

Sept. 5, 1961

R. H. THOMAS

2,998,893

CLOSURE AND MEASURING DEVICE

Filed Jan. 29, 1960

2 Sheets-Sheet 1

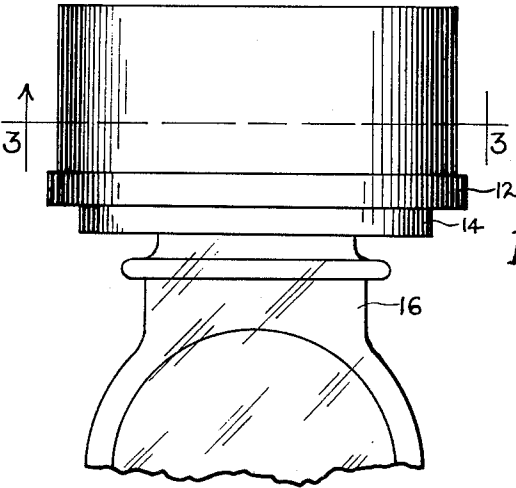


Fig-1

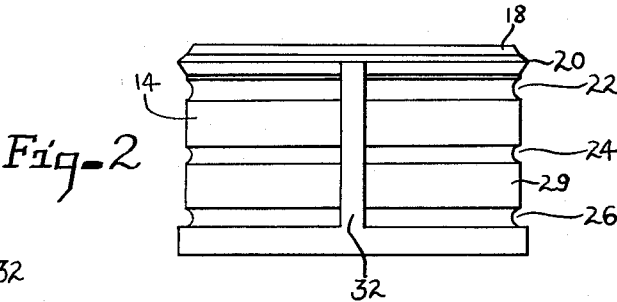


Fig-2

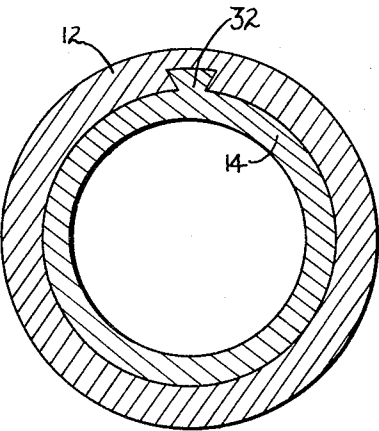


Fig-3

INVENTOR.
RALPH H. THOMAS

BY *George P. Maskas*
Attorney

Sept. 5, 1961

R. H. THOMAS

2,998,893

CLOSURE AND MEASURING DEVICE

Filed Jan. 29, 1960

2 Sheets-Sheet 2

Fig-4

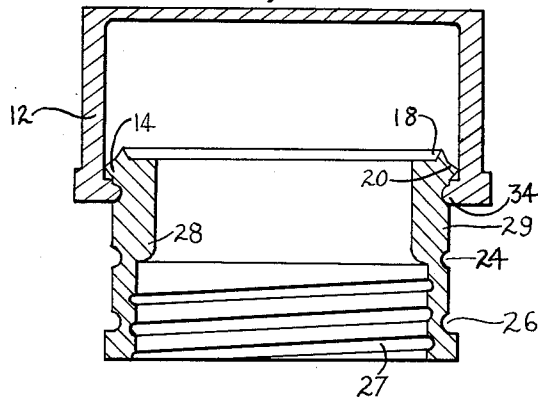


Fig-5

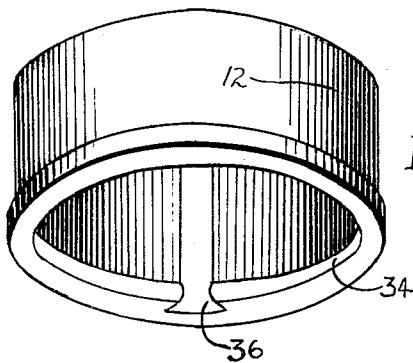
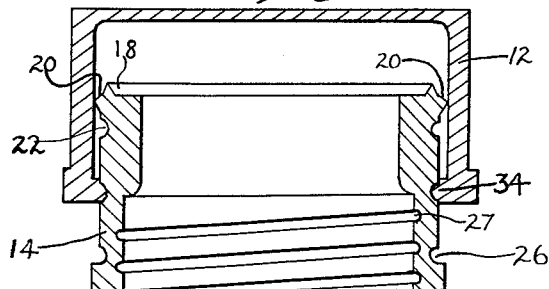


Fig-6

INVENTOR.
RALPH H. THOMAS

BY *George P. Mackee*
Attorney

1

2,998,893

CLOSURE AND MEASURING DEVICE

Ralph H. Thomas, Rahway, N.J., assignor to Bristol-Myers Company, New York, N.Y., a corporation of Delaware

Filed Jan. 29, 1960, Ser. No. 5,560

4 Claims. (Cl. 215-37)

This invention relates to a fluid-tight closure which can be telescoped into a measuring device. More specifically, this invention relates to a closure for containers such as bottles wherein the closure can be telescoped into a measuring and drinking utensil.

The primary objects of this invention are to provide a telescoping closure and measuring device which can be easily and inexpensively produced, which can be easily telescoped while still fastened to the container, which has means for preventing inadvertent nesting or telescoping, which is fluid-tight in both the collapsed and telescoped positions, and which is compact and easy to manipulate.

Broadly the objects of this invention are attained by a closure comprising an outer hollow elongated ring closed at one end and an inner hollow elongated ring open at both ends with means at its lower end for attachment to the mouth of a container and which is in sealing pressure contact within the first mentioned ring. Means are provided to prevent relative rotation of the two parts and to give a positive nesting or telescoping position of the two parts. At least one of the two parts is fabricated of a resilient material.

In a preferred form of the invention the outer ring is a rigid hollow cylindrical cap having an inner longitudinal keyway and an inner flange near its bottom or open end. The inner ring is a cylindrical polyethylene tube open at both ends and has a longitudinally disposed key for cooperative engagement with the keyway of the cap, at least one circumferential groove for positive or snap-on cooperative engagement with the cap flange, and a spirally disposed rib such as screw threads for cooperative engagement with the mouth of a receptacle.

The foregoing and other objects and advantages of the invention will become readily apparent from the following description of a preferred embodiment of the invention illustrated in the accompanying drawings in which:

FIG. 1 is a perspective view of the closure attached to the mouth of a bottle;

FIG. 2 is a perspective view of the inner cylindrical tube member;

FIG. 3 is a cut-away portion of the closure taken along the line 3-3 of FIG. 1;

FIGS. 4 and 5 are cross sectional views of the closure; and

FIG. 6 is a perspective view of the cap member.

Referring now more particularly to the drawings wherein identical numerals refer to identical parts, the closure of the present invention comprises a hollow cylindrical cap 12 which is open at one end. The cap has an inner annular flange 34 about the open end. A cylindrical resilient tube 14 is slidably engaged in pressure sealing contact by the cap 12. The tube 14 and the cap 12 form a telescoping unit. The flange 34 of the cap 12 slidably engages the outer circumference of the tube 14. Optionally the tube 14 has, at its upper portion, a circumferential ridge 20 and a vertically disposed annular ridge 18 to assist in forming a seal between the cap and tube members. Annular grooves 22 and 26 are disposed about the periphery of the tube. Additional annular grooves such as 24 can also be provided. The flange 34 has an inner diameter of slightly less than that of the tube, slides on the cylindrical body 29 of the tube 14 and snaps into the annular grooves. The grooves are positioned to enable snap-on engagement of the parts at the nested posi-

2

tion, the telescoped position and optionally an intermediate position as provided by the groove 24. The tube 14 has a radially disposed projection or key 32 which cooperates with the keyway 36 of the cap to prevent relative rotation of the parts. The tube 14 is also provided with internal screw threads 27 for engagement with screw threads of a container such as bottle 16. Instead of a flange 34 as shown in the drawing, the part 34 can be an inward projection or a series of projections forming an annular bead to cooperate with an indentation or series of annular indentations on the slidable surface of the tube 14 instead of grooves as shown in the drawings. The cap flange 34 and circumferential ridge 20 can be formed at an angle to a line parallel with the radius of either the cap or tube instead of projecting radially as shown in the drawing. Such an angle, i.e., about 5 to 20° from the radius assists production assembly of the cap and tube.

In operation the closure is screwed onto the bottle and the closure parts are nested as in FIG. 1. Thus, the cap flange 34 is snapped into the groove 26 of the tube 14. In the nested position, the assembly can be used as a simple closure for bottles and the like. The fluid-tight seals which include flange 34, circumferential ridge 20 and vertical bead 18 form a fluid-tight seal when the assembly is in the nested position. When it is desired to use the closure as a drinking or measuring utensil the cap 12 is pulled upwardly from the bottle while the closure is still screwed onto the bottle. This causes the closure to telescope after the flange 34 snaps out of the annular groove 26. The tube 14 remains attached to the bottle. The closure is telescoped easily with the only hindrance of the moving parts being the sliding action of the flange 34 on the tube 14 and the sliding action of the circumferential ridge 20 sliding within the cap. The closure is thus easily telescoped to the intermediate position defined by groove 24 where the flange snaps into groove 24. The closure can be used in this position as a measuring or drinking device by unscrewing the closure from the bottle. If a greater volume is desired within the closure, the cap is further pulled upwardly, again while the closure is still screwed onto the bottle, until the flange 34 reaches the groove 22 when the flange 34 is snapped in groove 22. Further telescoping is prevented because of the annular circumferential ridge 20. Instead of the circumferential ridge 20 which also acts as a sealing aid, the tube can merely have an abutment or flange which does not contact the cap 12. In a further modification of the invention the top of the cap can have an annular depending inwardly tapered skirt within the cap to form a seal with the top of the inner tube when the closure is in the nested position. This further modification dispenses with the desirability of the vertically disposed ridge 18 of the tube 14. The term cap as used herein refers to a hollow member having parallel sides which are closed at one end and open at the other end. Although the drawings show a cylindrical closure, the closure need not be cylindrical but can be in the form of a rectangle, square or triangle. The cooperation of the cap flange and tube grooves prevent inadvertent nesting or telescoping of the closure since a moderate amount of force is required to produce a relative sliding motion of the tube and cap when the cap flange is positioned within a tube groove.

At least one of the closure members is made of a resilient material such as a resilient natural or synthetic resin which is compressible, e.g., polyethylene. It is preferable to have the tube constructed of a resilient material and the cap member of a relatively hard material such as glass or a clear, transparent plastic such as polystyrene resin or acrylic resin like that sold under the registered trade-

mark Lucite. Of course, both members can be made of a resilient material.

The closure as herein described and illustrated has been found to possess a number of important advantages. In appearance it is much like the conventional closure particularly that of a wide mouthed bottle closure. The snap engagement features prevent inadvertent telescoping of the parts. However, the closure is easily telescoped while on the bottle. The closure forms a fluid-tight seal and the keyed parts prevent relative rotation between the cap and tube members. The closure can be easily and inexpensively produced, is compact and easy to manipulate.

The closure of this invention is particularly suited for containers such as bottles which contain a mouthwash since the ingredients of a mouthwash often leave stains or residues adhering to drinking utensils and also develop odors. As with toothbrushes, each person prefers to use his own mouthwash cup. Also, an adjustable measuring utensil and closure attached to a bottle containing a mouthwash makes it easy to dispense the proper quantity of fluid.

What is claimed is:

1. A closure comprising a first elongated ring member closed at its upper end, a second elongated ring member open at both ends axially and slidably adjustable in pressure sealing contact within the first member and having screw threads at its bottom portion, said first and second member having a cooperating axial keyway and key to prevent relative rotation of the two members, said first member having a radially inwardly disposed projection at its lower end, said second member having an upper and lower indentation on its slidable surface wherein the first member inwardly disposed projection cooperates with said second member indentations to provide snap-on closure positions and wherein at least one member of the closure is constructed of a resilient material.

2. A closure comprising a cylindrical cap having an inner annular flange at its open end and an inner longitudinally disposed keyway, an inner tubular member open at both ends and slidably adjustable in pressure sealing contact within the cap flange, said tubular member hav-

ing screw threads at its lower end for cooperative engagement with the mouth of a receptacle and an integral radial projection slidable within the cap keyway to prevent relative rotation of the parts, said tubular member also having two outer circumferential annular grooves, for cooperative positive snap-on positioning with the cap flange.

3. A closure comprising a cylindrical cap having an inner annular flange about its open end and an inner longitudinally disposed keyway, a resilient tubular member open at both ends slidably adjustable in pressure sealing contact within the cap, said tubular member having an axially disposed bead at its upper end, a circumferential ridge below the axially disposed bead, an integral longitudinal radial projection, and inwardly disposed screw threads at its lower end for cooperative engagement with the mouth of a receptacle, said tubular member having an outer annular circumferential groove below the circumferential ridge and an outer annular circumferential groove above the screw threads, whereby the tube bead and tube ridge are in sealing relationship with the cap, the tube radial projection being within the cap keyway and the cap flange being in sealing relationship within a tube groove.

4. A closure comprising a first elongated ring member closed at its upper end and having an inner flange at its lower end, a second elongated ring member open at both ends adjustable in axially slidable pressure sealing contact within the annular flange of the first member and having at its bottom portion a spirally shaped rib adapted to be secured to the mouth of a container, said members having a cooperating axial keyway and key to prevent relative rotation with respect to each other, said second member having two outer annular circumferential grooves adapted for snap-on cooperative engagement with the first member flange while the said first and second members are slidably engaged and wherein at least one of the said members is fabricated of a resilient material.

References Cited in the file of this patent

UNITED STATES PATENTS

2,364,126 Cantor et al. ----- Dec. 5, 1944

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,998,893

September 5, 1961

Ralph H. Thomas

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 26, after "inner" insert -- annular --.

Signed and sealed this 3rd day of April 1962.

(SEAL)

Attest:

ERNEST W. SWIDER

Attesting Officer

DAVID L. LADD

Commissioner of Patents