April 6, 1965 F. J. REYNOLDS 3,176,867

RECLOSURE CAP FOR BOTTLES

Filed Feb. 21, 1963

FIG. 1

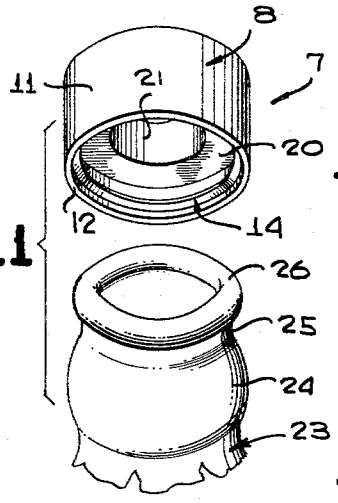


FIG. 2

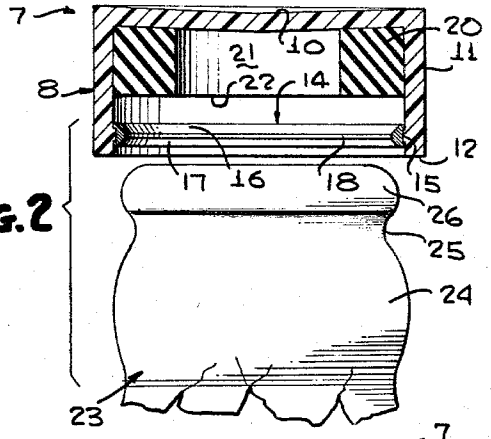


FIG. 3

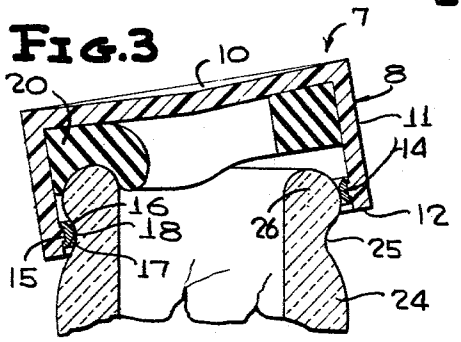


FIG. 4

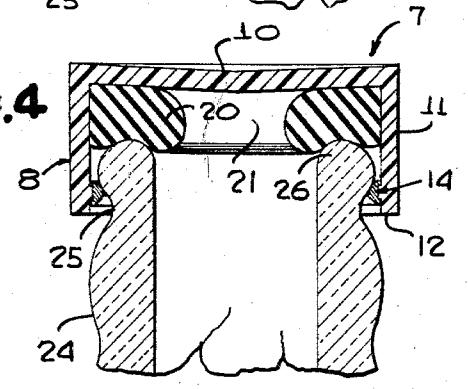


FIG. 5

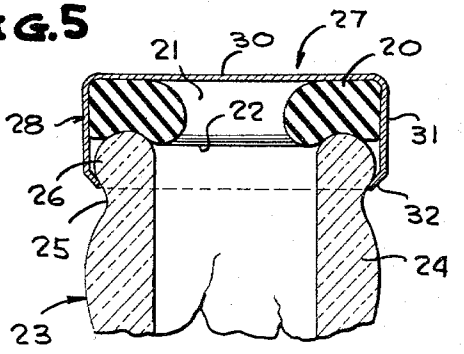
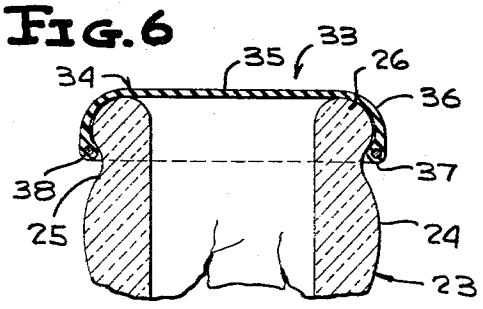


FIG. 6



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RECLOSURE CAP FOR BOTTLES

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6 Claims. (Cl. 215—40)

This invention relates to a novel reclosure cap for bottles, and in particular to a reclosure cap having a locking portion which is easily deformable and relatively non-stretchable and of a dimension less than the external diameter of a lip of a bottle with which the reclosure cap is associated.

An object of this invention is to provide a novel reclosure cap having an end wall and a depending peripheral skirt terminating in an inwardly directed peripheral locking rib or bead having an inside diameter less than the outside diameter of a lip on an associated bottle which is to be reclosed by the reclosure cap.

Still another object of this invention is the provision of a novel reclosure cap constructed in accordance with the depending peripheral skirt, the peripheral skirt having a deformable inwardly directed peripheral locking rib or bead spaced from the end wall of the reclosure cap, the inside diameter of the peripheral locking rib or bead being less than the outside diameter of a lip on an associated bottle which is to be reclosed by the reclosure cap.

A further object of this invention is the provision of a novel reclosure cap constructed in accordance with the immediately above object, and in addition, to provide the reclosure cap with a resilient, annular, compressible, gasket located betwen the end wall and the locking rib or bead of the reclosure cap thereby enabling the peripheral locking rib to be easily forced downwardly below the lip of the bottle and slipped into an annular groove thereof.

A further object of this invention is the provision of a novel reclosure cap having a flexible end wall terminating in a depending peripheral skirt, and a free end portion of the peripheral skirt having a resilient, integral locking rib or bead encasing a relatively non-stretchable, deformable metallic ring, the inside diameter of the encased metallic ring and the integral, resilient peripheral rib or bead thereof being less than the outside diameter of a lip on an associated bottle which is to be reclosed by the resilient reclosure cap.

Still another object of this invention is the provision of a novel reclosure cap formed from an integral piece of metal and including a depending peripheral skirt terminating in an angular, radially, inwardly directed peripheral locking rib or bead which has an inside diameter less than the external diameter of a lip on a bottle which is to be reclosed by the metallic reclosure cap.

A further object of this invention is the provision of a novel reclosure cap constructed from plastic material, the reclosure cap being easily deformable and relatively nonstretchable and including a peripheral skirt provided with an inwardly directed metallic locking rib, the metallic locking rib having a transverse cross-section substantially of triangular configuration with the apex thereof being flattened, the inside diameter of the metallic locking rib or bead being slightly less than the outside diameter of a lip on a head of a bottle which is to be reclosed by the plastic reclosure cap.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawing:

In the drawing:

FIGURE 1 is an exploded perspective view of a reclosure cap constructed in accordance with this invention prior to being inserted upon a head of a bottle, and illustrates an easily deformable and relatively non-stretchable inwardly directed peripheral locking rib or bead formed internally of a skirt of the reclosure cap and an annular gasket located internally of the reclosure cap and spaced from the peripheral locking bead or rib thereof.

FIGURE 2 is an enlarged exploded fragmentary view with parts shown in section, and illustrates a plastic reclosure cap including an internal annular resilient gasket and the cross-sectional configuration of the inwardly directed peripheral locking rib or bead.

FIGURE 3 is a fragmentary vertical sectional view through the reclosure cap and bottle of FIGURE 1, and illustrates the reclosure cap prior to being completely inserted upon the lip of the bottle.

FIGURE 4 is a fragmentary vertical sectional view, similar to FIGURE 3, but illustrating the reclosure cap completely inserted upon and in sealing engagement with the lip of the bottle.

FIGURE 5 is a fragmentary vertical sectional view of another reclosure cap, and illustrates a metallic cap body housing an annular, resilient gasket and including a depending skirt terminating in an integral inwardly directed peripheral locking rib or bead.

FIGURE 6 is a fragmentary vertical sectional view of another reclosure cap, and shows a resilient cap body having a depending skirt terminating in an integral resilient locking rib or bead encasing a member having high tensile strength but a small transverse cross-sectional area to permit deformation of the member.

A preferred bottle reclosure cap constructed in accordance with this invention is illustrated in FIGURES 1 through 4 of the drawing, and is generally designated by the reference numeral 7. The bottle reclosure cap 7 comprises a cap body 8 which is preferably constructed of an integral plastic material which is strong and easily deformed. The cap body 8 includes an end wall 10 and an integral depending skirt 11 terminating in a free end wall 12. The skirt 11 includes an internal, integral, inwardly directed peripheral rib 13 spaced slightly above the end wall 12 of the depending skirt 11.

A locking rib or bead 14 is formed of metal or other high tensile strength material and is secured to the peripheral rib 13 of the skirt 11 by a complementary peripheral groove 15 of the locking rib or bead 14. Upper and lower faces, 16 and 17, respectively, of the locking rib or bead 14 converge radially inwardly toward the axis of the cap body 8, and terminate in a flat, peripheral face 18. As will be more fully described hereafter, the inside diameter of the peripheral locking rib or bead 14 is less than the outside diameter of a lip on a head of a bottle which is to be reclosed by the bottle reclosure cap 7.

A resilient, annular sealing gasket 20, preferably constructed of an elastomeric material such as rubber, is located within the cap body 8 between the end wall 10 and the peripheral locking rib or bead 14. The annular, resilient gasket 20 includes a central aperture 21 and a lower annular face 22. The natural resilience of the annular gasket 20 retains the same in the upper portion of the cap body 8, or, alternatively, the resilient sealing gasket 20 may be adhesively bonded or otherwise secured to the end wall 10 and depending skirt 11 of the cap body 8.

The maximum inside diameter of the peripheral locking rib or bead 14 is preferably less than 1.050", since this dimension is the outside diameter of the lip of a bottle which is to be reclosed by the bottle reclosure cap 7. The distance (called "grip") from the face 18 of the peripheral locking rib or bead 14 to the annular face 22 of the sealing gasket 20 is preferably no greater than 1/8" when the annular sealing gasket 20 is not compressed.

A bottle 23 which is to be reclosed by the bottle reclosure cap 7 includes a head 24 having an annular groove 25 which terminates in a peripheral lip 26. As is best illustrated in FIGURE 2 of the drawings, the external diameter of the peripheral lip 26 of the bottle 23 is greater than the inside diameter of the peripheral locking rib or bead 14 of the bottle reclosure cap 7.

The method of reclosing the bottle 23 by the bottle reclosure cap 7 will be best understood by referring to FIGURES 3 and 4 of the drawings, to which attention is now directed. The bottle reclosure cap 7 is first tilted, as is illustrated in FIGURE 3, and a peripheral edge portion thereof is placed about a peripheral edge portion of the head 24 of the bottle 23. The locking rib or bead 14 is positioned in the annular groove 25 of the bottle head 24 below the lip 26 thereof, causing the portion of the annular face 22 of the sealing gasket 20 to compress against the lip 26 of the bottle 23. It is again important to note that the inside diameter of the locking rib or bead 14 is less than the outside diameter of the lip 26. However, even though the inside diameter of the locking rib or bead 14 is less than the outside diameter of the lip 26, the positioning of the locking rib or bead 14 in the groove 25 of the bottle head 23 and the compression of the annular face 22 of the sealing gasket 20 allows the reclosure cap to be progressively slid downwardly over the entire periphery of the bottle lip 26 to the position illustrated in FIGURE 4 of the drawing. Even though the outside diameter of the bottle lip 26 is greater than the diameter of the locking rib or bead 14, the reclosure cap 7 can be slid to the position illustrated in FIGURE 4 due to the deformation of the relatively non-stretchable and easily deformable locking rib or bead 14, as it progressively passes over the bottle lip 26.

A bottle reclosure cap 27 is shown in FIGURE 5 of the drawings, and comprises an integral, metallic cap body 28 having an end wall 30, an integral depending peripheral skirt 31 and a terminal, inwardly directed peripheral locking rib or bead 32. Once again, the inside diameter of the peripheral locking rib or bead 32 is less than the outside diameter of the lip 26 of the bottle 23. A preferable inside diameter of the locking rib or bead 32 is 1.020", since the maximum outside diameter of the lip 26 is approximately 1.050". Similarly, the distance between the annular face 22 of the sealing gasket 20 located in the cap body 28 and the peripheral locking rib or bead 32 is preferably ⅛" with the gasket in the free position.

The bottle reclosure cap 27 is placed upon the head 24 of the bottle 23 and secured thereto in the manner described heretofore with reference to the bottle reclosure cap 7 of FIGURE 3.

A bottle reclosure cap is shown in FIGURE 6 of the drawings and generally designated by the reference numeral 33. The bottle reclosure cap 33 includes a resilient cap body 34 constructed of rubber or similar elastic material. The cap body 34 includes an integral depending skirt 36 terminating in an integral, resilient peripheral locking rib or bead 37. The integral, resilient locking rib or bead 37 houses a deformable relatively non-stretchable circular member 38 composed of a material with a high tensile strength. The inside diameter of the resilient locking rib or bead 37 and the encased deformable member 38 is less than the outside diameter of the lip 26 of the bottle 23. The bottle reclosure cap 33 is placed upon the bottle 23 in a manner identical to that described in connection with FIGURES 3 and 5. However, it is to be noted that the resilient cap body 34 of the bottle reclosure cap 33 is devoid of a sealing gasket, similar to the annular, resilient sealing gasket 20 of FIGURES 1 through 5. It is because the cap body 34 of the bottle reclosure cap 33 is constructed of rubber or a similar elastic material that the same does not require a sealing gasket. That is, when the bottle reclosure cap 33 is positioned upon the head 24 of the bottle 23 in a

manner identical to that shown in FIGURE 3 of the drawings, the resilient cap body 34 stretches or deforms to allow the peripheral locking rib or bead 37 to be inserted in the annular groove 25 of the bottle head 24. Thus, neither the annular sealing gasket 20 nor the "grip" of the bottle reclosure caps 7 and 27 is necessary in the structure of the bottle reclosure cap of FIGURE 6. However, it is again additionally emphasized that the circular member 38 of the bottle reclosure cap 33 deforms but does not substantially stretch when the bottle reclosure cap 33 is being placed upon the head 24 of the bottle 23. Rather, it is the positioning of the locking rib in the annular groove and the deformation of the member 38 as it is progressively passed over the lip 26 of the bottle 23 which allows the locking rib or bead 37 to be passed over the larger dimensioned lip 26 of the bottle 23.

While example disclosures of bottle reclosure caps have been disclosed herein, it is to be understood that various modifications thereof may be made without departing from this disclosure. For example, the locking rib or bead 14 of the bottle reclosure cap 7 has been disclosed as having a flat peripheral face 18. It is within the scope of this invention to eliminate the peripheral flat face 18 and blend the same with the converging sides 16 and 17 of the locking rib or bead 14 to form a semi-cylindrical locking bead. Furthermore, while the converging walls 16 and 17 of the locking rib or bead 14 are illustrated as being substantially 45° to the axis of the bottle reclosure cap, any angles between 30° and 90° may be used.

While preferred example disclosures of bottle reclosure caps are disclosed herein, it is to be understood that variations in the various structures and arrangements thereof may be made without departing from the spirit and scope of this invention as defined in the appended claims.

I claim:

1. A bottle reclosure cap comprising a cap body, said cap body including an end wall and a depending peripheral skirt, said peripheral skirt having an inwardly directed peripheral rib spaced from the end wall of the cap body, a locking rib secured to the peripheral rib by a complementary peripheral groove, a resilient gasket in said cap body positioned between the locking rib and the end wall, the distance between diametrically opposite points of the locking rib being less than the distance between diametrically opposite points of a lip defining a mouth of a container, and the distance between a lower surface of the gasket and the locking rib being less than the distance between uppermost and lowermost peripheral surfaces of the container lip whereby the gasket is compressed upon the application of the reclosure cap to a container by tilting the cap body until a portion of the lip of the bottle is engaged between a portion of the cap body and the locking rib, and upon subsequent sliding movement of the closure cap, the remaining unengaged portion of the locking rib is engaged about and beneath the lip of the bottle with the inherent forces of the compressed gasket maintaining the locking rib in locking engagement with the container lip.

2. The bottle reclosure cap as defined in claim 1 wherein the cap body is formed of resilient elastomeric material and the locking rib is metal.

3. A bottle reclosure cap comprising a cap body, said cap body including an end wall and a depending peripheral skirt, a locking rib, interlocking means securing the locking rib to the peripheral skirt of said cap body, said interlocking means including a peripheral rib engaging a peripheral groove in one of said skirt and locking rib elements, a resilient gasket in said cap body positioned between the locking rib and the end wall, the distance between diametrically opposite points of the locking rib being less than the distance between diametrically opposite points of a lip defining the mouth of a container, and the distance between a lower surface of the gasket and the

locking rib being less than the distance between the uppermost and lowermost annular surfaces of the container lip whereby the gasket is compressed and the locking rib locked thereby beneath the container bead, said reclosure cap being adapted to be applied to the container lip whereby the gasket is compressed upon the application of the reclosure cap to a container by tilting the cap body until a portion of the lip of the bottle is engaged between a portion of the cap body and the locking rib, and upon subsequent sliding movement of the closure cap, the remaining unengaged portion of the locking rib is engaged about and beneath the lip of the bottle with the inherent forces of the compressed gasket maintaining the locking rib in locking engagement with the container lip.

4. The bottle reclosure cap as defined in claim 3 wherein said locking rib includes an uppermost peripheral surface tapering radially inwardly and downwardly relative to the cap body axis.

5. The bottle reclosure cap as defined in claim 3 wherein the locking rib includes an uppermost peripheral surface directed radially inwardly and downwardly and a lowermost peripheral surface projecting radially inwardly and upwardly, said latter-mentioned surfaces terminating at a peripheral relatively narrow apex portion of the locking rib.

6. The bottle reclosure cap as defined in claim 4 wherein the cap body is constructed from elastomeric material and the locking rib is constructed of metal.

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