

July 24, 1934.

W. L. WHITE

1,967,797

TUBE CLOSURE

Original Filed May 21, 1932

Fig. 1

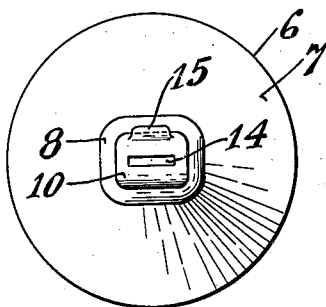


Fig. 2

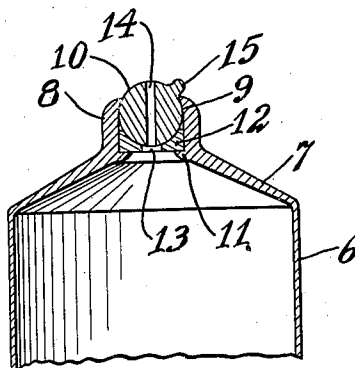


Fig. 3

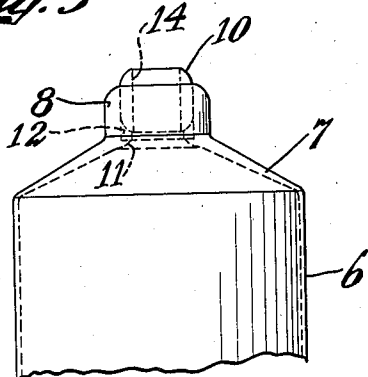


Fig. 4

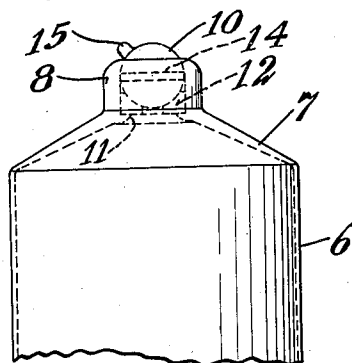
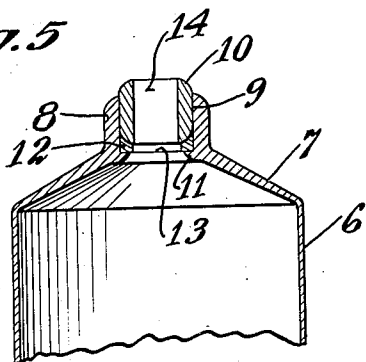


Fig. 5



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TUBE CLOSURE

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Renewed May 19, 1934

4 Claims. (Cl. 221—60)

My invention relates to a closure for tubes or containers which is especially, though not exclusively, adapted for use with collapsible tubes of tooth paste and like toilet or therapeutic compositions.

The prime object of my invention is to devise a closure which can be very cheaply made up, simply assembled and which, in position in the neck of the tube, will serve as a closure tight enough to permit of shipment of the filled tubes without requiring the application of any screw cap or removable cover thereto.

It is essential that such a closure, for tubes of the type in question, to be commercially valuable, be so inexpensive that it will not add appreciable cost to the container, and with this end in view I have sought to provide a non-removable closure which will enable the amount of metal in the neck of the container to be reduced and which will provide a readily operable valve that with its seat and packing forms a perfectly safe and sanitary tube closure.

My invention further contemplates designing the closure in the form of a rotary valve-like member, preferably of cylindrical shape, which is forced to and operably held against its outer seat by the deformation of an interior element in the neck, a thin packing being interposed between said neck element and the valve and brought under compression so as to seal the joint and eliminate the necessity of any other closure for the tube.

My invention further comprises the novel details of construction and arrangements of parts which, in their preferred embodiment only, are illustrated in the accompanying drawing which form a part of this specification, and in which:—

Fig. 1 is a top plan view of a tube container equipped with my improved rotary valve closure, shown in its open position;

Fig. 2 is a vertical transverse cross sectional view of Fig. 1;

Figs. 3 and 4 are respectively side and end elevational views of Fig. 1, Fig. 4 showing the valve in closed position; and

Fig. 5 is a longitudinal vertical central cross sectional view of Fig. 1.

Similar reference numerals refer to similar parts throughout the drawing.

In the embodiment of my invention which is illustrated in the drawing, I show the valve closure associated with a tube 6 of the type in general use for tooth paste and like substances.

The tube 6 is customarily made of a thin metallic material which is thickened across its

tapering top portion 7 which merges into a thickened neck portion 8. I show, this neck portion 8 as oblong, though this shape is merely preferable. It is formed internally, at its outer open end, so as to form a complementary seat 9 for the rotary valve 10. This valve in cross section makes a snug turning fit in the interior of the neck against its seat 9.

The inner end of the neck is provided with a marginal flange 11 which before deformation is disposed so as to permit the insertion of the valve from the open bottom end of the tube before it is filled. When the valve has been thus seated in the tube a suitable packing 12 is applied having an elongated central aperture 13 therein slightly larger in area than the ribbon like port 14 which extends diametrically through the center of the valve 10. Having introduced the seat behind the valve, the lip 11 is peened or forced over by any suitable means until it compresses the packing against the valve 10 and the latter against its seat 9 at the outer end of the neck. The pressure exerted upon the packing is sufficient to hold the valve closure in its initial closed position and to pack the neck joint sufficient to insure against leakage of the contents of the tube about its valve closure.

The valve element is provided with a longitudinal rib or boss 15 which when rocked into engagement with the seat 9 on one side will set the valve in full open position, as shown in Fig. 2, and when rocked to engage the opposite side of the seat will set the valve in closed position.

It will be observed that by employing the ribbon type of port through the valve the port can be displaced sufficiently from the opening 13 in the packing seat 12 to insure an ample extent of packing to safeguard against leakage, notwithstanding that considerable pressure may be applied to the contents of the tube.

Having assembled the valve closure and its packing seat in the tube in the manner described, or in any other convenient manner, the valve is rocked to closed position and the tube is filled in the usual manner and shipped to the trade without other closure than is provided by its valve 10. When the user desires to utilize the contents of the tube, the rib or boss 15 is pressed to the position shown in Fig. 2, which opens its port 14 through which the contents of the tube can be expressed. Thereafter the tube is closed as shown in Fig. 4, leaving only the clean surface of the valve to the right of the rib 15 exposed. The valve surface on which any of the contents of the tube may have been left will be drawn back into

concealed and protected position within the neck of the tube. This causes the tube to present always a slightly appearance and preserves a sanitary surface from which the contents of the tube can be removed for use.

The valve 10 may be formed of any inert composition or material which is light and inexpensive. The assemblage and setting of the closure member in the tube can be performed mechanically and at no greater expense than the threading and assembling of screw caps on the present style of tube.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:—

1. A closure for tubes and the like comprising, the combination with the neck of a tube having a valve seat at its open end, of a valve mounted within the container neck in engagement with said seat, a packing disposed on the inner side of the valve, and a deformed portion of the neck disposed to engage the packing and force the valve against its seat, the valve having an operating means accessible through the open end of the neck to rock it to open or closed position.

2. A closure for tubes and the like according to claim 1, in which the valve is of the cylindrical

type with an elongated narrow port disposed diametrically therethrough and the packing is provided with an opening to register with the port when the valve is in open position.

3. In a closure for flexible tubes having a neck portion open at its outer end and internally shaped to form an inwardly facing valve seat, a valve inserted through the bottom of the tube and adapted to engage said seat, a boss on the valve projecting through the outer open end of the neck, marginal packing fitted within the neck on the inner side of the valve, and means at the inner end of the neck to hold the packing pressed against the valve to seal the joint between the valve and the neck, as and for the purposes described.

4. A closure device for dispensing containers, comprising a neck portion formed integrally with such a container and having a discharge passage communicating with the interior of said container, a rotary valve member having a substantially diametrical bore and rotatably mounted in said passage, the outer portion of the neck extending over said valve member to hold said member in said passage but provided with a discharge opening in communication with said passage, means for rotating said valve member into and out of position of relative alignment of said diametrical bore with said discharge opening, a packing washer and means to secure it in fixed position beneath, and in contact with, the inner portion of said valve member.

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