Jan. 28, 1964 E. W. LYNN 3,119,541

HANGING CAP AND CONTAINER COMBINATION

Filed Dec. 28, 1961

Fig. 2.

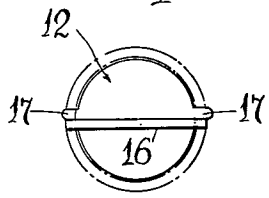



Fig. 3.

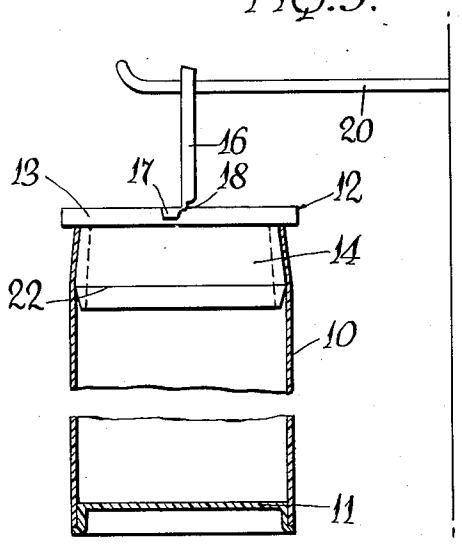



Fig. 1.

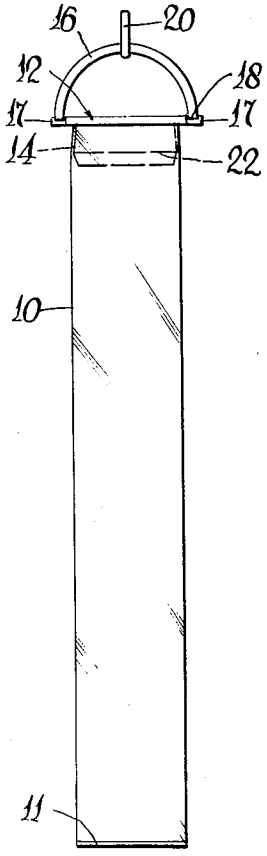
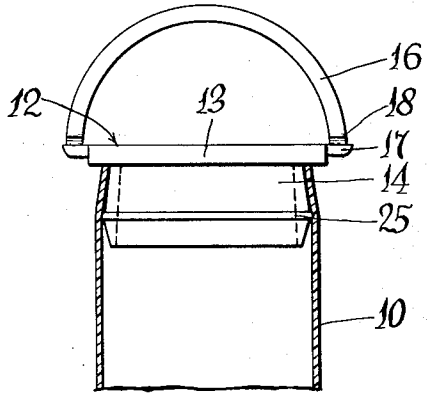



Fig. 4.




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United States Patent Office 3,119,541 Patented Jan. 28, 1964



3,119,541

# HANGING CAP AND CONTAINER COMBINATION

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Filed Dec. 23, 1961, Ser. No. 162,853
11 Claims. (Cl. 229—5.5)

This invention relates to a container and closure combination and more particularly to a combination wherein the container and closure are of organic plastic material and formed so that a secure closure is effected by merely pushing a portion of the closure into the open end of the container.

For display purposes and for other reasons it is often desirable to hang a container from a peg or hook and the construction of the closure and container combination of the present invention is particularly advantageous in such instances. In addition to the novel assembly of the closure with respect to the container, the present invention provides a novel hanger arrangement wherein the plastic cap is provided with an integral loop or bail which normally occupies no additional space, as in packing or the like, and which may readily be pivoted to operative position when the same is to be employed in hanging a container with which the cap or closure is associated.

In the form of the invention disclosed herein in detail, by way of example, the closure member includes a plug for insertion in the open end of a thermoplastic container wherein the plug is in the form of a hollow skirt and is accordingly slightly yieldable in a radial direction. Furthermore, the external periphery of this hollow skirt formation is such as to produce a novel embracing action of the flexible open end portion of the container when the plug or skirt portion of the closure is inserted therein.

The materials of the container and the closure are moderately critical since the relative yieldability of the container end portion and the closure contribute to the above mentioned novel embracing action of the container with respect to the plug portion of the closure. In a preferred form the container is formed of a cellulosic plastic material and the closure is preferably of polypropylene although linear polyethylene may be employed with reasonably good results.

The hinge construction of the aforementioned bail or hanger member is particularly satisfactory when polypropylene is employed in molding the closure. In such case despite the very attenuated cross-section of the actual hinge part of the closure the same is of adequate strength and durability and withstands repeated hinging flexure.

Specific embodiments of the present invention are illustrated in the drawing and described in detail in the following specification but it is to be understood that such embodiments are by way of example only and that various mechanical modifications may be made therein without departing from the spirit of the invention, the scope of which is limited only as defined in the appended claims.

In the drawing:

FIG. 1 is a general elevational view of one form of the container and closure combination of the present invention shown suspended from a hook or the like;

FIG. 2 is a top plan view of the container and closure of FIG. 1;

FIG. 3 is an enlarged fragmentary elevational view partly in cross-section of the structure of FIG. 1 but viewed at right angles thereto; and

FIG. 4 is a fragmentary cross-sectional elevational view of the upper portion of a container showing a slightly modified closure member.



Like characters of reference denote like parts throughout the several figures of the drawing. In FIGS. 1 and 3 the container is shown to comprise a relatively thin walled tubular body member 10 of cellulose acetate, cellulose acetate butyrate, cellulose nitrate, or other cellulosic plastic material having approximately similar physical properties, particularly with regard to flexibility. The plastic employed must be flexible enough to be rather readily distended when a slightly larger closure plug is inserted therein.

In the present instance body member 10 is about one inch in diameter and the wall thickness is approximately .015 inch. In the present instance the bottom of the container is in the form of a flanged disc 11 of molded plastic material which is set into the bottom end of tubular body member 10 and may be pressed securely therein, cemented, heat bonded or otherwise fixed to the body member.

The closure illustrated in FIGS. 1, 2 and 3 is designated generally by the numeral 12 and comprises a flat disc portion 13 and a reduced skirt portion 14 of smaller diameter than disc portion 13. Skirt portion 14 is preferably hollow and relatively thin walled as shown in FIG. 3 whereby it possesses a desired degree of radial resilience. The closure 12 is preferably of polypropylene or other organic plastic material having similar physical properties.

Linear polyethylene may also be satisfactorily employed although polypropylene is slightly preferable in the above specified size and proportions of the container wall.

A novel bail or loop member for use in hanging the container and closure combination for display purpose or otherwise comprises a semi-circular member 16 which is formed integrally with closure 12. The disc portion 13 of the closure is provided with a pair of diametrically oppositely projecting trunnion formations 17 and the bail 16 is molded integral with the trunnions 17, being connected by a relatively thin web portion designated 18 in FIG. 3.

When the closure 12 is initially molded the bail 16 lies in the same plane as disc portion 13 of the closure and the bail will normally retain such position until its use for hanging or suspension purposes is desired when the same is hinged to the position illustrated in the drawing. Thus the presence of the bail does not complicate packing and effects no increase in the length of the package and very little increase in overall diameter of the closure 12.

When the container and closure combination is to be suspended the bail, as previously stated, may merely be moved pivotally to the position illustrated in FIGS. 1, 2 and 3 and suspended from a hook 20 or other suspension means.

Referring particularly to FIG. 3, it will be noted that the external periphery of the skirt portion 14 of the closure 12 is double tapered and accordingly has a ridge formation 22 of maximum diameter. In the present instance, by way of example, the initial free diameter of ridge portion 22 may be approximately ten thousandths of an inch larger than the initial free inside diameter of the tubular body member 12. The lower end of skirt portion 14 as viewed in FIG. 3 is of substantially less diameter than the inside diameter of tubular body member 10 to permit easy entry of the skirt or plug portion into the body member.

When the skirt 14 is inserted into tubular body member 10 the latter is distended by the ridge formation 22 of the skirt portion and this distention causes the upper end of the tubular body member 10, from the ridge formation to the underside of the disc portion 13 of closure 12, to assume the tapered form illustrated in FIG. 3 wherein such

upper portion of the tubular body member 10 closely embraces the upper inwardly tapering portion of skirt 14 to provide a simple but unusually effective holding action which retains the closure 12 in its inserted position against accidental dislodgment, although a substantial intentional pulling force on the closure permits the same to be withdrawn from the tubular body portion 10 when desired.

The form of the invention illustrated in FIG. 4 is substantially identical with that of the preceding figures excepting that in FIG. 4 the ridge formation 22 of the previously described embodiment comprises a relatively small encircling bead formation 25. This bead also provides an excellent retention action and produces the above described inward flexing of the container body above the bead while permitting forcible intentional removal of the closure by withdrawing movement. In FIG. 4 numerals the same as those employed in describing the structure of the previous embodiment are employed throughout, excepting as to the bead formation 25 since the structure is otherwise the same as in FIGS. 1, 2 and 3.

I claim:

1. A container and closure combination comprising a flexible thermoplastic container having an open relatively thin walled distendible tubular end portion having a cylindrical interior wall and a closure comprising an outer discoidal portion of greater diameter than the interior of said tubular container end portion to seat thereagainst and a hollow skirt portion adapted to be pressed into said open end portion, said skirt portion having a greatest diameter ridge portion medially of its length in an axial direction tapering gradually to smaller diameters at the outer end of the skirt portion and at the juncture thereof with the discoidal portion, said greatest diameter portion being greater than the internal diameter of said container open end portion to distend said cylindrical wall whereby the same seals securely against said tapering portions of said closure.

2. A container and closure combination comprising a flexible thermoplastic container having an open relatively thin walled distendible tubular end portion having a cylindrical interior wall and a closure comprising an outer discoidal portion of greater diameter than the interior of said tubular container end portion to seat thereagainst and a plug portion adapted to be pressed into said open end portion, said plug portion having its greatest diameter medially of its length in an axial direction to form a ridge and tapering gradually to smaller diameters at the outer end of the plug portion and at the juncture thereof with the discoidal portion, said greatest diameter of said plug being sufficiently greater than the internal diameter of said container open end portion to distend the container wall at said greatest diameter and thus cause the container portion between said greatest diameter and said discoidal portion to flex inwardly and thereby closely embrace the adjacent tapering portion of said plug portion.

3. A container and closure combination comprising a flexible thermoplastic container having an open relatively thin walled distendible tubular end portion having a cylindrical interior wall and a closure comprising an outer portion and a hollow skirt portion adapted to be pressed into said container open end portion, said skirt portion having a greatest diameter ridge portion medially of its length in an axial direction tapering gradually to smaller diameters in both directions axially therefrom, said greatest diameter portion being greater than the internal diameter of said container open end portion and said smaller diameters being smaller than the internal diameter of said container open end portion to distend said cylindrical wall whereby the same seals securely against said tapering portions of said closure.

4. A container and closure combination comprising a cellulosic plastic container having an open relatively thin walled distendible tubular end portion having a cylindrical interior wall and a polypropylene closure comprising an outer discoidal portion of greater diameter than the interior of said tubular container end portion to seat thereagainst and a hollow skirt portion adapted to be pressed into said open end portion, said skirt portion having a greatest diameter ridge portion medially of its length in an axial direction tapering gradually to smaller diameters at the outer end of the skirt portion and at the juncture thereof with the discoidal portion, said greatest diameter portion being greater than the internal diameter of said container open end portion to distend said cylindrical wall whereby the same seals securely against said tapering portions of said closure.

5. A container and closure combination comprising a cellulosic plastic container having an open relatively thin walled distendible tubular end portion having a cylindrical interior wall and a polypropylene closure comprising an outer discoidal portion of greater diameter than the interior of said tubular container end portion to seat thereagainst and a plug portion adapted to be pressed into said open end portion, said plug portion having a greatest diameter ridge portion medially of its length in an axial direction tapering gradually to smaller diameters at the outer end of the plug portion and at the juncture thereof with the discoidal portion, said greatest diameter portion being greater than the internal diameter of said container open end portion to distend said cylindrical wall whereby the same seals securely against said tapering portions of said closure.

6. A container and closure combination comprising a flexible thermosplastic container having an open relatively thin walled distendible tubular end portion and a closure comprising an outer discoidal portion of greater diameter than the interior of said tubular container end portion to seat thereagainst and a skirt portion adapted to be pressed into said open end portion, said skirt portion having a greatest diameter portion medially of its length in an axial direction tapering to smaller diameters at the outer end of the skirt portion and at the juncture thereof with the discoidal portion, said greatest diameter portion being greater than the internal diameter of said container open end portion, said discoidal portion having a pair of diametrically opposed trunnion formations projecting radially outwardly therefrom, and a semi-circular bail formation normally encircling one-half of the periphery of said discoidal portion and formed integrally with said trunnion formations at its ends, the connections between said trunnion formations and said bail formation ends being relatively thin in a direction axially of said discoidal portion to permit ready hinging action of said bail formation about said trunnion formations.

7. A container and closure combination comprising a flexible thermoplastic container having an open relatively thin walled distendible tubular end portion and a closure comprising an outer discoidal portion of greater diameter than the interior of said tubular container end portion to seat thereagainst and a plug portion adapted to be pressed into said open end portion, said plug portion having a diameter portion greater than the internal diameter of said container open end portion, said discoidal portion having a pair of diametrically opposed trunnion formations projecting radially outwardly therefrom, and a semi-circular bail formation normally disposed generally in the plane of said discoidal portion encircling one-half of the periphery thereof and formed integrally at its ends with said trunnion formations, the connections between said trunnion formations and said bail formation ends being relatively thin in a direction axially of said discoidal portion to permit ready hinging action of said bail formation about said trunnion formations.

8. A container closure of flexible thermoplastic material comprising an outer discoidal portion adapted to seat against the open end of a container and a plug portion adapted to be pressed into said open end, said plug portion having a greatest diameter portion medially of its length in an axial direction tapering to smaller diameters

at the outer end of the plug portion and at the juncture thereof with the discoidal portion, said greatest diameter portion being greater than the internal diameter of said container open end, said discoidal portion having a pair of diametrically opposed trunnion formations projecting radially outwardly therefrom, and a semi-circular bail formation normally disposed generally in the plane of said discoidal portion and encircling one-half of the periphery thereof and formed integrally at its ends with said trunnion formations, the connections between said trunnion formations and said bail formation ends being relatively thin in a direction axially of said discoidal portion to permit ready hinging action of said bail formation about said trunnion formations.

9. A container closure of flexible thermoplastic material comprising an outer discoidal portion adapted to seat against the open end of a container and a plug portion adapted to be pressed into said open end, said plug portion having a diameter portion greater than the internal diameter of said container open end, said discoidal portion having a pair of diametrically opposed trunnion formations projecting radially outwardly therefrom, and a semi-circular bail formation normally disposed generally in the plane of said discoidal portion and encircling one-half of the periphery thereof and formed integrally at its ends with said trunnion formations, the connections between said trunnion formations and said bail formation ends being relatively thin in a direction axially of said discoidal portion to permit ready hinging action of said bail formation about said trunnion formations.

10. A container closure of flexible thermoplastic material comprising an outer discoidal portion adapted to seat against the open end of a container and a hollow skirt portion adapted to be pressed into said open end, said skirt portion having a greatest diameter portion medially of its length in an axial direction tapering to smaller diameters at the outer end of the skirt portion and at the juncture thereof with the discoidal portion, said greatest diameter portion being greater than the internal diameter of said container open end portion, said discoidal portion having a pair of diametrically opposed trunnion formations projecting radially outwardly therefrom, and a semi-circular bail formation normally disposed generally in the plane of said discoidal portion and encircling one-half of the periphery thereof and formed integrally at its ends with said trunnion formations, the connections between said trunnion formations and said bail formation ends being relatively thin in a direction axially of said discoidal portion to permit ready hinging action of said bail formation about said trunnion formations.



11. A container closure of flexible thermoplastic material comprising an outer discoidal portion adapted to seat against the open end of a container and a hollow skirt portion adapted to be pressed into said open end, said skirt portion having a diameter portion greater than the internal diameter of said container open end portion, said discoidal portion having a pair of diametrically opposed trunning formations projecting radially outwardly therefrom, and a semi-circular bail formation normally disposed generally in the plane of said discoidal portion and encircling one-half of the periphery thereof and formed integrally at its ends with said trunnion formations, the connections between said trunnion formations and said bail formation ends being relatively thin in a direction axially of said discoidal portion to permit ready hinging action of said bail formation about said trunnion formations.

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