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R. S. SCHULTZ ET AL

3,191,806

STAND-UP CONTAINER

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Fig. 1.

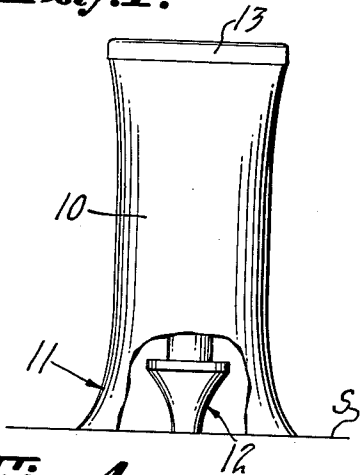


Fig. 3.

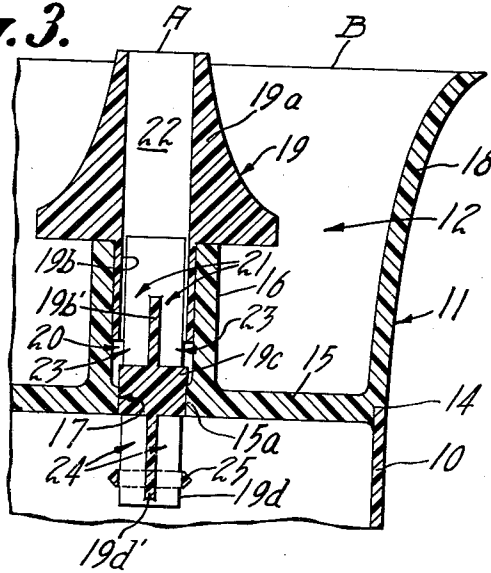


Fig. 4.

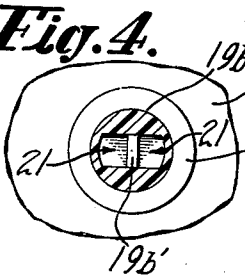


Fig. 2.

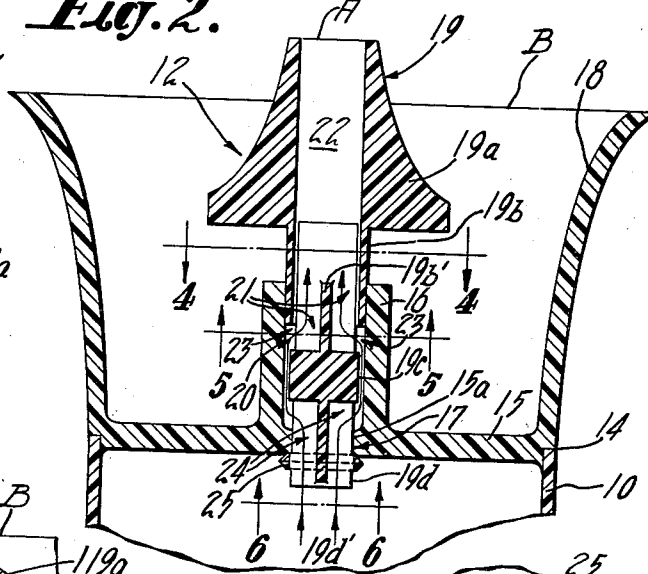


Fig. 5.

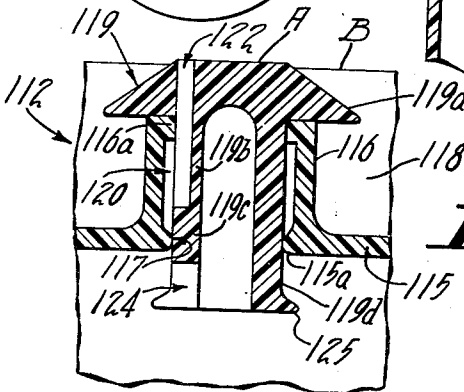
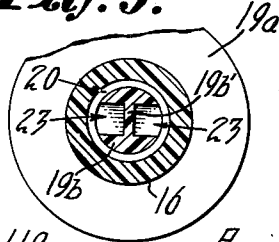


Fig. 6.

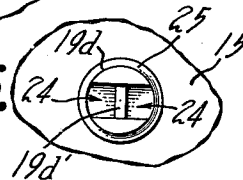


Fig. 7.

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3,191,806

STAND-UP CONTAINER

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5 Claims. (Cl. 222-41)

This invention relates to a container capable of standing upright or erect while on display or when not in use. More particularly, this invention is concerned with a collapsible dispensing tube having pedestal means at its discharge end for supporting it in upright position, which pedestal means also function to ensure positive closure of the tube when placed in its upright position.

Collapsible tubes presently enjoy great popularity for packing a wide variety of consumer products, including comestibles, cosmetics, medicaments, toiletries, detergents, etc. Unlike other types of containers, such as fibre cartons, metal cans and glass or plastic bottles and jars which have a flat base for convenient placement on a shelf or table, collapsible tubes generally are fabricated with some type of neck or dispensing device at one end and closed at the other by a transverse seam or seal having very little base area. As a consequence, collapsible tubes are not longitudinally stable or capable of standing erect and customarily are vended either in rectangular cartons or placed on their sides in a prone position on display counters. This characteristic has several disadvantages among which are low shelf space economy, less effective display both from the standpoint of orderly shelf arrangement and the placement of product and origin labels, and increased package cost where the tubes are placed in outer cartons. There are disadvantages to the consumer, too, since it is necessary, between product usage, to place the tube prone in its storage area which takes up far more space than standing it erect as is the case with most other household product packages.

An object of the present invention is to provide a collapsible tube capable of standing erect while on display and between intervals of product usage.

Another object of this invention is to provide a collapsible tube having integral means for supporting it in erect position as a stand-up container.

Still another object of this invention is the provision on a collapsible tube of pedestal means for supporting it in an erect position, which means also functions to ensure that the tube closure is fully sealed when not in use.

These and other objects and advantages of this invention will become apparent from the following description which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

FIGURE 1 is a side elevational view, partly broken away, of a collapsible tube embodying our invention and shown in use as a stand-up container.

FIGURE 2 is a sectional view of the pedestal end of the tube of FIGURE 1, illustrating its closure device in open position, with the dispensing end disposed uppermost.

FIGURE 3 is a sectional view similar to FIGURE 2, illustrating the closure device in closed position.

FIGURES 4, 5 and 6 are sectional views taken along lines 4-4, 5-5 and 6-6, respectively, of FIGURE 2.

FIGURE 7 is a sectional view illustrating a modified form of a dispensing device usable in our invention.

A preferred or exemplary form of our invention is illustrated in FIGURE 1 and is shown standing on a flat surface, or table top S, in its intended erect or stand-up position. This collapsible tube comprises a tubular body

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10, an apertured headpiece generally designated 11 and a dispensing device generally designated 12, including a closure means hereinafter described, mounted in the headpiece. The collapsible tube may be constructed of metallic or thermoplastic material, or may be made of a combination of material suitable for squeeze-to-use tube containers. For example, body 10 may be a laminate of two or more layers of plastic, foil or paper, and headpiece 11 may be made entirely of plastic and integrally united to the body in a well known manner, such as taught in the U.S. Patent 2,673,374 to Strahm. The end of the tube opposite to the headpiece 11 is customarily closed after product filling by means of a transverse seam or seal 13, formed by pinching the tube walls together at this end under heat and pressure or by other ways of achieving a permanent fluid-tight seal. Formed in this manner, the base area of seam 13 is quite small and distributed solely along a diametral line; consequently, the tube is longitudinally unstable and incapable of standing erect on this permanently sealed end.

Turning now to FIGS. 2 and 3, the structural features of our novel tube giving it stand-up capability are shown in detail. Headpiece 11, shown integrally connected to body 10 in a fused or welded joint 14, comprises a transversal wall 15, a hollow sleeve 16 centered in wall 15 over a central aperture 17, and an annular peripheral wall 18 which extends upwardly from transversal wall 15 to define therewith a recessed end, which peripheral wall provides the pedestal means by which the tube can be stood erect.

Dispensing device 12 is illustrated, in its exemplary form, as a push-pull closure which includes the hollow sleeve 16 and a plunger 19 slidably mounted within the sleeve for operation between an open and closed position (FIG. 2 and FIG. 3, respectively). Transversal wall 15 extends inwardly beyond the inside diameter of sleeve 16 to provide an annular bead or sealing flange 15a, the inner surface of which defines aperture 17. Flange 15a and sleeve 16 define a chamber 20 within which the plunger 19 is movable between its open and closed position.

The upper end of the plunger is constructed with an enlarged section 19a which overlies and is adapted to seat against the upper edge of sleeve 16. Below this enlargement, the plunger includes a section 19b which slidably engages the inner surface of sleeve 16, an imperforate section 19c adapted to slidably seal aperture 17 when the plunger is in closed position (FIG. 3), and an inner section 19d which extends through the aperture into the interior of the tube.

Section 19b, which is dimensioned to tightly slidably seal chamber 20 against egress of product, is provided with a pair of passages 21, 21 which merge into a single discharge passage 22 extending through the upper enlarged section 19. These passages, separated by a thin wall 19b' which provides the integral connection between sections 19b and 19c, are in constant communication with chamber 20 by means of a pair of radial ports 23, 23, which are but the lowermost ends of passages 21, 21 at the point of discontinuity between section 19b and imperforate section 19c. This construction is best illustrated in section in FIGURES 4 and 5.

As illustrated, imperforate section 19c is slightly smaller in diameter than the outer surface of section 19b, and is adapted to slide tightly into and seal aperture 17. Section 19d, below the imperforate section, however, also is provided with a pair of passages 24, 24 separated by a thin web 19d' similar to the arrangement above described for section 19b. A stop lug or rib 25 is provided near the innermost end of section 19d of the plunger and is adapted to engage against the inner surface of

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projecting flange 15a in the up position of the plunger to prevent its inadvertent dislodgement.

In operation of the push-pull closure plunger above described, passages 21, 21 and ports 23, 23 in upper section 19b are in constant communication with chamber 20, and passages 24, 24 in lower section 19d are in constant communication with the interior of the container. When the plunger is raised to the up or open position (FIG. 2), imperforate section 19c is withdrawn from its sealing engagement within aperture 17 and passages 24, 24 are brought into communication with chamber 20, thereby allowing the product to be dispensed to pass from the interior of the container through passages 24, 24 into chamber 20 around imperforate section 19c and then out through ports 23, 23, passages 21, 21 and passage 22. When plunger 19 is again pressed down to its closed position, imperforate section moves in to block aperture 17, and lower passages 24, 24 move out of communication with chamber 20. Simultaneously, the lower surface of enlarged section 19a comes to rest against the upper edge of sleeve 16 to properly position imperforate section 19c within the aperture.

As best illustrated in FIG. 3, the longitudinal position of the closure plunger 19 when closed has an important relationship to the height of the upstanding peripheral wall 18. That is, the height of sleeve 16 and the position of enlarged section 19a when it rests on the upper edge of sleeve 16 are such that the outer tip end A of the plunger substantially coincides with the plane of the upper edge B of peripheral wall 18. Preferably, plunger 19 is constructed so that tip A, rather than exactly coinciding with the plane of edge B, actually extends slightly beyond a few thousands of an inch. The reason for this is so that when the tube is inverted and stood erect on a flat surface, such as a shelf or counter surface S as illustrated in FIG. 1, tip A also makes contact with this surface which forces plunger 19 into its properly closed and sealed position. This ensures a positive closure of the plunger, regardless of any dimensional irregularities in the plunger or headpiece parts due to fabrication tolerances, shrinkage or wear. The amount that tip A extends beyond edge B, however, is not so great as to cause the tube to tip over. Rather, it extends just enough to always compensate for predictable dimensional irregularities, which as a practical matter are never so great that the slight amount of tip extension cannot be absorbed or compensated for by the ability of transversal wall 15 to yield and flex inwardly slightly when tip A and edge B rest against surface S. Should the consumer inadvertently leave plunger 19 in its up or open position after use, tip A in this instance extends sufficiently beyond edge B as to cause the tube to tilt to a noticeable extent or tip over, thus providing a warning that the plunger is not properly closed.

As illustrated, peripheral wall 18 is arcuate in cross-section and flares upwardly and outwardly from transversal wall 15 in what may be described as a bell-shaped configuration. At present, this is the preferred arrangement, but it is envisaged that various modifications may be introduced to achieve different aesthetic effects. For example, wall 18 need not be continuous but may take the form of a plurality of space fingers or legs, or the upper edge E may be fluted or petal shaped instead of planar as shown.

Turning now to FIG. 7, there is illustrated a modified form of dispensing closure generally designated 112, adaptable to our invention. Similar in structure and function to the arrangement described above, this modified closure comprises sleeve 116 formed integrally with transversal wall 115 of the headpiece, which wall extends radially inwardly in the form of an annular bead or flange 115a to define an aperture 117. The upper end of sleeve 116 may be provided with an inturned flange 116a at the top of the chamber 120 defined by the sleeve and bottom flange 115a. Slidably movable between an open

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and closed position within sleeve 116 is a plunger generally designated 119, comprising an upper enlarged section 119a which overlies and is adapted to seat upon the upper edge of sleeve 116 and flange 116a, a stem section 119b depending into the chamber and having a passage 122 in its outer surface which extends upwardly through enlarged section 119a, an imperforate section 119c adapted to slide in and out of sealing engagement with aperture flange 115a, and an innermost section 119d having a passage 124 in constant communication with the interior of the container and having a stop bead or lug 125 formed at its lower end for limiting the upward movement of the plunger. To open the valve, plunger 119 is lifted to remove imperforate section 119c from aperture 117 and raise passage 124 into communication with chamber 120, thereby enabling product to flow out through passage 122 which is in constant communication with chamber 120. Flange 116a sealingly engages the periphery of stem section 119b and blocks egress of the product at the top of the chamber. As with the previously described embodiment, upper surface or tip A of plunger 119 substantially coincides with edge B of the surrounding pedestal wall 118 to ensure that the valve is fully closed when the tube is stood in its erect position.

It is contemplated that other closure configurations, of the push-pull type as herein illustrated as well as threaded closures and swivel closures, may be used in our invention. These and other embodiments and modifications will suggest themselves to those skilled in the art deemed to be within the spirit and scope of our invention.

We claim:

1. A stand-up collapsible tube having a support pedestal at its discharge end, comprising a tubular body sealed at one end, a headpiece integral with the opposite discharge end of said body, and a dispensing device operable between an open and closed position mounted in said headpiece, said headpiece including a transversal apertured wall overlying said discharge end and an axially projecting peripheral wall as said pedestal terminating in a planar edge spaced a predetermined distance from said transversal wall, said dispensing device including a hollow valve body centered over the aperture in and integral with said transversal wall and a valve closure slidable in said body between open and closed position, said closure terminating in an end surface outwardly of said transversal wall, which surface is adapted to project substantially beyond said planar edge when in open position and to substantially coincide with said planar edge when in closed position.

2. The tube of claim 1 wherein said body defines a cylindrical chamber and said closure is a slidable plunger having an upper portion slidably sealing said chamber with a passage therein in constant communication with said chamber, an imperforate intermediate portion slidable in and out of sealing engagement with said aperture, and a lower portion extending through said aperture with a passage therein in constant communication with the interior of said tube and adapted to communicate with said chamber when said plunger is raised to open position.

3. The tube of claim 1 wherein said body defines a cylindrical chamber and said closure is a slidable plunger having a passaged enlargement overlying and seatable on said body and also having a hollow stem extending through said chamber and said aperture, said stem having a diameter less than said chamber and substantially equal to said aperture, a portion of said stem directly below said enlargement having an axial groove on its outer surface aligned with and communicating with the passage in said enlargement and with said chamber, and an innermost portion of said stem having a passage in constant communication with the interior of said tube and adapted to communicate with said chamber when said plunger is raised to open position.

4. A stand-up container having a support pedestal

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at its discharge end, comprising a tubular body, a headpiece integral with the discharge end of said body, and a dispensing closure mounted in said headpiece, said headpiece including a transversal apertured wall centrally mounting said closure and an axially projecting wall as said pedestal extending from the periphery of said transversal wall and terminating in a planar peripheral edge spaced a predetermined distance from said transversal wall, said closure including a passaged neck positioned wholly within said pedestal and a neck-sealing member normally closing said neck and adapted to be moved relative to said neck to open same for egress of product, said member being movable to a position substantially within said pedestal with the outermost extremity of said member substantially coinciding with the plane of said peripheral edge of said pedestal to ensure positive closure when said container is stood erect and being movable outwardly from said plane when not in fully closed position to cause a tilting of said container as an indicator of an incomplete closure.

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5. The container of claim 4 wherein said sealing member is axially movable relative to said neck and includes a projecting spout portion movable to a normally closed position slightly beyond the plane of said pedestal edge insufficient to cause tilting of said container and to an open position substantially beyond said edge sufficient to cause tilting.

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