Aug. 16, 1932. S. M. WEAVER 1,871,640

CLOSURE STRUCTURE FOR TUBES OR THE LIKE

Filed Dec. 19, 1929

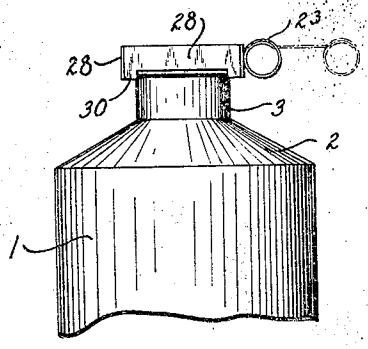


Fig. 2

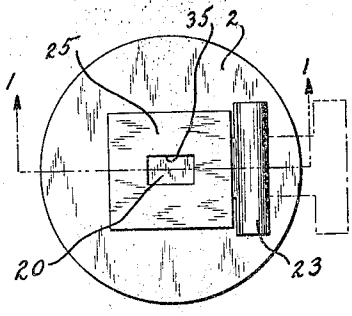


Fig. 3

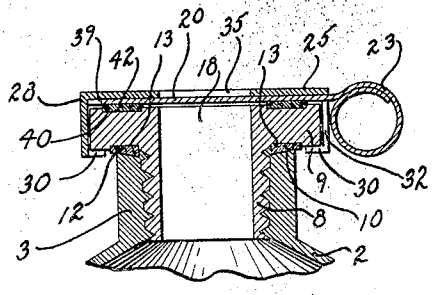


Fig. 1

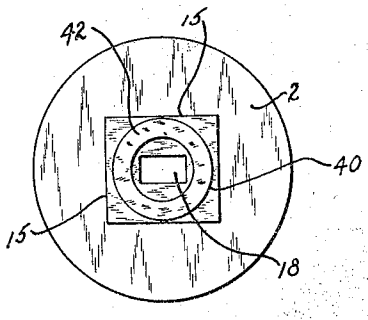


Fig. 4

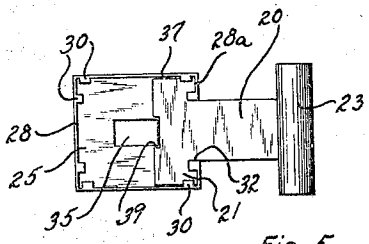


Fig. 5

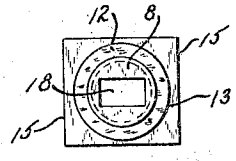


Fig. 7

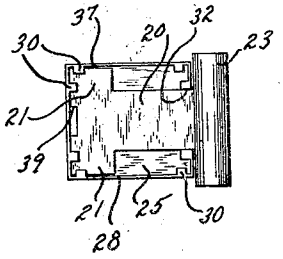


Fig. 6

INVENTOR

Samuel Marshall Weaver

BY

Brockett, Hyde, Higley & Meyer

ATTORNEYS

Patented Aug. 16, 1932

1,871,640

UNITED STATES PATENT OFFICE

SAMUEL MARSHALL WEAVER, OF SHAKER HEIGHTS, OHIO

CLOSURE STRUCTURE FOR TUBES OR THE LIKE

Application filed December 19, 1929. Serial No. 415,302.

This invention relates to improvements in closure structures for tubes and the like, such as tooth paste tubes, for example. More particularly, the invention relates to that type of closure structures in which the closure cut-off member is not removed to expose the tube discharge opening, as in the case of the usual threaded cap, but is simply swung, slid or lifted to one side of said opening. There is, therefore, no liability of the tube contents being left exposed or of the closure cut-off member being lost.

The general objects of the present invention are the provision of a closure structure of the character described in which the several parts thereof are of simple and inexpensive construction and capable of convenient assembly in which there are one or more sealing gaskets which not only effectively prevent leakage of the tube contents but also effectively maintain the slidable closure cut-off member in its normal closing or cutting-off position; and which closure structure is compact in form, neat and pleasing in appearance, and highly efficient in use.

More specific objects of the invention are in part obvious and in part will appear more in detail hereinafter.

The invention will be readily understood from the following description thereof, taken in connection with the accompanying drawing in which Fig. 1 is a vertical sectional view of the present improved closure structure applied to a tube, the view being on the line 1—1; Fig. 3; Fig. 2 is a side elevation thereof; Fig. 3 is a plan view thereof; Fig. 4 is a top plan view of the closure body member and the tube; Fig. 5 is a bottom plan view of the closure cut-off member and the confining cap therefor, the cut-off member being in a position which exposes the cap opening; Fig. 6 is a similar view of these two parts, with the cut-off member closing the cap opening; and Fig. 7 is a bottom plan view of the closure body member.

The present improved closure structure is particularly adapted for use with collapsible tubes, such as tooth paste tubes, for example. A portion 1 of such a tube is shown in the drawing, said tube having a tapering upper end 2 terminating in a centrally disposed, upwardly extending tubular neck 3, as is usual. The necks of most tubes of this sort are externally threaded but the neck of the present tube is internally threaded, as shown in Fig. 1.

Threaded within said neck is the externally threaded portion 8 of the one-piece metal body member of the present closure structure, said portion being either cylindrical or as shown, tapered slightly inwardly, the opening of the neck 3 having a corresponding taper, thereby providing an arrangement which insures a tight, leak-proof connection between the tube neck and the closure body member. At the upper end of its securing portion 8, said body member is provided with an outwardly extending, generally annular flange 9 which seats upon the upper end 10 of the tube neck 3. If desired, and as shown, an annular sealing gasket 12 of cork or the like may be arranged or fitted in a correspondingly shaped groove or recess 13 in the bottom of this flange, around the threaded portion 8, for engagement with the upper end 10 of the tube neck, which neck end may, for example, be tapered inwardly, as shown, rather than being flat, as is usual. The flange 9 of the closure body member may have any suitable or desired outer peripheral shape, either circular or non-circular, and is here shown as having four straight side edges 15, which give the closure body member, in plan view, a square shape, as best indicated in Figs. 4 and 7.

Extending vertically through the central portion of the closure body member, or in other words, through portion 8 thereof, is a passageway 18, centrally disposed and of any suitable size and shape in cross dimension, being here shown as of rectangular shape, which enables tooth paste, if that is the contents of the tube, to be ejected in the desirable ribbon form.

The lower end of passageway 18 communicates with the interior of the tube 1 so that a suitable cut-off member must be provided for the upper end of said passageway, to cover and to expose the same. The cut-off

member 20 of the present closure structure is a thin, flat metal member of generally rectangular shape and provided at its inner end with two oppositely and laterally extending, generally rectangular stop wings 21, to be later referred to. At its outer end, said cut-off member is provided with a suitable operating handle or finger piece, the handle 23 here shown being an integral rolled extension of increased width.

The closure cut-off member is maintained in assembly with the closure body member by a suitable one-piece metal cap having a top portion 25 corresponding in size and shape with the top flanged portion of the closure body member, being therefore of generally square shape. Depending from the four edges of said cap top portion are four, generally rectangular flanges 28, each provided at its lower edge, near the ends thereof, with two or more clamping tongues 30 adapted to be sprung or bent inwardly beneath the flange 9 of the closure body member, as indicated in Fig. 1. The middle portion of one of said cap flanges, such as of flange 28*a*, is cut away to provide a suitable passageway 32 for the closure cut-off member 20, as best shown in Figs. 1 and 5.

The closure cut-off member is therefore positioned between the top surface of the closure body member and the bottom surface of the top portion 25 of the closure cap, which cap portion is provided with a suitable discharge opening 35 corresponding in size and shape to the passageway 18 of the closure body member. Said cap opening is, of course, in alignment with said body member passageway, and communication therebetween is controlled by the closure cut-off member 20, as will be readily understood. As best indicated in Fig. 5, the cap opening 35 is exposed, permitting the contents of the tube to pass through it from the closure body member passageway 18, by sliding the cut-off member outwardly or away from the tube. Such outward sliding movement of the closure cut-off member is limited by the engagement of its wings 21 with the cap flange 28*a*, so that there is no liability of said cut-off member becoming detached and lost. Sliding movement of the closure cut-off member in the other direction, that is, inwardly, is limited by the engagement of its inner edge with the left end cap flange 28, as viewed in the drawing, or by the engagement of its handle 23 with the cap flange 28*a*, along which flange said handle lies when the cut-off member is in its inner and normal closing position. To prevent swinging or lateral movement of the closure cut-off member, the flange passageway 32, through which said cut-off member slides, is made but slightly wider than said cut-off member and the stop wings 21 of said member are of such width that they engage, as at 37, the two side flanges of the closure cap, that is, the top and bottom flanges, as viewed in Figs. 5 and 6.

The cap opening 35 is here shown as of such size with respect to the cap top portion 25 that the inner edge of the closure cut-off member 20 must be notched, as at 39, in order that said opening may be fully exposed. Of course, the cut-off member might be shortened, but then its inner edge would not engage the left end cap flange 28, as viewed in Figs. 1 and 6, and would not, therefore, form a limiting means for inward sliding movement of the cut-off member.

In order to effectively prevent leakage of the tube contents above the closure body member, said member is provided in its top surface with an annular groove or recess 40 surrounding passageway 18 and in which is arranged a correspondingly shaped sealing gasket 42 of cork or other yielding material. The thickness of said gasket preferably exceeds the depth of said groove so that said gasket projects above the closure body member and yieldingly but firmly presses the closure cut-off member 20 up against the bottom surface of the closure cap top portion 25. Leakage of the contents of tube 1 is therefore not only effectively prevented by gasket 42 but the closure cut-off member is also effectively maintained thereby in any of its positions of adjustment.

It will thus be seen that the present closure structure is of simple and inexpensive form, comprising a one-piece body member carrying with it, as a unitary structure, two sealing gaskets, with consequent ease of assembly and disassembly of this part of the closure structure with respect to the tube neck; a one-piece metal cut-off member; and a one-piece metal cap for maintaining the cut-off member in assembly with the closure body member and which is secured to said body member by simple and inexpensive means. Taken as a whole, the present closure structure is exceptionally compact and highly efficient in use.

Other features of the present closure structure will be apparent to those skilled in the art to which it relates. While the present description and illustration have been specific in order to enable the invention to be fully understood, it will be appreciated that changes and modifications may be made without departing from the invention or sacrificing its benefits and advantages.

What I claim is:

1. A closure for the necks of tubes and the like, comprising a one-piece body member having a top portion adapted to overlie a tube neck and also having a depending portion adapted to be secured within a tube neck, said body member being provided with a centrally disposed passage-way extending through its top and depending portions, the lower end of said passage-way being there-

fore adapted for communication with the interior of any tube to the neck of which the closure is secured, a cap member arranged above and secured to the top portion of said body member and having an opening registering with the upper end of the passage-way of said body member, and a cut-off member interposed between said body member top portion and said cap member and adjustable to establish and to cut-off communication between said body member passage-way and said cap member opening.

2. A closure as set forth in claim 1, characterized in that the depending portion of said body member is externally threaded and in that the tube neck to which it is secured is internally threaded.

3. A closure as set forth in claim 1, characterized in that the neck to which the closure is secured is internally threaded and has a slight inward taper and in that the depending portion of said body member is externally threaded and has a corresponding taper, an arrangement which insures a tight connection between said neck and the depending portion of said body member.

4. A closure for the necks of tubes and the like, comprising a body member having a top portion adapted to overlie the top of a tube neck and also having a depending portion integral therewith and adapted to be secured to said tube neck, a sealing gasket adapted to the arranged between and engage the top portion of said body member and the top of said tube neck, said body member having a passage-way adapted for communication with the interior of any tube to the neck of which said body member is secured, a cap member secured to said body member and overlying the top portion thereof, said cap member having an opening registering with the passage-way of said body member, a cut-off member interposed between said cap member and the top portion of said body member and being adjustable to establish and cut-off communication between said cap member opening and said body member passage-way, and a sealing gasket arranged between and engaging said cut-off member and the top portion of said body member.

5. A closure for the neck of tubes and the like, comprising a body member having a top portion adapted to overlie the top of a tube neck and also having a depending portion integral therewith and adapted to be secured to said tube neck, said top portion being provided in its bottom surface with an annular groove, an annular sealing gasket secured in said groove and adapted to be clamped with sealing effect between the top portion of said body member and the top of the neck to which the depending portion of said body member is secured, said body member having a passage-way adapted for communication with the interior of any tube to the neck of which said body member is secured, a cap member secured to said body member and overlying the top portion thereof, said cap member having an opening registering with the passage-way of said body member, a cut-off member interposed between said cap member and the top portion of said body member and being adjustable to establish and cut-off communication between said cap member opening and said body member passage-way, the top portion of said body member being provided in its top surface with an annular groove, and an annular sealing gasket secured in said last mentioned groove and adapted to be clamped with sealing effect between the top portion of said body member and said cut-off member.

In testimony whereof I hereby affix my signature.

SAMUEL MARSHALL WEAVER.