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J. R. KENT

2,147,164

TUBE CLOSURE

Filed June 30, 1938

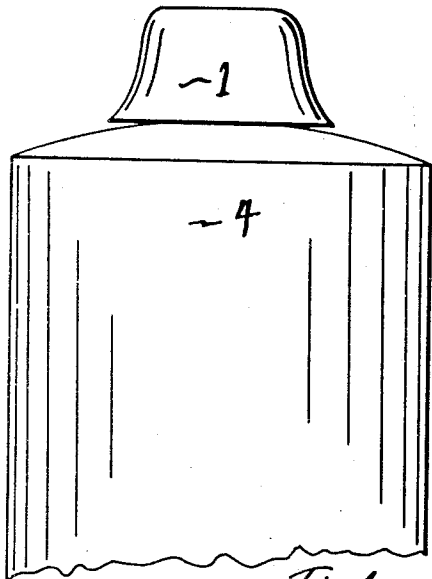


Fig. 1

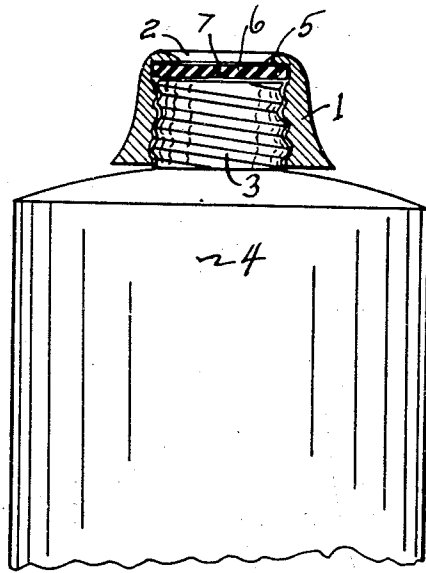


Fig. 2

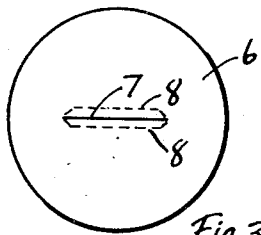


Fig. 3

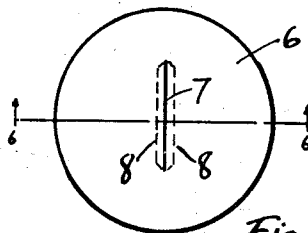


Fig. 5

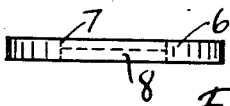


Fig. 4

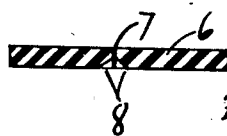


Fig. 6

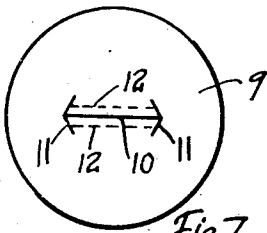


Fig. 7

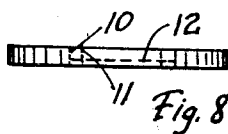


Fig. 8

James R. Kent

INVENTOR.

BY *W.B. Harpman*  
ATTORNEY.

# UNITED STATES PATENT OFFICE

2,147,164

## TUBE CLOSURE

James R. Kent, East Akron, Ohio, assignor to Ben  
B. Fleck, Warren, Ohio, and himself

Application June 30, 1938, Serial No. 216,682

3 Claims. (Cl. 221—60)

This invention relates to a tube closure.

The principal object of this invention is the provision of a closure comprising a cap equipped with a slotted rubber disc, adapted to be threaded upon the neck of a collapsible tube and provides an efficient closure and at the same time permits the contents of the tube to be passed therethrough when sufficient pressure is applied to the tube proper.

A further object of the invention is the provision of a threaded cap formed of suitable material, and provided with an opening in the top thereof of relatively smaller diameter than the threaded portion so as to retain a slotted rubber disc within the said cap and adjacent to the said opening.

A still further object of the invention is the provision of a slotted rubber valve disc, the bottom portion of the slot being suitably widened so as to effectively form the slot with tapered abutting edges.

A still further object of the invention is the provision of an optional form of slotted rubber valve disc, the slot being formed with secondary slots at the ends thereof so as to provide, in effect, a pair of lips.

The tube closure shown and described herein has been designed primarily with the object of providing a practical cap-like closure that can be threaded upon the present form of collapsible tube and which will provide means for allowing the contents of the tube to be forced through a portion of the cap, thus making it unnecessary to remove the cap.

The tube closure shown and described herein can easily be made within the size limits of the well known threaded cap so that the adoption of this improved form of tube closure will not necessitate changes in the tube itself, the method used in applying the cap to the tubes or the size of the carton used in packaging the articles.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a side elevation with parts broken

away showing a collapsible tube with the improved tube closure cap affixed thereto.

Figure 2 is a side elevation of a collapsible tube with parts broken away showing in cross section the improved tube closure positioned thereon.

Figure 3 is an enlarged top plan view of the slotted rubber valve disc used in the tube closure shown in Figures 1 and 2.

Figure 4 is a side elevation of the slotted rubber valve disc shown in Figure 3.

Figure 5 is a view of the slotted rubber valve disc.

Figure 6 is a cross section view taken on lines 6—6 of Figure 5.

Figure 7 is a top plan view of a slotted rubber valve disc with a modified slot formation.

Figure 8 is a side elevation of the modified form of slotted rubber valve disc shown in Figure 7.

By referring to the drawing it will be seen that the invention comprises a tube closure formed of a cap-like threaded shell 1 having an opening 2 formed in the top thereof and adapted to be threaded upon the standard threaded neck 3 of a collapsible tube 4. The shell portion 1 of the tube closure is formed with a flange 5 adjacent to the opening 2 therein and adapted to receive just within this flange 5 a rubber valve disc 6. The rubber valve disc 6 being positioned between the flat bottom of the flange 5 of the shell 1 and the top of the threaded neck 3 of the collapsible tube 4 thus the tension upon the rubber valve disc 6 may be varied by the rotation of the shell 1 of the cap.

Centrally positioned in the rubber valve disc 6 there is a slit 7 which forms a passage way for the contents of the collapsible tube 4 when sufficient pressure is applied thereto. In order that the pressure of the contents of the tube against the rubber valve disc will result in the opening of the slit 7 the lower abutting edges 8 of the slit 7 have been tapered so as to allow the sides of the slit 7 to form a practical slot-like opening.

Were it not for these tapered abutting edges 8 the action of the contents of the tube against the slit 7 in the rubber valve disc 6 would be to force the lower edges of the slit more tightly together rather than forming an opening, due to the thickness and the resiliency of the rubber valve disc 6.

For handling products of stiffer consistency a modified rubber valve disc 9 is provided as shown in Figures 7 and 8 of the drawing. In this modification a single slit 10 is provided with an addi-

tional V-like slit 11 at each end to form in effect a pair of opposing lips, the lower edges 12 of which are tapered.

What I claim is:—

- 5 1. A tube closure comprising a threaded cap having a flanged opening in the top thereof, a relatively thick rubber disc adapted to be placed within the said cap and adjacent to the said flanged opening, a slit like opening in the said rubber disc, the inner opposing edges of the slit like opening being tapered away from one another so as to form a valve like opening when raised.
- 15 2. A tube closure comprising a threaded shell, adapted to thread upon the neck of a collapsible tube, a flanged opening formed in the top of the said threaded shell, and adapted to retain a relatively thick rubber disc within the said shell between the flanged edges of the said opening and the top of the said neck of the collapsible tube, an opening cut in the said rubber disc, tapered lower opposing edges on the said rubber disc adjacent to the said opening and forming

a part thereof, the tapered lower opposing edges enabling the contents of the collapsible tube to lift these tapered opposing edges and thus provide an opening for the emission of the tube contents.

3. A tube closure comprising a threaded shell, adapted to thread upon the neck of a collapsible tube, a flanged opening formed in the top of the said threaded shell, and adapted to retain a rubber disc within the said shell and between the said flanged opening and the top of the neck of the said collapsible tube, a slit like opening cut in the said rubber disc, secondary V-like slits cut at both ends of the said slit, so as to form lips, tapered lower opposing edges formed in the said rubber disc adjacent to the said slit like opening and forming a part thereof, so as to form a valve disk, the tapered edges of the slit like opening permitting the said lips to open outwardly when the contents of the collapsible tube are forced against them.

JAMES R. KENT.