

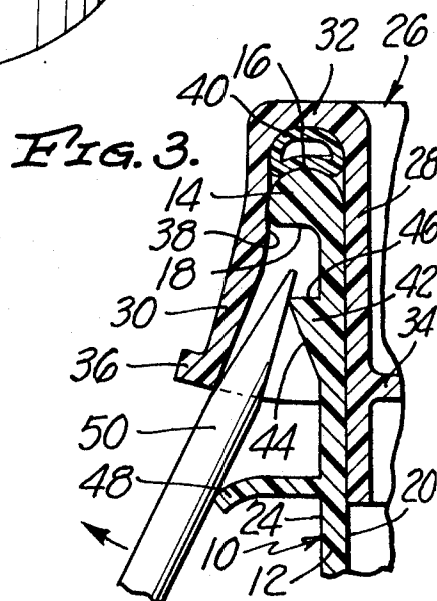
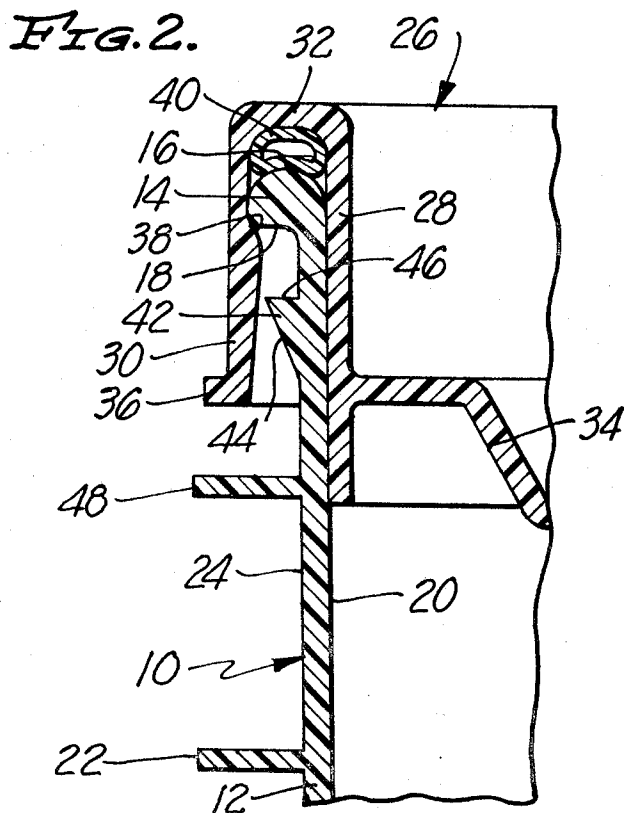
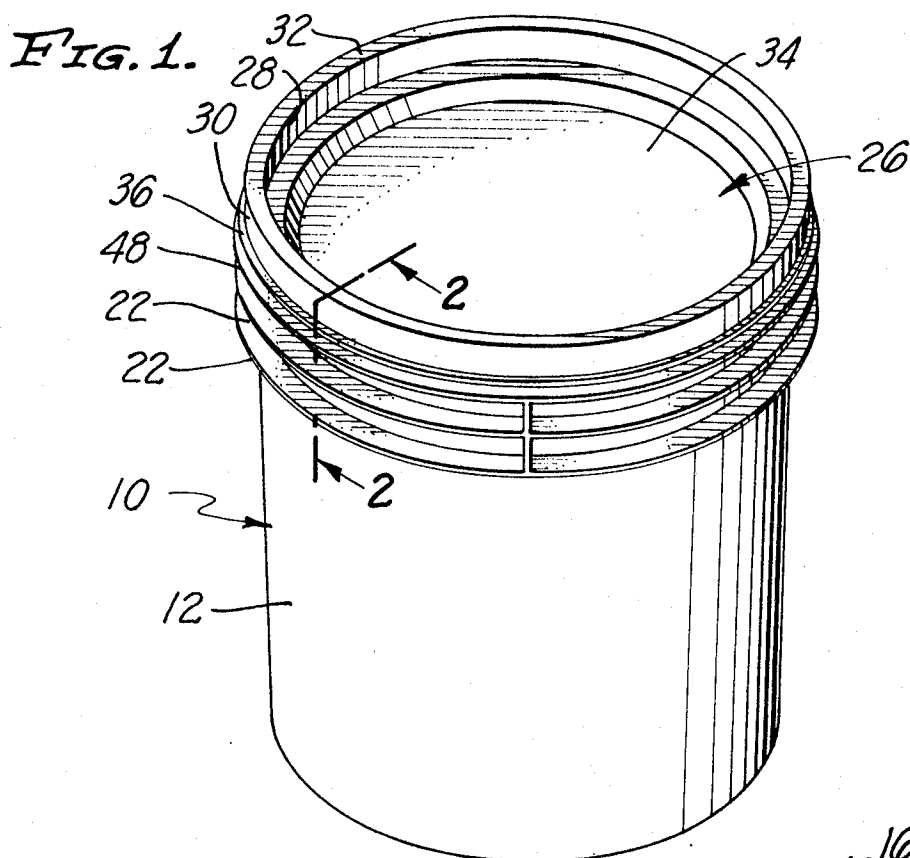
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CONTAINER WITH COVER AND HIDDEN COVER RELEASE

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CONTAINER WITH COVER AND HIDDEN COVER RELEASE

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10 Claims

ABSTRACT OF THE DISCLOSURE

An outwardly projecting annular bead is formed at the upper termination of a plastic container side wall downwardly engaged by an inverted U-shaped edge portion of a cover, an outer flange of the cover edge portion having an inward projection engaging beneath the container bead. An annular deflection rib preferably projects outwardly from the container side wall underlying and projecting outwardly beyond the cover edge portion flange protecting said flange against inadvertent engagement. An annular engagement rib also projects outwardly from the container side wall spaced between the container bead and deflection rib, said engagement rib preferably being formed outwardly-upwardly angled with a substantially flat upper surface, and normally being covered by the cover edge portion flange. The cover edge portion flange is flexible and may be deformed outwardly by a tool inserted upwardly and inwardly of the cover flange to engage over the container engagement rib so as to flex the cover flange outwardly from engagement with the container bead and displace the cover upwardly from engagement with the container.

BACKGROUND OF THE INVENTION

This invention relates to a molded plastic container and cover construction of the type wherein the cover has an outer flange received downwardly over an annular, outwardly projecting bead at the upper termination of the container side wall, said cover flange normally covering an engagement rib which may be engaged by a tool inserted upwardly within the cover flange flexing the cover flange outwardly and disengaging the cover flange from the container bead for removal of the cover from the container. Furthermore, the container preferably includes an outwardly projecting annular deflection rib spaced below the engagement rib and cover flange with the deflection rib projecting outwardly a greater distance than the outer extremities of the cover flange so as to protect the cover flange against inadvertent engagement which could cause a beginning of disengagement from the container. The deflection rib is sufficiently flexible so as to permit the tool insertion for engagement with the engagement rib as described.

Various molded plastic container and cover constructions have heretofore been provided of the general type wherein an outer annular flange of the cover normally engages downwardly over an annular bead at the upper termination of the container side wall, the cover flange having an inward projection engaging beneath the container bead and retaining the cover sealed on the container. One of the basic difficulties with this prior form of molded plastic container and cover has been the problem of disengaging the cover from the container when it is desired to remove the same. If the cover flange is formed sufficiently flexible for ease in disengagement thereof from the container bead in the cover removal, then the cover does not have sufficiently strong sealing qualities with

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the container for the retainment of heavier material therein, yet if the cover flange is less flexible for stronger sealing, the problems of disengagement are greatly increased.

As a result, if secure engagement of the cover with the container is required, it is necessary to make use of a tool, such as a screw driver, for at least initiating the release of the cover from the container, that is, an end of the tool is inserted upwardly between the cover flange and the container side wall, with upwardly pivoting of the tool urging the cover upwardly from engagement with the container. The basic forces required for such release are a combination of outward flexing of the cover flange to disengage the same from the container bead, while at the same time, an upward force being exerted on the cover to urge the same upwardly from the container. In order to supply the required forces, the tool must be retained tightly against the container wall during the pivoting thereof which has resulted in serious damage to the containers being manipulated.

This release problem is even more greatly magnified in the case where the cover edge portion is formed inverted U-shaped with an outer flange outwardly telescoping the container side wall and an inner flange inwardly telescoping the container side wall. This more complex cover construction is used for supplying greater rigidity to the container side walls during cover and container engagement, and also serves to strengthen the sealing between the cover outer flange and the container bead. Obviously, however, this gives even greater sealing between the cover and container and appreciably increases the difficulty of removal of the cover from the container.

There have been certain prior attempts to solve the foregoing release problem by the provision of an annular engagement rib projecting outwardly from the container side wall spaced below the cover flange when such flange is secured over the container bead. This engagement rib thusly positioned provides a ledge for retaining the end of the tool used for releasing the cover from its sealing engagement with the container during the tool upward pivotal movement. Although these engagement ribs have aided in solving the problem in certain instances, they are still objectionable in most cases for at least two reasons.

One reason is that with the engagement rib spaced below the cover flange when the cover flange is engaged with the container bead, and particularly with the cover formed of flexible plastic, upward pivoting of the tool tends to flex the cover flange but does not give sufficient upward force for completing the release of the cover from the container. Secondly, the space between the engagement rib and the cover flange provides an exposed area within which unwanted objects can become inadvertently engaged with the cover flange and cause an untimely release of the cover from the container. Thus, the problem involved is just how to provide some form of release means which can be conveniently used for aiding in releasing the cover from the container, yet providing such release means in such a way that it cannot become inadvertently engaged during storage and transportation of a cover-sealed container.

OBJECTS AND SUMMARY OF THE INVENTION

It is, therefore, an object of this invention to provide a molded plastic container and cover having hidden cover release means on the container conveniently located for engagement by a tool for the release and removal of the cover from the container. According to the present invention, with a molded plastic container and cover construction of the type discussed and having the container bead outwardly engaged by the cover flange, an outwardly projecting engagement rib is formed on the con-

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tainer side wall spaced below the container bead but spaced upwardly from the cover flange lower termination. As a result, the engagement rib forms a ledge for retaining and providing a pivot point for a tool manipulated in forcing the cover upwardly from its container sealing position, yet the positioning of the engagement rib normally upwardly above and covered by the cover flange guards or hides this engagement rib from any possibility of inadvertent engagement which could cause untimely removal of the cover from its container sealing position until such removal is desired.

It is a further object of this invention to provide a molded plastic container and cover of the foregoing general character wherein the unique positioning of the engagement rib places the same guarded or hidden by the cover flange as discussed, while at the same time such positioning of the engagement rib results in maximum proper cover release forces during the cover release operation so that an exceptionally secure engagement may be provided between the cover flange and the container bead for retaining the maximum sealing engagement therebetween without prohibiting the ready release disengagement when required for gaining access to the contents of the container. By placing the engagement rib of the container closely beneath the container bead, although spaced downwardly therefrom, and such engagement rib normally covered by the downward extension of the cover flange during the container and cover sealed engagement, the exact combined outward forces may be applied between the container and cover and again the cover flange by a tool, such as a screw driver, having the end thereof pivotal over such engagement rib. Upward pivoting of the tool with the engagement rib serving as the pivot point, and with the cover flange outwardly covering the engagement rib, causes simultaneous outward distortion or flexing of the cover flange to disengage the same from its engagement with the container bead, while at the same time, urging the cover upwardly from the container bead and from its normal engaged sealing position.

It is also an object of this invention to provide a molded plastic container and cover having the foregoing advantageous features and attributes wherein an annular deflection rib may also be provided on the container side wall projecting outwardly beyond and spaced below both the container engagement rib and the cover flange lower extremity when the cover is in its normal sealing position over the container to further provide an even more secure sealing of the cover over the container in this sealing position and even more completely guarding the construction against inadvertent movement of the cover upwardly from such sealing position. The annular deflection rib serves as a barrier against unwanted objects entering the space between the container engagement rib and the outwardly covering cover flange unless purposely inserted therein, and also normally prevents anything from upwardly engaging the cover flange which could force the cover from its sealing position unless such forces are purposely applied as hereinbefore set forth. The flexibility of this barrier positioned deflection rib combined with the flexibility of the cover flange still, however, permits sufficient deformation of these elements for the insertion of the tool upwardly between the container side wall and cover flange for the tool pivotal manipulation over the engagement rib in accomplishing the relatively simple release of the cover from the container, thereby providing all of the foregoing advantages without inhibiting the ready release manipulation.

Other objects and advantages of the invention will be apparent from the following specification and the accompanying drawing which are for the purpose of illustration only.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of an assembled container

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and cover incorporating an embodiment of the principles of the present invention;

FIG. 2 is an enlarged, fragmentary, vertical sectional view looking in the direction of the arrows 2—2 in FIG. 1; and

FIG. 3 is a view similar to FIG. 2, but with a tool, such as a screw driver, inserted for pivotal engagement with the uniquely positioned engagement rib of the present invention and ready for proper manipulation to remove the cover from sealing position with the container.

DESCRIPTION OF THE BEST EMBODIMENT CONTEMPLATED

Referring to FIGS. 1 and 2 of the drawing, a molded plastic container is generally indicated at 10, hollow cylindrical in configuration and having an upstanding side wall 12 terminating upwardly in an outwardly projecting sealing bead 14 so as to define a container upper open end, the container also preferably including a closed bottom end of usual form. As shown in vertical cross section in FIG. 2, the sealing bead 14 extending continuously around the upper termination of the side wall 12 may be of usual form having an upper sealing surface 16 and a lower re-entrant surface 18, the latter being downwardly and outwardly exposed of the side wall 12. The side wall 12 is also preferably slightly inward tapered in its downward projection in usual fashion with a plain inner side 20 and any usual form of reinforcing and stiffening ribs 22 formed on an outer side 24 thereof.

A somewhat usual molded plastic cover generally indicated at 26 is formed with an inverted U-shaped edge portion constituted by a downwardly extending inner flange 28 and a downwardly extending outer flange 30 integrally joined by a connecting portion 32. The inner flange 28, preferably intermediate its downward extension, is integrally connected to a usual, generally horizontally extending closing wall 34, and the outer flange 30 terminates downwardly in a usual outwardly projecting lip 36. The outer flange 30 further includes a usual inward projection 38 projecting inwardly toward the inner flange 28 and adapted for engagement beneath or with the lower surface 18 of the container sealing bead 14 when the cover 26 is positioned over the container 10 as will be hereinafter described.

Thus, as particularly shown in FIG. 2, the cover 26 may be positioned over the open upper end of the container 10 with the cover inner flange 28 received slidably down along the container side wall inner side 20, the cover connecting portion 32 overlying the container sealing bead 14, and the cover outer flange 30 projecting downwardly along the container side wall 12 outwardly of the sealing bead 14 and spaced outwardly of the container side wall terminating downwardly of the sealing bead. A compressible sealing ring 40, preferably formed of resilient material, may be positioned underlying the cover connecting portion 32 and overlying the container sealing bead 14, said sealing ring being downwardly compressed therebetween when the cover 26 is forced downwardly to final sealing position over the container 10 with the inward projection 38 of the cover outer flange 30 engaged beneath and against the sealing bead lower surface 18 as shown. Thus, the assembly of the container 10 and the cover 26 as described is the sealed position of the cover with the container, and the cover can be removed by outward flexing of the cover outer flange 30, due to the necessary resiliency thereof, for disengaging the container sealing bead 14 and permitting the cover to be forced upwardly from its sealing position over the container.

More particularly to the principles of the present invention, a preferably annular, outwardly projecting engagement rib 42 is formed integral on the container side wall outer side 24 spaced below the container sealing bead 14, but above the lower termination of the cover outer flange 30. The engagement rib 42 is preferably formed with an upwardly-outwardly angled side surface 44 termi-

nating upwardly in an inwardly extending, substantially flat upper surface 46. Furthermore, the engagement rib 42 preferably occupies the major portion of the space between the normal extension of the container side wall 12 and the cover outer flange 30 requiring anything of appreciable thickness inserted upwardly beneath the cover outer flange and over the engagement rib upper surface to flex the cover outer flange outwardly for a purpose to be hereinafter pointed out.

An annular, outwardly projecting deflection rib 48 is also formed on the container side wall outer side 24, integrally therewith, spaced below the previously described engagement rib 42 and spaced below the lower extremity of the cover outer flange 30. Particularly important is the fact that the deflection rib 48 projects outwardly from the container side wall outer side 24 beyond the outer extremity or dimensions of the cover outer flange 30 including the lower termination lip 36 thereof. As a result, the deflection rib 48 forms an outwardly projecting barrier preventing any inadvertent engagement with the cover outer flange 30 which could tend to flex the same outwardly and cause inadvertent disengagement of the cover 26 from the container 10 when such cover is in proper sealing position as shown in FIG. 2.

Equally important, the flexibility of the deflection rib 48 serves to permit the previously described engagement rib 42 to act as a unique special cover sealing release means by use of a tool, such as screw driver 50 as shown in FIG. 3. This flexibility of the deflection rib 48 permits the end of the screw driver 50 to be inserted upwardly beneath or inwardly of the cover outer flange 30 for engaging over the container engagement rib 42. As shown in FIG. 3, during such insertion, the container deflection rib 48 flexes downwardly and the cover outer flange 30 flexes outwardly, particularly causing the inward projection 38 of the cover outer flange to disengage from the lower re-entrant surface 18 of the container sealing bead 14 commencing the release of the cover 26 from the container 10 and the cover sealing position with the container.

After the positioning of the screw driver 50 has been obtained as shown in FIG. 3, it is frequently only necessary to thereafter pivot the screw driver over the container engagement rib 42 and the upper surface 46 thereof for not only continuing to flex the cover outer flange 30 outwardly, but also to urge the cover 26 upwardly relative to the container 10 and move the cover inner flange 28 upwardly from slidable engagement with the container side wall inner side 20. Where the container 10 is of the larger sizes or diameters, and in many cases where the molded plastic materials forming the cover 26 are of lesser resiliency or greater stiffness, it may be necessary to not only pivot the screw driver 50 upwardly as described, but at the same time, slide the same circumferentially along the engagement rib 42 while retaining the same engaged therewith so as to complete the convenient release of the cover 26 from its sealing position with the container 10.

Thus, according to the principles of the present invention, the engagement rib 42 on the container side wall outer side 24 serves as a convenient, hidden release means for engagement by a tool, such as the screw driver 50, for the ready and convenient release of the cover 26 from the container 10, the necessary combined outward flexing of the cover outer flange 30 and the upward urging of the cover being quickly accomplished. In view of the fact that this engagement rib 42 is hidden and guarded by the cover outer flange 30, the same cannot be inadvertently engaged to release the cover 26 from the container 10 when it is not desired. Also, when provided, the container deflection rib 48 projecting outwardly beyond the cover flange 30 serves as a guard to prevent inadvertent engagement with the cover 26 which could cause the start of release thereof from the container 10 when it is not desired, this deflection rib also serving as a further guard for the engage-

ment rib 42 and the space between the cover outer flange 30 and the container side wall 12.

We claim:

1. In a container and cover construction, the combination of: a molded plastic container having an upwardly open side wall terminating upwardly in a continuous annular bead around said side wall and projecting outwardly therefrom, an engagement rib on said side wall projecting outwardly therefrom spaced below said annular bead; and a molded plastic cover adapted for reception over said container and having a downwardly extending annular flange outwardly covering said container bead, said flange having an inward projection engaged with an under surface of said container bead normally retaining said cover over said container, said cover flange terminating downwardly below said container engagement rib normally outwardly covering said container engagement rib, said cover flange being flexible and being deformable outwardly by a tool inserted upwardly and inwardly of said cover flange to engage over said container engagement rib so as to flex said cover flange outwardly from engagement with said container and displace said cover upwardly from engagement with said container.

2. Container and cover construction as defined in claim 1 in which said cover flange is an outer flange of an inverted U-shaped cover edge, said cover edge having an inner annular flange adapted for inner telescopic reception along an inner surface of said container side wall, said inner flange extending downwardly within said container side wall and being secured to a generally horizontally extending closing wall of said cover.

3. Container and cover construction as defined in claim 1 in which said container engagement rib is an annular engagement rib generally parallel to and spaced below said container bead covered by said cover flange.

4. Container and cover construction as defined in claim 1 in which said container engagement rib is an annular engagement rib generally parallel to and spaced below said container bead covered by said cover flange, said container engagement rib having an upwardly-outwardly angled side surface terminating upwardly in an inwardly extending substantially flat upper surface spaced below said container bead.

5. Container and cover construction as defined in claim 1 in which said container engagement rib is an annular engagement rib generally parallel to and spaced below said container bead covered by said cover flange, said container engagement rib having an upwardly-outwardly angled side surface terminating upwardly in an inwardly extending substantially flat upper surface spaced below said container bead; and in which said cover flange is an outer flange of an inverted U-shaped cover edge, said cover edge having an inner annular flange adapted for inner telescopic reception along an inner surface of said container side wall, said inner flange extending downwardly within said container side wall and being secured to a generally horizontally extending closing wall of said cover.

6. In a container and cover construction, the combination of: a molded plastic container having an upwardly open side wall terminating upwardly in a continuous annular bead around said side wall and projecting outwardly therefrom, a continuous annular deflection rib on and projecting outwardly from said side wall spaced below said bead, said annular deflection rib terminating spaced outwardly from said bead outward projection, an engagement rib on said side wall projecting outwardly from said side wall spaced between said container bead and said annular deflection rib; and a molded plastic cover adapted for reception over said container and having a downwardly extending annular flange outwardly covering said container bead, said flange having an inward projection engaged with an under surface of said container bead normally retaining said cover over said container, said cover flange terminating downwardly below said con-

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tainer engagement rib normally outwardly covering said container engagement rib, said cover flange downward termination being spaced inwardly of horizontal limits of said container annular deflection rib so as to be protected by said deflection rib from inadvertent upward engagement, said cover flange being flexible and being deformable outwardly by a tool inserted upwardly over said container annular deflection rib and inwardly of said cover flange to engage over said container engagement rib so as to flex said cover flange outwardly from engagement said container bead and displace said cover upwardly from engagement with said container.

7. Container and cover construction as defined in claim 6 in which said cover flange is an outer flange of an inverted U-shaped cover edge, said cover edge having an inner annular flange adapted for inner telescopic reception along an inner surface of said container side wall, said inner flange extending downwardly within said container side wall and being secured to a generally horizontally extending closing wall of said cover.

8. Container and cover construction as defined in claim 6 in which said container engagement rib is an annular engagement rib spaced between said container annular deflection rib and said container bead normally outwardly covered by said cover flange.

9. Container and cover construction as defined in claim 6 in which said container engagement rib is an annular engagement rib spaced between said container annular deflection rib and said container bead normally outwardly covered by said cover flange, said container

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annular engagement rib having an upwardly-outwardly angled side surface terminating upwardly in an inwardly extending substantially flat upper surface.

10. Container and cover construction as defined in claim 6 in which said container engagement rib is an annular engagement rib spaced between said container annular deflection rib and said container bead normally outwardly covered by said cover flange, said container annular engagement rib having an upwardly-outwardly angled side surface terminating upwardly in an inwardly extending substantially flat upper surface; and in which said cover flange is an outer flange of an inverted U-shaped cover edge, said cover edge having an inner annular flange adapted for inner telescopic reception along an inner surface of said container side wall, said inner flange extending downwardly within said container side wall and being secured to a generally horizontally extending closing wall of said cover.

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150—5; 215—41; 220—46, 72

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