy to manufacture.

Other objects and advantages will appear as the description proceeds.

Reference is had to the accompanying drawings, in which,

40 Figure 1 is an elevation with the nozzle in section of a modification wherein the nozzle is integral with the tube.

Figure 2 is the central cross section of the cap, as applied to the tube on the line 2-2 of Figure 4.

Figure 3 is a bottom plan of the cap, and

Figure 4 is a top plan of the cap.

Collapsible tube 10 is provided with a nozzle 11 integral therewith, having a channel 12 therein. A spring has a main portion 13 extending into channel 12 and contacting with all the walls thereof. In the modification shown, channel 12 is rectangular in cross section. The invention, however, is not limited to this specific form. A spring has a minor portion 14 bent at an angle

and is provided with apertures in which screws 15 are positioned for securing the spring to the nozzle.

It is obvious that when the tube is pressed, the paste will feed outwardly and press major portion 13 of the spring to one side. On the release of pressing action, the strength of the spring is exerted against the paste in the opening 12 and the spring moves forwardly to the position shown in Figure 1, completely closing the opening 12 and protecting the contents of the tube. The action of the spring is such as to maintain not only a tight contact of the top of the spring with the wall of opening 12, but also the fitting between the side walls of opening 12, and the sides of the spring is such as to completely close the end of the tube.

In the modification shown in Figures 2, 3 and 4, the nozzle is made in the form of a detachable cap 16 threaded internally at 17 to cooperate with the nipple 18 of flexible tube 19. Here the tube is of the type that is in use at present. A shoulder 20 on cap 16 limits the downward threading action, and a chamber 21 is provided above nipple 18 so that the horizontal surface 22 is inoperative to constrict the opening in nipple 18. In using this device, the threaded cap now used on tubes of paste may be removed and cap 16 may be screwed into place. The cap remains in position as long as there is any paste in the tube 19, so that in using the contents all that is necessary is a manual compression of the tube. Then the device may be set aside, no other operation being necessary.

While a preferred embodiment of the invention has been illustrated and described, it is to be understood that the present invention is not confined to such specific embodiment, but may be otherwise embodied within the spirit of the invention and the scope of the following claim, and it will further be understood that a substantial range of equivalence is contemplated.

I claim:

The combination of a nozzle having an enlarged chamber therein, a spring having a major portion and a minor portion, said minor portion being secured to said nozzle in said chamber, said nozzle having an elongated channel from said chamber to the exterior of said nozzle, said channel being of uniform cross section throughout its

length and having two narrow walls and two wide walls, the major portion of said spring extending throughout the length of said channel, from one of said wide walls to the other of said wide walls, and from one of said narrow walls to the other of said narrow walls, said major portion being at an

acute angle with respect to each of said wide walls.

In testimony that I claim the foregoing 10
I have hereunto set my hand at Madison, in
the county of Dane and State of Wisconsin.

CHARLES N. KELLEY.