

Sept. 2, 1958

A. CHRISTIANSEN

2,850,217

CLOSURE FOR COLLAPSIBLE TUBES

Filed May 3, 1955

FIG. 1

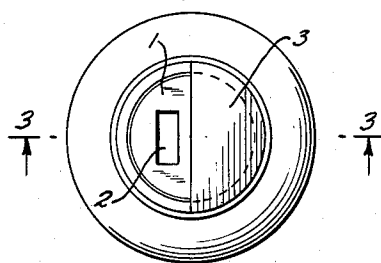


FIG. 2

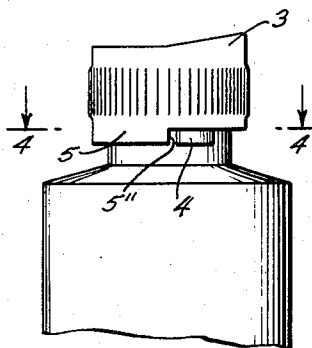


FIG. 3

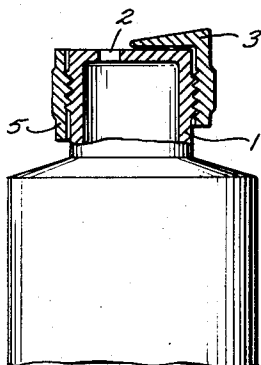


FIG. 4

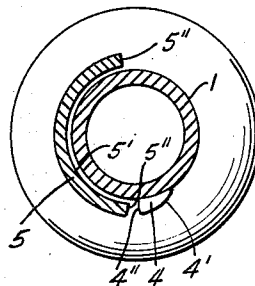


FIG. 5

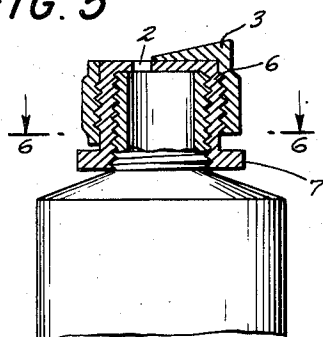
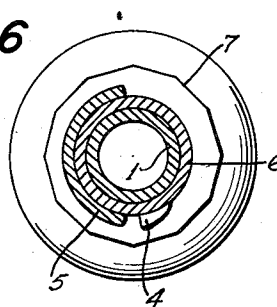


FIG. 6



INVENTOR.  
AAGE CHRISTIANSEN  
BY

Michael S. Striker  
ATTORNEY

1

2,850,217

## CLOSURE FOR COLLAPSIBLE TUBES

Aage Christiansen, Aalborg, Denmark

Application May 3, 1955, Serial No. 505,766

2 Claims. (Cl. 222—520)

The invention relates to a tube closure in which a cap is screwed on to the tube neck, and in which the turning of the cap is limited by a stop to secure that the cap shall not inadvertently be screwed off and the contents of the tube be lost. In known devices of this type, however, the stop had to be placed on the tube neck by manual work after the screwing-on of the cap, which, consequently, considerably increased the manufacturing expenses.

The object of the present invention is to avoid this disadvantage.

The characteristic feature of the tube closure according to the invention is that a cam, which is sloping to one side, is formed on the side of the tube neck, whereas the lower edge of the cap is made so elastic that a projection, extending downwards or inwards, can slide over the cam during screwing of the cam onto the neck, but after that assembly will prevent the removal of the cap.

Hereby it is made possible to make the parts of the tube by molding, casting or extrusion without any extra work after the joining of the parts.

The drawing shows in:

Figs. 1 and 2 a tube with a tube closure according to the invention in top and side views respectively,

Fig. 3 a section taken along line 3—3 of Fig. 1,

Fig. 4 a section taken along line 4—4 of Fig. 2,

Fig. 5 a longitudinal section of a tube with a modified design, and

Fig. 6 a section taken along line 6—6 of Fig. 5.

As shown in the drawings the neck 1 of the tube is closed at the top by means of an end plate which has an opening 2 for the outlet of the contents of the tube. The tube neck 1 has an external thread, on to which a cap 3 is screwed. One half of the end plate of the cap is cut away so as to form a semi-circular opening, and so that, when the cap 3 is turned into the position shown in the drawing, the cap uncovers the opening 2. If the cap is turned 180° from this position, the solid part of the end plate will extend across the opening 2 and close the same, while, owing to the lead of the thread, the end plate of the cap will at the same time be pressed against the end plate of the tube neck, so that the contents of the tube cannot be pressed out.

The tube neck has an inclined cap 3 having a cam face 4' substantially tangential to neck 1 and a stop face 4'' substantially normal to the peripheral surface of neck 1, whereas the cap 3 has, at the bottom and along one side a projection or rim portion 5 projecting downwardly from the threaded portion of the cap. The rim portion 5 has an inner face 5' and a pair of side faces 5''. The cap is made of elastic material, so that, when the cap is screwed on to the neck, the rim portion 5 can slide over the cam 4. When the rim portion 5 has passed the cam 4, it will resiliently spring back against the circumference of the tube neck. After this the cap is prevented from turning back, as the end face 5'' of the rim 5 will strike the stop face 4'' of the cam 4. Then the cap can be turned no more than 180° to and fro to cover and uncover the opening 2 respectively.

2

The constructional embodiment described above can only be used where the tube neck has an end plate at the top. If the same cap closure is to be used for tubes with an open neck, a nipple 6, Fig. 5, provided with an internal thread, must be screwed on to the neck of the tube. The nipple has at the bottom a polygonal shoulder-flange 7, so that it can be fastened by means of a spanner. Projecting from one of the nipple 6 is a cam 4, as shown in Fig. 6. The nipple 6 has an external thread, so that a cap 3 can be screwed on to it as shown in Fig. 5. The cap 3 together with the nipple 6 here described can be removed from one to another tube.

I claim:

1. A container comprising, in combination, a body portion; a narrowed neck portion projecting from one end of said body portion, said neck portion being formed with an aperture therethrough and having an externally threaded portion; a cap being formed with an opening therethrough, said cap having a threaded portion engaging said threaded portion of said neck portion and having a flexible rim portion projecting from said threaded portion of said cap toward said body portion and extending only partly about said neck portion, said rim portion having an inner face facing said neck portion and a pair of side faces projecting outwardly from said inner face; and a stop cam projecting from said neck portion intermediate said threaded portion thereof and said body portion, said stop cam having a cam face substantially tangential to said neck portion and a stop face substantially normal to the peripheral surface of said neck portion, said cam face engaging said inner face of said rim portion during the screwing of said cap onto said neck portion and flexing said rim portion outwardly so that said rim portion may be passed about said stop cam and said rim portion resiliently springing back after being passed over said stop cam so that one of said side faces of said rim portion will engage said stop face of said cam portion when said cap is turned in unscrewing direction on said neck portion, whereby said cap may be turned on said neck portion between a dispensing position in which said opening in said cap registers with said aperture in said neck portion and a closing position in which said opening is out of register with said aperture while said cap is prevented from being unscrewed from said neck portion by engagement of one of said side faces of said rim portion with said stop face of said cam.

2. A container comprising, in combination, a body portion; a narrowed neck portion projecting from one end of said body portion, said neck portion being formed with an aperture therethrough and having an externally threaded portion; a cap being formed with an opening therethrough, said cap having a threaded portion engaging said threaded portion of said neck portion and having a flexible rim portion projecting from said threaded portion of said cap toward said body portion and extending for substantially 180° about said neck portion, said rim portion having an inner face facing said neck portion and a pair of side faces projecting outwardly from said inner face; and a stop cam integrally formed with said neck portion and projecting therefrom intermediate said threaded portion thereof and said body portion, said stop cam having a cam face substantially tangential to said neck portion and a stop face substantially normal to the peripheral surface of said neck portion, said cam face engaging said inner face of said rim portion during the screwing of said cap onto said neck portion and flexing said rim portion outwardly so that said rim portion may be passed about said stop cam and said rim portion resiliently springing back after being passed over said stop cam so that one of said side faces of said rim portion will engage said stop face of said cam portion when said cap is

turned in unscrewing direction on said neck portion, whereby said cap may be turned on said neck portion between a dispensing position in which said opening in said cap registers with said aperture in said neck portion and a closing position in which said opening is out of register with said aperture while said cap is prevented from being unscrewed from said neck portion by engagement of one of said side faces of said rim portion with said stop face of said cam.

5

## References Cited in the file of this patent

## UNITED STATES PATENTS

260,108	Matthews	June 27, 1882
1,878,599	Perkins	Sept. 20, 1932
2,138,992	Baker	Dec. 6, 1938
2,146,993	Schroeder	Feb. 14, 1939
2,653,735	Brinkman	Sept. 29, 1953
2,660,344	Starner	Nov. 24, 1953