

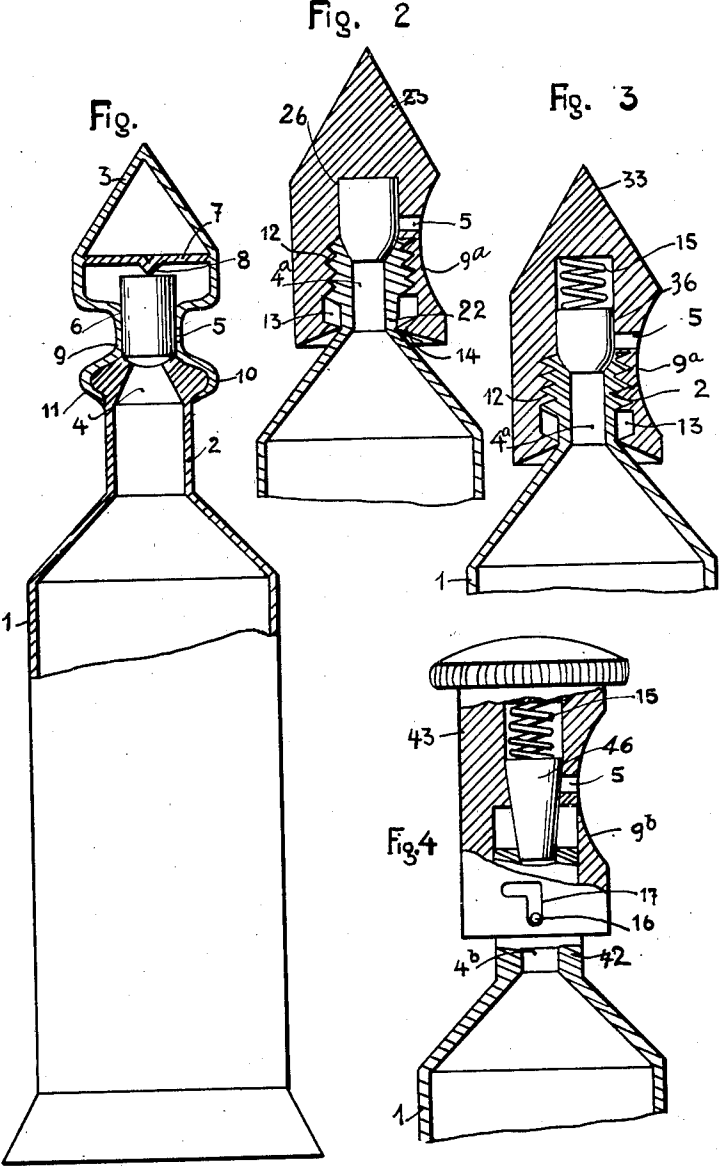
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CLOSURE FOR COLLAPSIBLE TUBES

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CLOSURE FOR COLLAPSIBLE TUBES

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3 Claims. (Cl. 221-60)

This invention relates to closures, and particularly to caps for tubes and other containers such as the flexible or collapsible tubes used for toothpaste, shaving cream, and the like, though the invention is not limited in use to these articles.

Many of the flexible tubes are closed by screw caps. This cap is very likely to be lost. Furthermore the cap is relatively small, it slips out of the fingers, is liable to fall upon the floor and be difficult to find, and if the cap is not used the cream becomes hard. The liquid or pasty content of the open collapsible tube flows out and soils the table, etc.

The primary object of my invention is to provide a new and improved cap for containers.

Another object is to provide a new and improved device of the type set forth which shall be adapted to be normally held in close-contact in a closed position over the dispensing outlet of a collapsible tube or other container.

A further object is to provide a device of the character described which shall have the fewest possible number of parts in order that it may be easily and economically produced and assembled and provide a maximum efficiency.

A still further object is to provide a cap for a container having a resilient means for holding the cap in close contact over the dispensing outlet which resilient means shall also operate as an opening means.

A further object is to provide means formed integrally with the cap, to lower the cost of production and provide greater efficiency, which shall be adapted to normally return the cap to a closed position over the dispensing outlet.

I attain these and other objects by means of the preferred form of the device disclosed in the drawing forming a part of the present specification wherein like characters of reference are used to designate similar parts throughout the said specification and drawing, and in which:

Figs. 1 to 4 show each in sectional elevation an embodiment of my invention.

Referring to the drawing the numeral 1 (Fig. 1) is used to designate a collapsible tube container having the usual reduced end 2 with a passage 4 and having an annular flange 10 arranged around the said reduced end 2. On the said annular flange 10 a cap 3 is fastened by the beaded over flange 11. The cap 3 is provided with a reduced neck 9 and with a dispensing outlet 5 arranged in said neck 9. In the neck a cylindrical closure body 6 of cork, rubber, etc., is arranged.

The parts 1 and 3 may be made of an alloy of

aluminium, and the container may be used for any material such as creams, shaving creams, facial creams, tooth paste, artist paints, liquids, etc.

The body 6 rests on a seat of the flange 10 and closes the passage 4. The body 6, moreover, abuts against a projection 8 of an elastic disk 7 which tends to press the body 6 on its seat. Said disk is convex and may be flexed when pressure is exerted against its crown.

If pressure is applied on the container 1, the body 6 is moved from its seat against the action of said disk 7 whereupon the contents pass through opening 5. When pressure is taken off the spring disk 7 returns to its initial position and presses body 6 on its seat closing thereby the outlet.

In the construction shown in Fig. 2 the end portion 22 of the collapsible tube 1 is provided with a screw threaded portion 12 on which the cap 23 is screwed. The cap 23 is provided with a groove 13 and an inwardly projecting flange 14. In a centre bore of the cap 23 a closure body 26 of cork, rubber, etc., is arranged closing the outlet 4^a of the container. The flange 14 is arranged in such a manner that the cap 23 may be unscrewed far enough to allow the contents of the container 1 to pass through the dispensing outlet 5 if pressure is applied to the container 1. To facilitate the outflow of the contents, the dimensions of the body 26 are such that some space is left free about said opening 5 when the cap 23 is partially unscrewed.

The construction shown in Fig. 3 is similar to that shown in Fig. 2. The body 36 is slidably arranged in a bore of the cap 33. The body 36 may be of metal, glass, ebonite and the like; it is pressed on its seat by a coiled spring 15 arranged in said bore. The cap 33 is provided with the dispensing outlet 5 arranged in a recess 9^a of the cap.

As shown in Fig. 4, the container 1 is provided with a cylindrical neck 42 on which the cap 43 is slidably mounted. The neck 42 is provided with a pin or stud 16 projecting into a slot 17 of the cap 43. The slot 17 runs in axial direction of the neck 42 and ends in a cross slot. In a bore of the cap 43 a closure body 46 is provided which is pressed on to the mouth of the channel 4^b by means of a coiled spring 15. By turning the cap 43 so far that pin 16 enters the axial branch of the slot 17, and by applying pressure on to the container 1, the cap 43 and the body

46 will be displaced and the content passes through the dispensing outlet 5.

While we have described this device as being particularly designed for use with flexible tubes, 5 such as are used for toothpastes, shaving creams, facial creams, and artists' colours, we do not wish to be limited thereto as it is obvious that it might be used for a large variety of different containers, and the invention is not to be limited 10 to the specific form of the device as illustrated, as this may be changed in many ways without departing from the spirit of the invention as defined in the appended claims; nor is it to be limited to the particular combination of the cap 15 with a flexible container as illustrated, as the cap may be disposed in other combinations without departing from the spirit of the invention.

What I claim is:—

1. A combination with a collapsible container, 20 having a substantially rigid tubular neck, a cap on a valve seat formed at the outer end of said neck, said cap being secured to the neck and formed with an outlet opening in a wall thereof, a deformable closure body normally mounted upon 25 the valve seat and normally closing the opening in the cap and a yieldable disk member enclosed within the cap to yieldably hold the closure body in a sealing position with relation to the valve seat and the opening in the cap, and to simul- 30 taneously flex to permit said body to recede from its seat to expose said opening under force of the material being extruded from the tube by pressure tending to collapse the walls thereof.

2. A combination with a container from which 35 material may be extruded by pressure against the wall of the container, said container having a cylindrical neck at one end thereof through which an outlet passageway is formed, and having a valve seat at the end of the neck, a cap

permanently mounted over the end of the neck and having an outlet opening in the side wall thereof, a deformable closure body fitting within the cap in a position normally obstructing the outlet opening and resting upon the valve seat, 5 and a resilient disk or end member in said cap having a central protruding portion with which the upper end of the closure body engages and which will become embedded in the end of the closure body as the closure body is deformed by 10 pressure of the extruded material, whereupon said end member will flex to permit said closure body to be raised from the valve seat and to uncover the outlet opening in the cap.

3. A combination with a container from which 15 material may be extruded by pressure against the wall of the container, said container having a cylindrical neck at one end thereof through which an outlet passageway is formed, and hav- 20 ing a valve seat at the end of the neck, a cap permanently mounted over the end of the neck and having an outlet opening in the side wall thereof, a deformable closure body fitting within the cap in a position normally obstructing the outlet opening and resting upon the valve seat, 25 and an end member consisting of a resilient diaphragm in said cap having a central protruding portion with which the upper end of the closure body engages and which will become embedded in the end of the closure body as the closure body 30 is deformed by pressure of the extruded material to be raised from the valve seat and to uncover the outlet opening in the cap, said protruding portion of the cap being formed centrally of the resilient diaphragm disposed with- 35 in the cap and said diaphragm yieldably resisting force exerted by movement of the closure body.

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