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(54) **CLOSURE AND CONTAINER PACKAGE
WITH CHILD-RESISTANT AND
NON-CHILD-RESISTANT MODES OF
OPERATION**

(76) Inventors: **Robert S. Konefal**, Wilton, NH (US);
Steven R. Wolfe, Maumee, OH (US)

Correspondence Address:
OWENS-ILLINOIS, INC.
ONE SEAGATE, 25-LDP
TOLEDO, OH 43666 (US)

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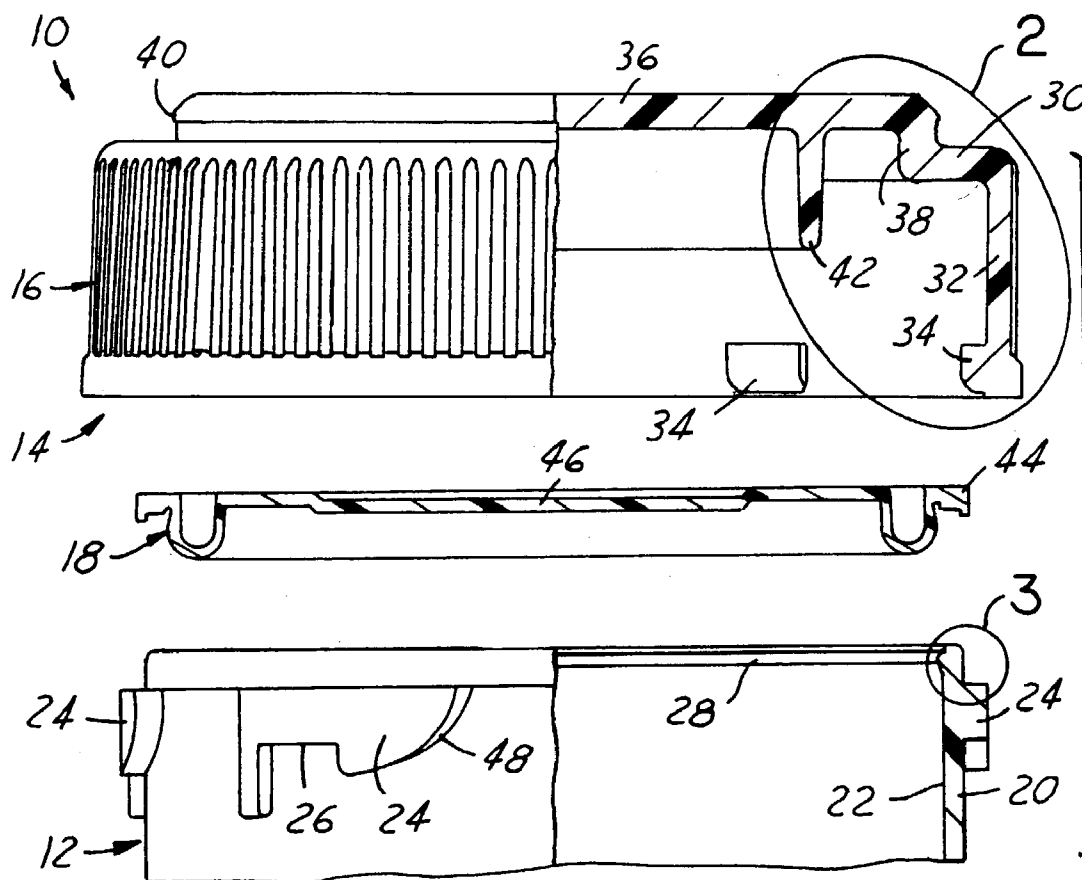
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(57) **ABSTRACT**

A closure and container package includes a container having an open end surrounded by a cylindrical wall with an inside surface, at least one first lock element extending radially outwardly from an outer surface of the wall adjacent to the open end, and a circumferential bead extending radially inwardly from the inner surface around the mouth. The closure includes a base wall, a cylindrical skirt extending from a peripheral edge of the base wall, and at least one second lock element on the skirt. An annular wall extends axially from the base wall in a direction opposite from the skirt. The annular wall is spaced radially inwardly from the peripheral edge of the base wall, and a circumferential bead extends radially outwardly from the annular wall at a position spaced from the base wall. The closure is secured to the container in a child-resistant mode of operation with the lock element on the container releasably engaged with the lock element on the closure skirt. The closure is secured to the container in a non-child-resistant mode of operation with the annular wall received within the container mouth and the external bead on the annular wall received by snap fit over the internal bead on the cylindrical wall.



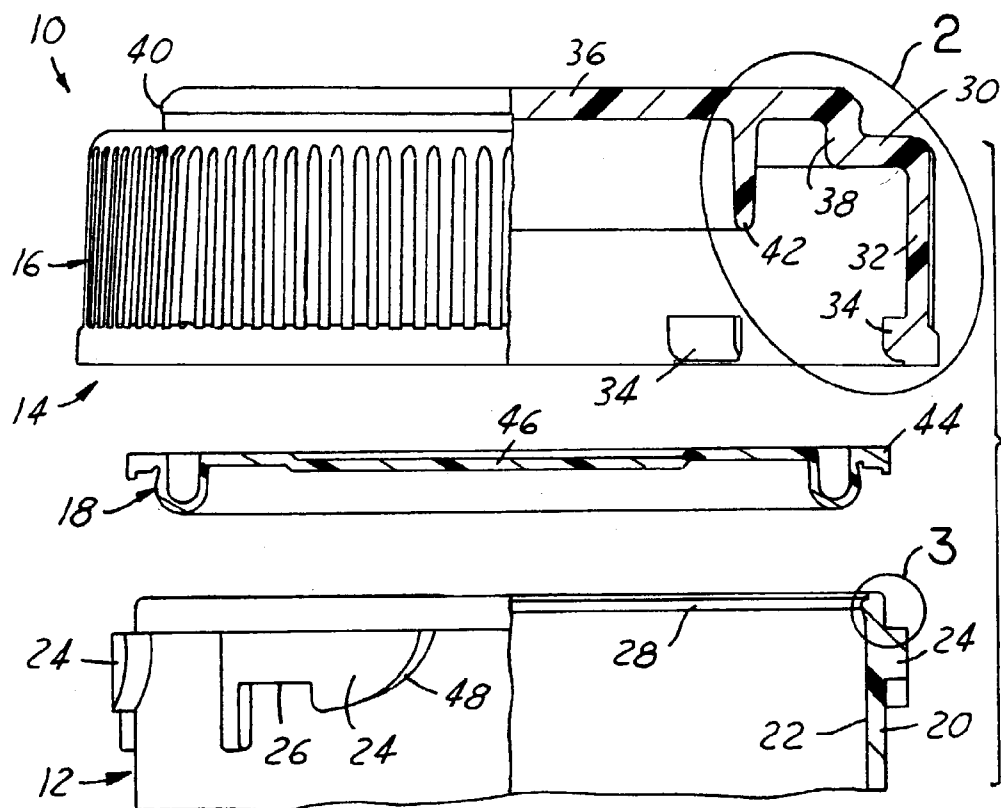


FIG. 1

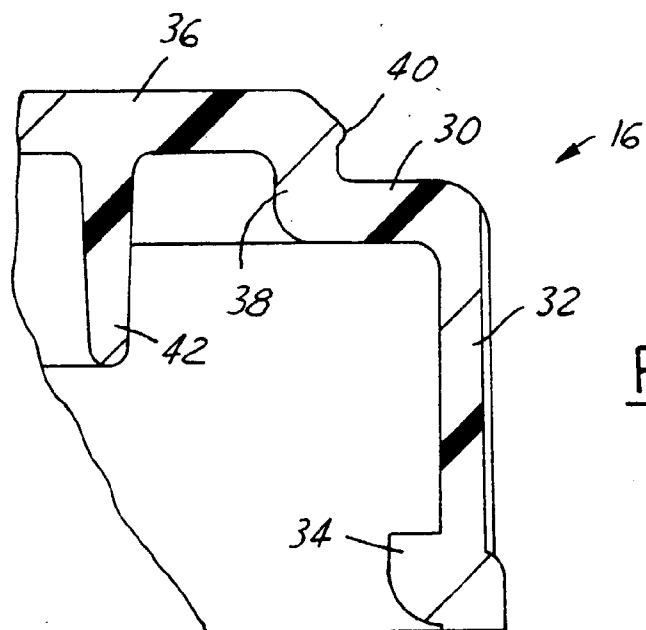


FIG. 2

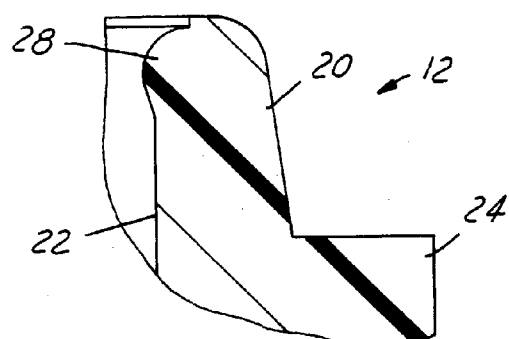


FIG. 3

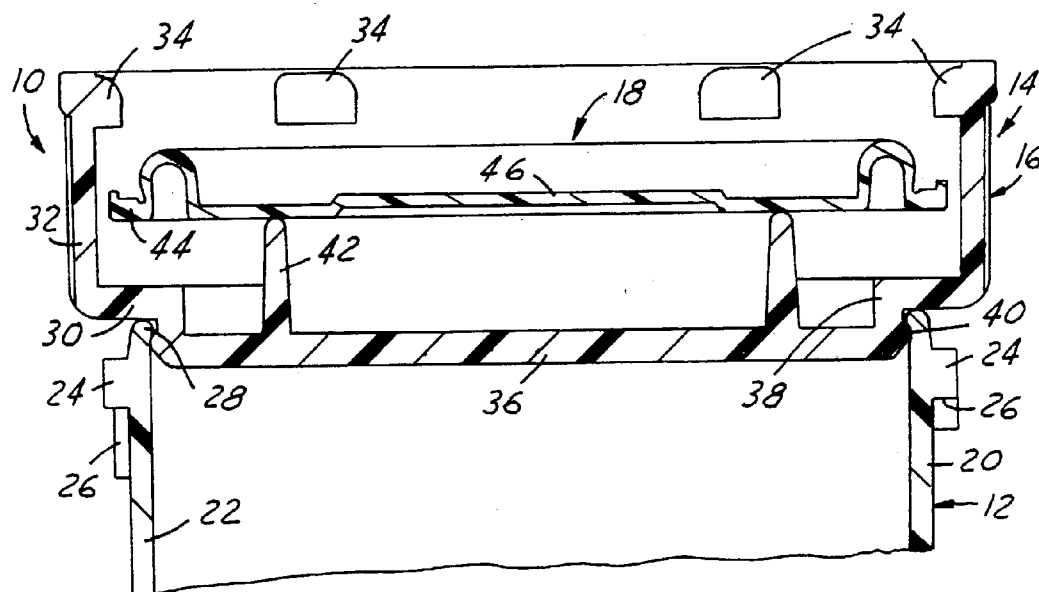


FIG. 4

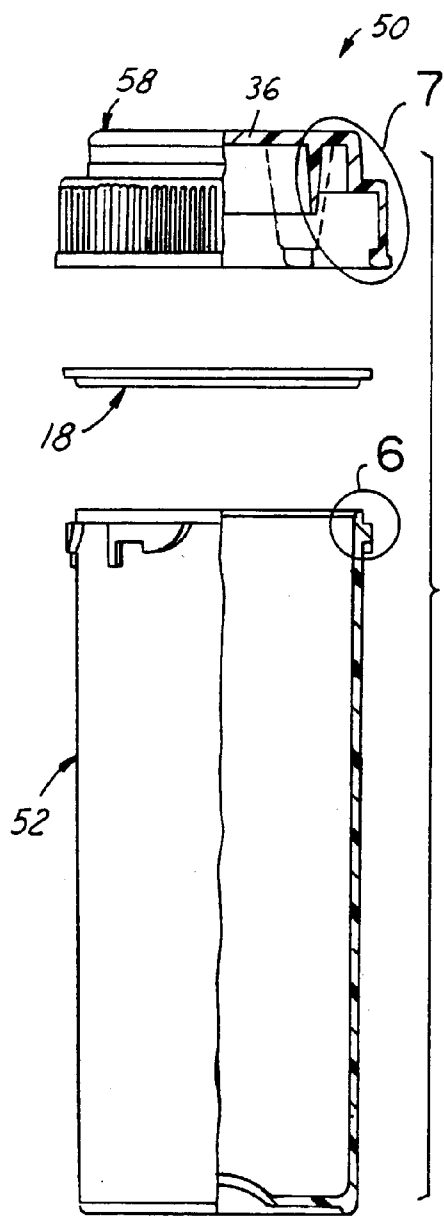


FIG. 5

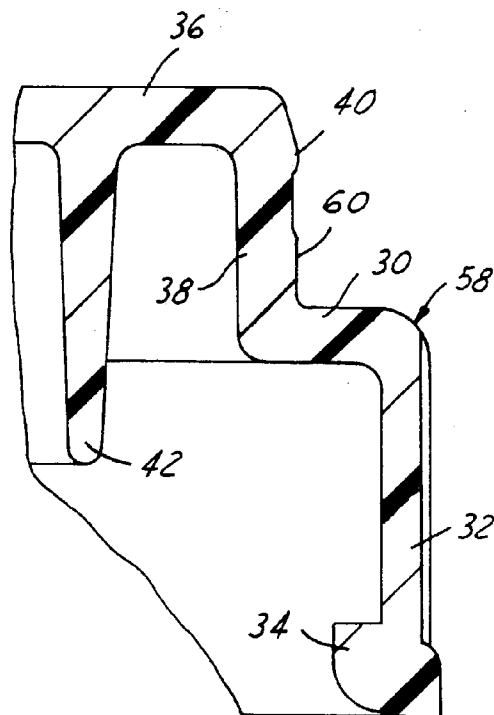


FIG. 7

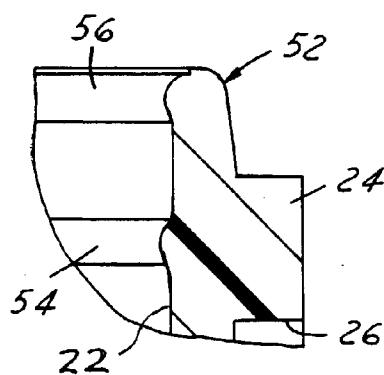


FIG. 6

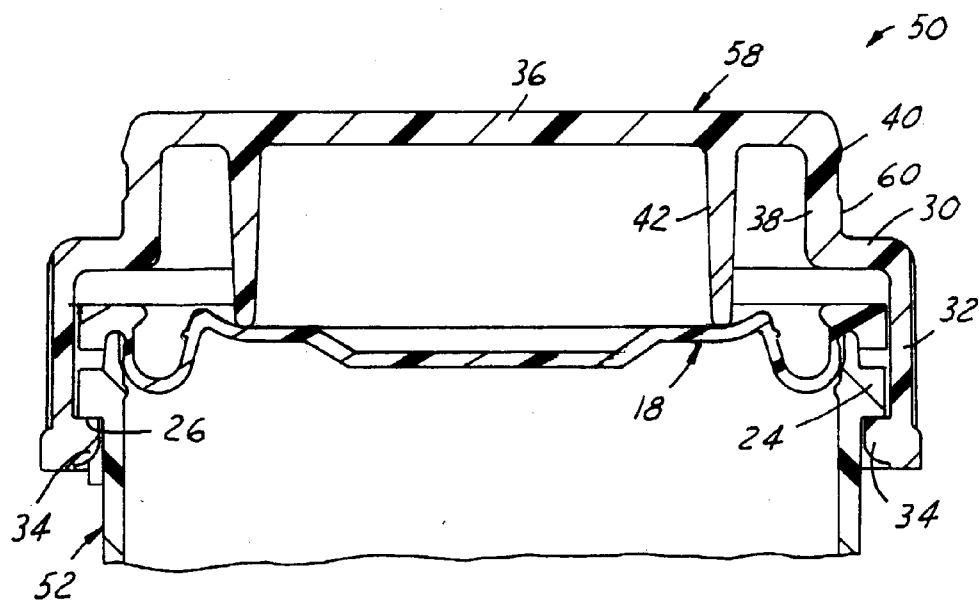


FIG. 8

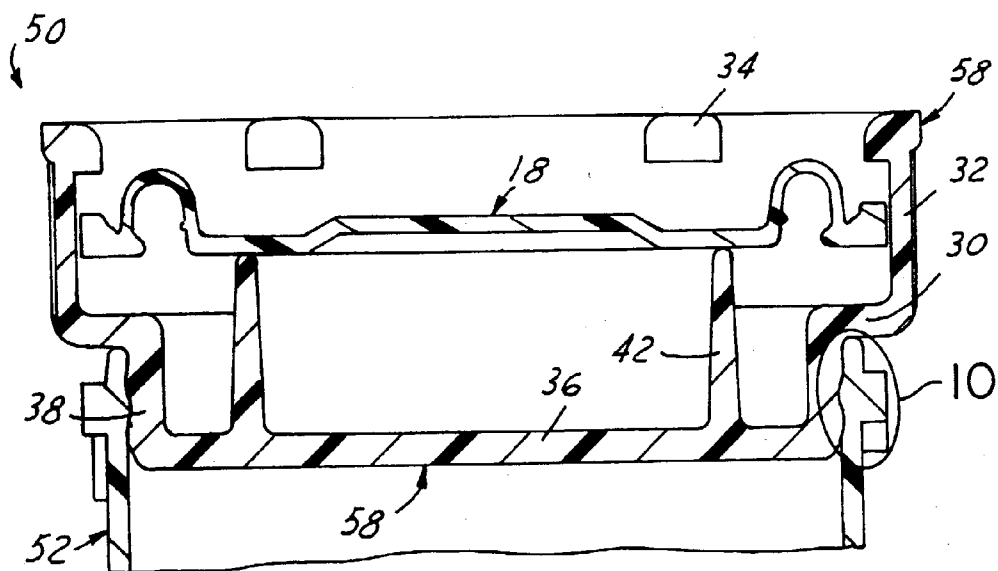


FIG. 9

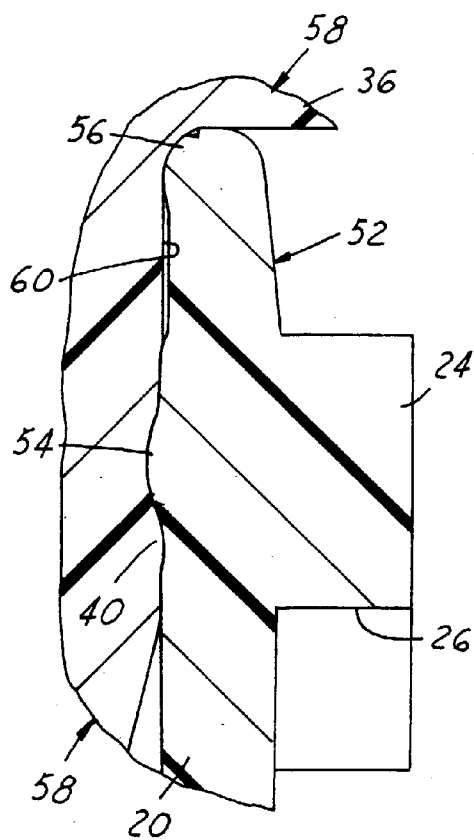


FIG. 10

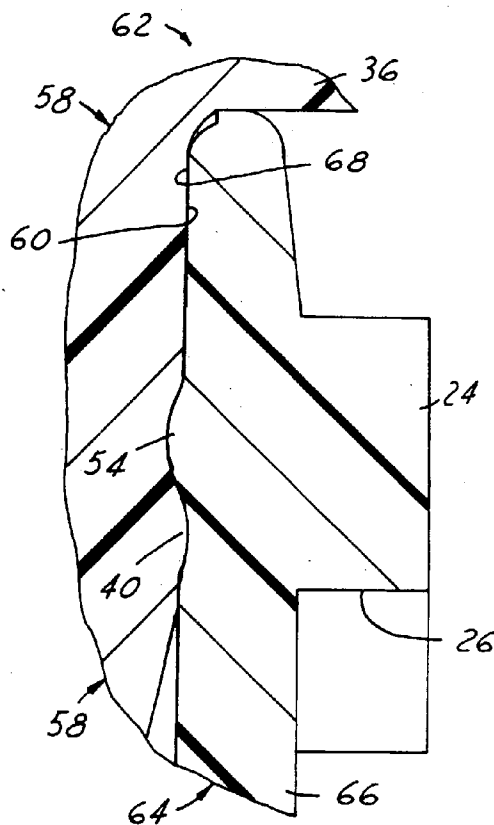


FIG. 11

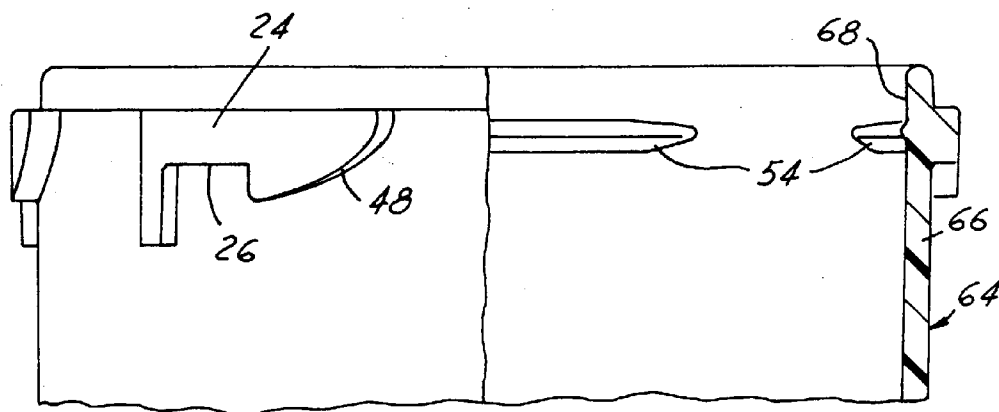
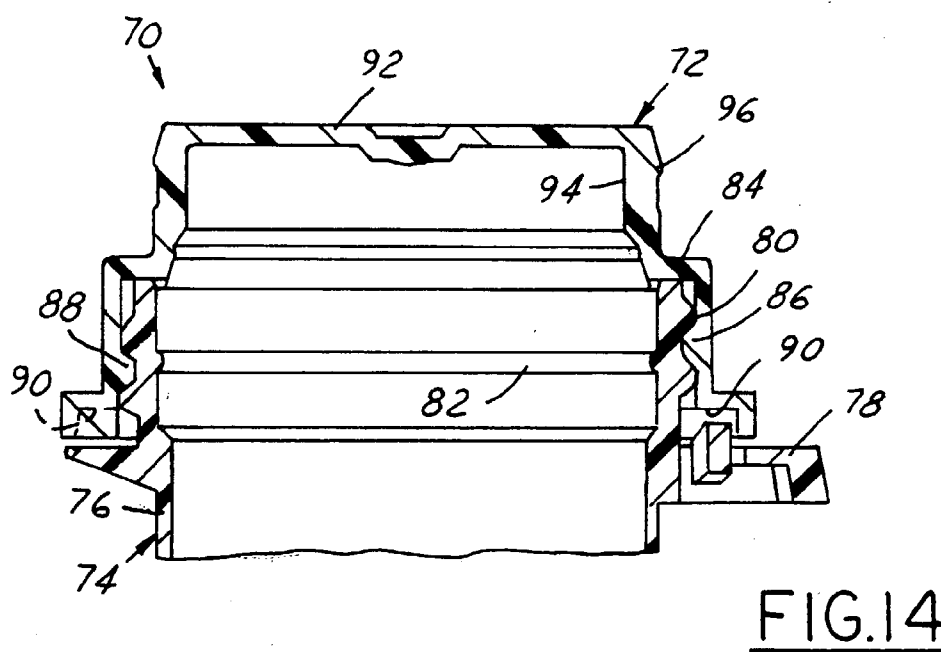
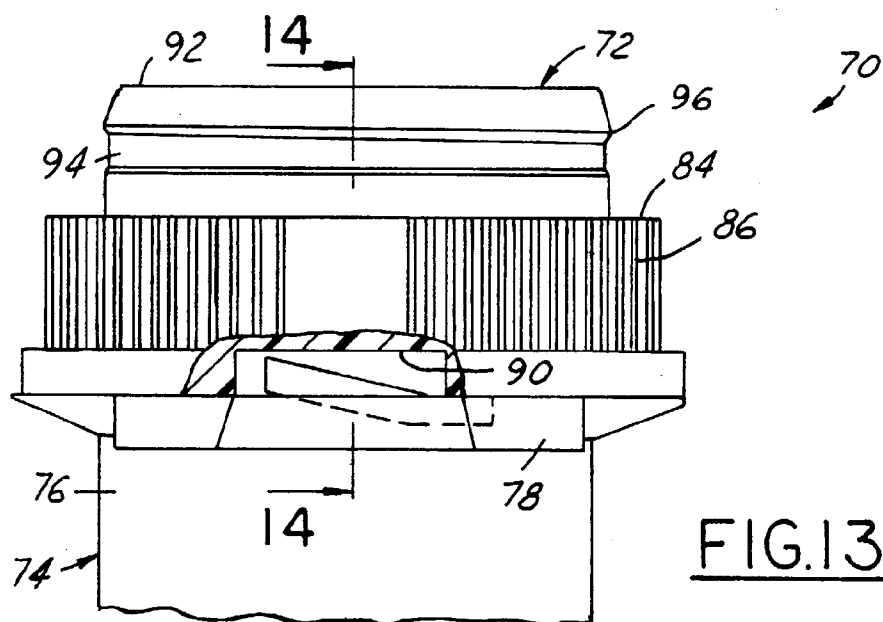


FIG. 12



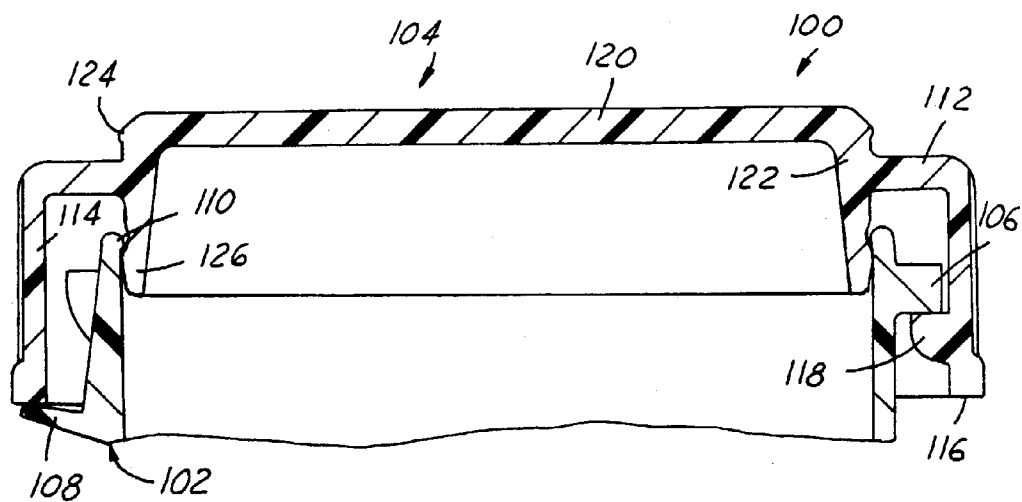


FIG. 15

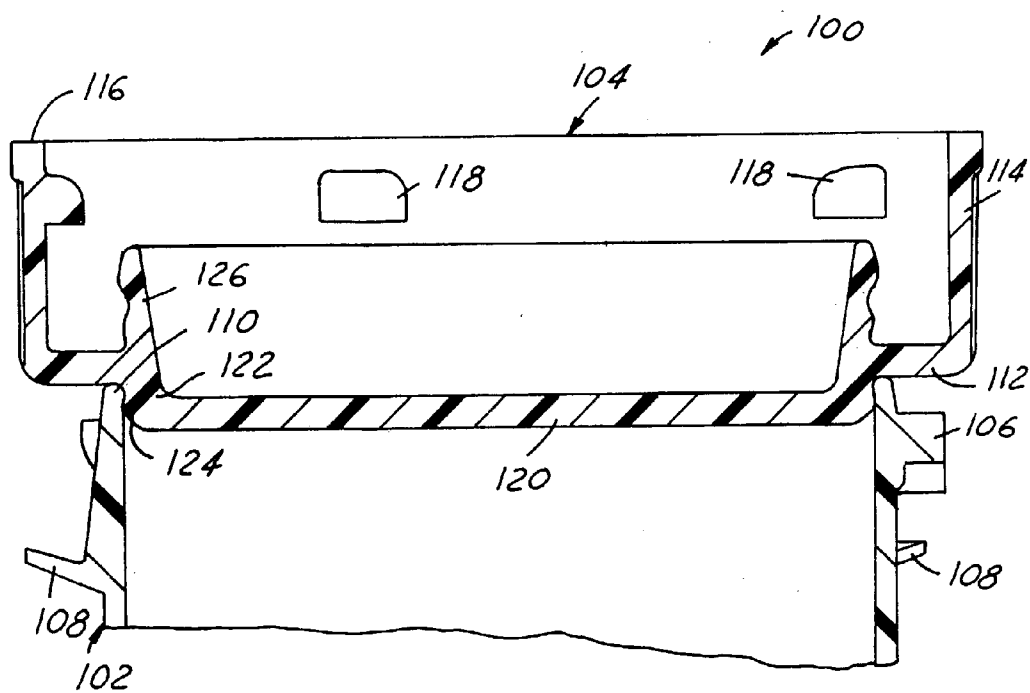


FIG. 16

CLOSURE AND CONTAINER PACKAGE WITH CHILD-RESISTANT AND NON-CHILD-RESISTANT MODES OF OPERATION

[0001] The present invention relates to child-resistant closure and container packages, such as prescription packages for example, to closures and containers for such packages, and to methods of making such packages.

[0002] Reference is made to U.S. application Ser. Nos. _____ (Dockets 17794, 17796, 17926, 17953 and 17956) assigned to the assignee of the present application.

BACKGROUND AND SUMMARY OF THE INVENTION

[0003] U.S. Pat. Nos. 4,057,159, 4,059,198 and 4,485,932 disclose child-resistant closure and container prescription packages that include a container or vial, a closure, and a spring/seal disk disposed between the closure and the container. The closure has lugs on an inside surface of a skirt that cooperate with external locking notches on projections around the mouth of the container for securing the closure to the container. An internal abutment on the closure cooperates with the spring/seal disk(s) to urge the closure away from the container so that the lugs are resiliently captured within the notches. When it is desired to remove the closure, the closure must be pushed toward the container so that the lugs clear the notches, and then turned counterclockwise. When the closure is assembled to the container, the lugs can be beneath convex surfaces on the projections against the force of the spring element until the lugs snap into the notches on the projections.

[0004] U.S. Pat. Nos. 5,899,348, 6,039,195 and 6,327,770 disclose child-resistant closure and container prescription packages in which the container has an external deflectable release element, and the closure has an axial locking lug on the edge of the skirt. The container has an external thread between the release element and the open end of the container, and the closure skirt has an internal thread for receipt over the external thread in a child-resistant mode of operation. Then axial lug on the closure skirt engages the deflectable release element in the child-resistant mode of operation, and the release element may be manually deflected with respect to the container sidewall to release the closure. The portion of the container between the deflectable release element and the end of the container also includes an internal thread, and the closure has a dome that may be threaded into the open end of the container in an inverted non-child-resistant mode of operation.

[0005] Although the closure and container packages disclosed in the noted patents have enjoyed substantial commercial acceptance and success, improvements remain desirable. For example, it can be difficult for adults with impaired dexterity to push and twist the closure with respect to the container, or to activate the deflectable release element, to open the package for access to the contents. It is a general object of the present invention to provide a closure and container package, a closure and a container for use in such a package, and/or a method of making such a package, in which the closure can be secured to the container in a child-resistant mode of operation as described above, and in a non-child-resistant mode of operation for use by adults with impaired manual dexterity, for example, when child-resistance is not needed. It is another and more specific

object of the invention to provide a package, container, closure and/or method of the described character that achieves the non-child-resistant mode of operation with little additional material, tooling or labor cost as compared with conventional child-resistant packages as described in the noted patents.

[0006] The present invention embodies a number of aspects that can be implemented separately from or, more preferably, in combination with each other.

[0007] A closure and container package in accordance with one aspect of the present invention includes a container having an open end surrounded by a cylindrical wall, at least one first lock element extending radially outwardly from an outer surface of the wall adjacent to the open end, and a circumferential bead extending radially inwardly from an inside surface of the wall adjacent to the end of the container. A closure includes a base wall, a cylindrical skirt extending from a peripheral edge of the base wall, and at least one second lock element on the skirt. An annular wall extends axially from the base wall in a direction opposite from the skirt and is spaced radially inwardly from the peripheral edge of the base wall. A circumferential bead extends radially outwardly from the annular wall at a position spaced from the base wall. The closure is received on the container in a child-resistant mode of operation with the lock element on the closure skirt engaged with the lock element on the container. The closure is secured to the container in a non-child-resistant mode of operation with the annular wall received within the container mouth and the external bead on the annular wall secured by snap fit over the internal bead on the cylindrical wall of the container.

[0008] A closure and container package in accordance with another aspect of the present invention includes a container with an open end surrounded by a cylindrical wall having an inside surface of revolution, a plurality of projections extending radially outwardly from an outer surface of the wall adjacent to the open end, notches on undersides of the projections, and at least one circumferential bead extending radially inwardly from the surface of revolution around the mouth. The closure includes a base wall, a cylindrical skirt extending from a peripheral edge of the base wall, and a plurality of circumferentially spaced lugs extending radially inwardly from the skirt. A projection extends axially from the base wall in a direction opposite from the skirt. The projection has a cylindrical sidewall spaced radially inwardly from the peripheral edge of the base wall, and a circumferential bead extends radially outwardly from the cylindrical sidewall at a position spaced from the base wall. A spring element is carried by the closure within the skirt for engaging an edge of the container surrounding the container mouth. The closure is adapted to be secured to the container in a child-resistant mode of operation with the spring element engaging the edge of the container mouth and the lugs resiliently captured in the notches. The closure is adapted to be secured to the container in a non-child-resistant mode of operation with the projection received within the container mouth and the external bead on the cylindrical sidewall received by snap fit over the internal bead on the cylindrical wall.

[0009] A closure and container package in accordance with a further aspect of the invention includes a container with an open mouth surrounded by a cylindrical wall having

an inside surface of revolution. A deflectable release element extends radially outwardly from an outer surface of the wall adjacent to the end, and at least one circumferential bead extends radially inwardly from the surface of revolution around the container mouth. A closure has a base wall, a cylindrical skirt extending from a peripheral edge of the base wall, and at least one axial locking lug on the skirt. A projection extends axially from the base wall in a direction opposite from the skirt. The projection has a cylindrical sidewall spaced radially inwardly from the peripheral edge of the base wall, and a circumferential bead extends radially outwardly from the cylindrical sidewall at a position spaced from the base wall. The closure is adapted to be secured to the container in a child-resistant mode of operation with the lug on the skirt releasably engaged by the deflectable locking lug on the container. The closure is adapted to be secured to the container in a non-child-resistant mode of operation with the projection received within the container mouth and the external bead on the cylindrical sidewall received by snap fit over the internal bead on the cylindrical wall.

[0010] A closure for receipt on a container in child-resistant and non-child-resistant modes of operation in accordance with another aspect of the invention includes a base wall, a cylindrical skirt extending from a peripheral edge of the base wall, and at least one lock element on the skirt. An annular wall extends axially from the base wall coaxially with the skirt in a direction opposite from the skirt, and is spaced radially inwardly from the peripheral edge of the base wall. A circumferential bead extends radially outwardly from the annular wall in a plane parallel to and spaced from the base wall. A container, in accordance with yet another aspect of the present invention, for receiving a closure in child-resistant and non-child-resistant modes of operation, includes an open end surrounded by a cylindrical wall, at least one lock element extending radially outwardly from an outer surface of the cylindrical wall, and a circumferential bead extending radially inwardly from an inside surface of the wall around the container mouth.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The invention, together with additional objects, features and advantages thereof, will be best understood from the following description, the appended claims and the accompanying drawings in which:

[0012] FIG. 1 is a fragmentary exploded partially sectioned elevational view of a closure and container package in accordance with one presently preferred embodiment of the invention;

[0013] FIG. 2 is a fragmentary sectional view of the portion of the closure within the area 2 in FIG. 1;

[0014] FIG. 3 is a fragmentary sectional view of the portion of the container within the area 3 in FIG. 1;

[0015] FIG. 4 is a fragmentary sectional view of the closure and container package of FIG. 1 in a non-child-resistant mode of operation;

[0016] FIG. 5 is an exploded partially sectioned elevational view of a closure and container package in accordance with another embodiment of the present invention;

[0017] FIG. 6 is a fragmentary sectional view of the portion of the container in FIG. 5 within the area 6;

[0018] FIG. 7 is a fragmentary sectional view of the portion of the closure in FIG. 5 within the area 7;

[0019] FIG. 8 is a fragmentary sectional view of the closure and container package of FIGS. 5-7 in a child-resistant mode of operation;

[0020] FIG. 9 is a fragmentary sectional view of the closure and container package in FIGS. 5-7 in a non-child-resistant mode of operation;

[0021] FIG. 10 is a fragmentary sectional view of the portion of FIG. 9 within the area 10;

[0022] FIG. 11 is a fragmentary sectional view which is similar to that of FIG. 10 but illustrates a modified embodiment of the invention;

[0023] FIG. 12 is a fragmentary partially sectioned elevational view of the upper portion of the container in the embodiment of FIG. 11;

[0024] FIG. 13 is a partially sectioned elevational view of a closure and container package in accordance with yet another embodiment of the invention;

[0025] FIG. 14 is a fragmentary sectional view taken substantially along the line 14-14 in FIG. 13;

[0026] FIG. 15 is a fragmentary sectional view of a closure and container package in accordance with a further modified embodiment of the invention; and

[0027] FIG. 16 is a fragmentary sectional view of the package illustrated in FIG. 15 in a non-child-resistant mode of operation.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0028] FIGS. 1-4 illustrate a closure and container package 10 in accordance with a first exemplary embodiment of the invention as comprising a container 12 and a closure assembly 14 that includes a closure body 16 and a spring element 18. Container 12 has an open mouth surrounded by a cylindrical wall 20 with an internal surface 22 on a surface of revolution, preferably a substantially cylindrical surface of revolution with minimal draft angle coaxial with the axis of the container mouth. A plurality of projections 24 extend radially outwardly from the outer surface of wall 20 adjacent to the edge of the container surrounding the mouth. Each projection 24 has a pocket or notch 26 formed in the undersurface of the projection. An internal bead 28 extends radially inwardly from wall 20 at the mouth of the container. In the embodiment of the invention illustrated in FIGS. 1-4, bead 28 extends radially inwardly from cylindrical surface 22. In an alternative but less preferred embodiment of the invention, bead 28 may be formed by an undercut in surface 22, so that the radially inner edge of bead 28 is on the surface of revolution formed by surface 22.

[0029] Closure body 16 includes an annular base wall 30 having concentric inner and outer peripheral edges. A cylindrical skirt 32 projects from the outer peripheral edge of base wall 30 coaxially with the base wall. A plurality of circumferentially spaced lugs 34 extend radially inwardly from the inside surface of skirt 32 adjacent to the axial edge of the skirt. Lugs 34 are dimensioned for receipt into notches 26 on projections 24, as will be described. A cylindrical projection or plug 36 extends axially upwardly from the inner periph-

eral edge of base wall 30. (Directional word such as “upwardly” and “downwardly” are employed by way of description and not limitation with respect to the orientation of FIGS. 1-3, 5-8 and 10-14. Directional words such as “axially” and “radially” are employed by way of description and not limitation with respect to the central axes of the closure and the container mouth, which are coaxial in assembly.) Projection or plug 36 may be solid, or more preferably hollow as shown to reduce weight and cost. Projection or plug 36 includes a cylindrical sidewall 38 that extends axially from base wall 30 at a position spaced radially inwardly from the peripheral edge of the base wall. Sidewall 38 is coaxial with closure skirt 32. An external bead 40 projects radially outwardly from annular sidewall 38 at a position adjacent to but spaced from the upper surface of base wall 30. An annular abutment wall 42 extends axially inwardly or downwardly from the end of projection 36. Spring element 18 is in the form of a flexible resilient disk that is captured by lugs 34 in assembly within closure body 16. Disk spring element 18 has a peripheral edge 44 for opposed engagement with the upper edge of container wall 20 around the container mouth, and a central portion 46 for engagement by abutment wall 42 on closure body 16. Projection 36 preferably has a flat upper surface, parallel to the plane of annular base wall 30, on which opening directions or other indicia may be provided.

[0030] In assembly in a child-resistant mode of operation (FIG. 1), with disk spring element 18 preassembled and captured within closure body 16, skirt 32 of closure body 16 is telescoped over the outer surface of container sidewall 20, with lugs 34 disposed between projections 24. Closure body 16 is then rotated with respect to the container, so that lugs 34 cam along edges 48 of projections 24 against the force of spring disk 18. When lugs 34 register with notches 26, the assembly is complete, with disk spring element 18 performing the dual functions of sealing the opposing edge of the container and retaining the lugs within the notches. To disassemble the closure from the container, closure body 16 is urged over the end of container 12 against the force of disk spring element 18 until lugs 34 clear notches 26, at which point the closure body can be rotated to remove the closure. Spring disk 18 may be replaced by separate seal and spring disks as shown in above-noted U.S. Pat. No. 4,057,159, or by a spring flange that integrally depends from closure base wall 30.

[0031] In a non-child-resistant mode of operation illustrated in FIG. 4, closure assembly 14 is inverted or reversed, so that projection 36 is received within the mouth of container 12. The radial dimensions of the projection are such that external bead 40 on dome annular sidewall 38 is received by snap fit within internal bead 28 on container sidewall 22 around the container mouth. Beads 28, 40 preferably are circumferentially continuous to provide a measure of sealing of the container interior, as well as snap-fit retention of the closure on the container. One or both of the beads may be circumferentially discontinuous, if desired. Beads 28, 40 preferably are rounded, as best seen in FIGS. 2 and 3. Spacings between bead 40 and base wall 30, and between bead 28 and the open edge of the container mouth, preferably are such that the rounded contours of the beads draw base wall 30 into abutment with the edge of the container. This feature not only tightly retains the closure on the container by snap fit of the beads, but also helps seal the container interior. Other bead geometries can be employed.

Thus, in the non-child-resistant mode illustrated in FIG. 4, closure assembly 14 can readily be removed from the container, such as by adults with impaired dexterity, by simply snapping the closure off of the container without requiring simultaneous depression of the closure against a spring and rotation of the closure with respect to the container.

[0032] FIGS. 5-10 illustrate a closure and container package 50 in accordance with a second exemplary embodiment of the invention. Package 50 includes a container 52, which is similar to container 12 in FIGS. 1-4 but has axially spaced radially inwardly extending internal circumferential beads 54, 56 around the inside of the container mouth. Each of the beads 54, 56 extends radially inwardly from the surface of revolution 22 around the container mouth. Bead 56 preferably is circumferentially continuous. Bead 54 may be circumferentially continuous or segmented. Package 50 also includes a spring element 18 as previously described, and a closure 58 that is similar to closure 14 in FIGS. 1-4. The primary difference between closure 58 in FIGS. 6-10 and closure 14 in FIGS. 1-4 lies in the fact that bead 40 on dome 36 is at greater axial spacing from the opposing surface of base wall 30, and a circumferentially continuous surface of revolution 60 is provided around projection sidewall 38 adjacent to base wall 30. Surface of revolution 60 preferably is substantially cylindrical, with minimum draft angle. In the child-resistant mode of operation (FIG. 8), package 50 operates in the same manner as package 10 of FIGS. 1-4. In the non-child-resistant mode of operation (FIGS. 9 and 10), projection 36 is received within the open mouth of the container. Bead 40 on closure 58 is received by snap fit over bead 54 on container sidewall 20. Surface 60 of closure 58 is received in sliding sealing engagement with the opposing surface of bead 56 on container sidewall 20 at the open end of the container. Thus, in this embodiment, the primary seal between the closure and container in the non-child-resistant mode of operation is accomplished by sliding plug seal engagement of surface 60 within bead 56. Beads 40, 54 preferably are axially positioned so that supplemental sealing engagement is obtained between the axially abutting surfaces of container sidewall 20 and closure base wall 30. Beads 40, 54 may be circumferentially segmented, or may be circumferentially continuous for an additional measure of sealing in the non-child-resistant mode of operation.

[0033] FIGS. 11-12 illustrate a closure and container package 62 in accordance with a further embodiment of the invention, in which the container 64 has a sidewall 66 from which internal bead 54 projects radially inwardly as in the embodiment of FIGS. 5-10. The upper end of sidewall 66 has an internal surface 68 on a surface of revolution, preferably a substantially cylindrical surface of revolution with minimum draft angle, for sliding surface engagement with surface 60 of closure 58 as the closure is assembled to the container. Thus, the embodiment of FIGS. 11-12 is similar to that of FIGS. 5-10, but internal bead 56 on the end of the container sidewall is eliminated. FIG. 12 also illustrates that container bead 54 may be circumferentially segmented.

[0034] FIGS. 13-14 illustrate a closure and container package 70, in which the present invention is implemented in the type of package illustrated in above-noted U.S. Pat. Nos. 5,899,348, 6,039,195 and 6,327,770. Package 70 includes a closure 72 received over the open end of a

container 74. Container 74 has a sidewall 76, and a manually deflectable release element 78 extends radially outwardly from container sidewall 76 at a position spaced from the axial end of the container sidewall. Between deflectable release element 78 and the open end of the container sidewall, one or more external threads 80 encircle the container sidewall. A circumferential internal bead 82 projects radially inwardly from the internal surface of sidewall 76 adjacent to the end of the container. Bead 82 may be circumferentially continuous or segmented as previously discussed. Closure 72 includes an annular base wall 84 and an outer peripheral skirt 86 with at least one internal thread 88 for engaging external thread 80 on container 74. At least one axial locking lug 90, and preferably a circumferential array of locking lugs 90, are disposed at the axial edge of closure skirt 86 for engagement with release element 78 in a child-resistant mode of operation. A cylindrical projection 92 extends from the inner peripheral edge of closure base wall 84 coaxially with skirt 86. Projection 92 has a cylindrical sidewall 94 integral with base wall 84 and positioned radially inwardly from the outer periphery of the base wall. Projection sidewall 94 has an outside diameter for receipt within the open end of the container, as previously described. Projection sidewall 94 has a circumferentially continuous or segmented external bead 96, which is positioned and dimensioned for snap-fit within bead 82 on container 74 in a non-child-resistant mode of operation as previously described. Thus, in the non-child-resistant mode of operation, closure 72 is inverted from the orientation illustrated in FIGS. 13 and 14, and projection 92 with sidewall 94 is received and secured by snap-fit within the open end of the container mouth. The beads and sealing surfaces on the container and closure projection may be of any of the examples discussed above. Operation of package 70 in a child-resistant mode of operation is fully described in above-noted U.S. Pat. No. 5,899,348, the disclosure of which is incorporated herein by reference for that purpose.

[0035] FIGS. 15 and 16 illustrate a closure and container package 100 in accordance with a further embodiment of the invention in respective child-resistant and non-child-resistant modes of operation. Package 100 includes a container or vial 102 and a closure 104. Container 102 includes a cylindrical wall having an open upper end that defines the mouth of the container. A plurality of circumferentially spaced projections 106 extend radially outwardly from the outer surface of the cylindrical wall at positions adjacent to the open end of the container. Each projection 106 is essentially the same as projection 24 in FIGS. 1-8. A plurality of circumferentially spaced flexible resilient spring elements 108 extend radially outwardly from the outer surface of the container wall and are angularly disposed between projections 106 in plan view. Spring elements 108 comprise essentially flat spring tabs that are molded integrally with container 102. The spring tab elements are disposed in a plane that is perpendicular to the axis of the container and positioned on a side of projections 106 that is opposite from the open end of the container. An internal bead 110 extends radially inwardly from the container wall at or adjacent to the open end of the container. Bead 110 preferably is circumferentially continuous around the container wall.

[0036] Closure 104 includes a flat annular base wall 112 and a cylindrical skirt 114 extending from an outer peripheral edge of the base wall. Skirt 114 has an axial edge 116

disposed in a plane parallel to and spaced from base wall 112. A plurality of circumferentially spaced lugs 118 extend radially inwardly from skirt 114. A cylindrical projection 120 extends axially from the inner peripheral edge of base wall 112. Projection 120 has a cylindrical sidewall 122 spaced radially inwardly from the outer peripheral edge of base wall 112. A flat top of projection 120 is parallel to and offset from base wall 112. Wall 122 is coaxial with skirt 114. A bead 124 extends radially outwardly from annular wall 122. Bead 124 preferably is circumferentially continuous around projection 120, and lies in a plane parallel to but spaced from annular base wall 112. Bead 124 preferably is rounded in profile. A circumferentially continuous annular wall 126 extends axially from the inner peripheral edge of base wall 112 coaxially with and spaced radially inwardly from skirt 114. Wall 126 narrows from base wall 112 to the free end of the wall spaced from base wall 112, and is radially flexible and resilient for purposes to be described. Container 102 and closure 104 are each of one-piece construction of suitable molded plastic material, such as polypropylene.

[0037] In a child-resistant mode of operation illustrated in FIG. 15, skirt 114 is telescopically received over the open end of the container sidewall until edge 116 of skirt 114 engages the opposing upper surfaces of spring elements 108. Closure 104 is then rotated so that lugs 118 on closure skirt 114 ride along the cam surfaces of container projections 106. Downward movement of the closure flexes spring elements 108 axially downwardly until lugs 118 snap into the notches on projections 106. Annular wall 126 is received within the open end of the container and is flexed radially inwardly to form a firm internal plug seal with the open end of the container. When it is desired to remove closure 104 from container 102, the closure is pressed downwardly against the resilient force of spring elements 108 until lugs 118 clear projections 106.

[0038] In a non-child-resistant mode of operation illustrated in FIG. 16, closure 104 is inverted and projection 120 is inserted into the open end of container 102. Bead 124 on projection 120 is received by snap fit over bead 110 on the container sidewall. The position of bead 110 on the container sidewall preferably is coordinated with the position of bead 124 on projection 120 so that the rounded contours of the beads bring the axial edge of the container into abutment with the surface of base wall 112 on closure 104. In this configuration, the inside of the container remains sealed, but the closure may be readily removed by elderly or handicapped persons, for example.

[0039] There have thus been disclosed a closure and container package, a closure, a container, and a method of making a closure and container package, that fully satisfy all of the objects and aims previously set forth. The invention has been disclosed in connection with a number of exemplary preferred embodiment thereof, and several modifications and variations have been discussed. Other modifications and variations will readily suggest themselves to persons of ordinary skill in the art. The invention is intended to embrace all such modifications and variations as fall within the spirit and broad scope of the appended claims.

1. A closure and container package having child-resistant and non-child-resistant modes of operation, which includes:

- a container having an end with an open mouth surrounded by a wall with a central axis, at least one lock element extending radially outwardly from an outer surface of said wall adjacent to said end, and a circumferential bead extending radially inwardly from an inside surface of said wall, and
- a closure that includes an annular base wall having concentric inner and outer peripheral edges, a cylindrical skirt extending from said outer peripheral edge of said base wall, at least one second lock element on said skirt, a projection extending axially from said inner peripheral edge of said base wall in a direction opposite from said skirt, said projection having a cylindrical sidewall spaced radially inwardly from said outer peripheral edge of said base wall, and a circumferential bead extending radially outwardly from said cylindrical sidewall at a position spaced from said base wall,
- said closure being secured to said container in a child-resistant mode of operation with said second lock element on said skirt releasably engaged with said first lock element on said container,
- said closure being secured to said container in a non-child-resistant mode of operation with said cylindrical sidewall received within said mouth and said bead on said cylindrical sidewall received by snap fit over said bead on said cylindrical wall.
2. The package set forth in claim 1 wherein said beads on said container and closure are circumferentially continuous.
3. The package set forth in claim 1 wherein said bead on at least one of said closure and said container is circumferentially segmented.
4. The package set forth in claim 1 wherein said inside surface of said cylindrical wall lies on a cylinder of revolution, and said bead on said container projects radially inwardly from said cylinder of revolution.
5. The package set forth in claim 1 further comprising a second circumferential bead on said inside surface of said container, said second bead being circumferentially continuous and making radial sealing engagement with a radially outer surface of said cylindrical sidewall in said non-child-resistant mode of operation.
6. The package set forth in claim 5 further comprising a second circumferential bead on said outer surface of said cylindrical sidewall for sealing engagement with said second bead on said container in said non-child-resistant mode of operation.
7. The package set forth in claim 1 wherein said at least one first lock element comprises a plurality of projections and notches on undersides of said projections, and wherein said at least one second lock element comprises a plurality of circumferentially spaced lugs extending radially inwardly from said skirt for receipt in said notches on said child-resistant mode of operation.
8. The package set forth in claim 1 wherein said at least one first lock element comprises a deflectable release element on said outer surface of said container, and wherein said at least one second lock element comprises at least one axial locking lug on said skirt for releasable engagement with said deflectable release element in said child-resistant mode of operation.
9. A closure and container package having child-resistant and non-child-resistant modes of operation, which includes:

- a container having an end with an open mouth surrounded by a cylindrical wall having an inside surface of revolution, a plurality of projections extending radially outwardly from an outer surface of said wall adjacent to said end, notches on undersides of said projections, and at least one internal circumferential bead extending radially inwardly from said surface of revolution around said mouth, and
- a closure that includes an annular base wall with inner and outer peripheral edges, a cylindrical skirt extending from said outer peripheral edge of said base wall, a plurality of circumferentially spaced lugs extending radially inwardly from said skirt, a projection extending axially from said inner peripheral edge of said base wall in a direction opposite from said skirt, said projection having an exterior cylindrical sidewall spaced radially inwardly from said outer peripheral edge of said base wall, an external circumferential bead extending radially outwardly from said cylindrical sidewall at a position spaced from said base wall, and a spring element carried by said closure within said skirt for engaging an edge of said container surrounding said mouth,
- said closure being adapted to be secured to said container in a child-resistant mode of operation with said spring element engaging said edge of said container and said lugs captured in said notches,
- said closure being adapted to be secured to said container in a non-child-resistant mode of operation with said cylindrical sidewall of said projection being received within said mouth and said external bead on said cylindrical sidewall being received by snap fit over said internal bead on said cylindrical wall.
10. The package set forth in claim 9 wherein said external bead on said closure lies in a plane parallel to said base wall.
11. The package set forth in claim 9 wherein said beads are round in profile.
12. The package set forth in claim 9 wherein spacing between said external bead and said base wall of said closure, and between said internal bead and said end of said container, are such that snap-fit of said external bead on said closure over said internal bead on said container brings said base wall into abutting engagement with said end of said container.
13. The package set forth in claim 9 wherein said container has first and second radially inwardly extending internal circumferential beads adjacent to said mouth, with a first of said beads being spaced from said end and engaging said external bead on said closure in said non-child-resistant mode of operation, and a second of said beads being adjacent to said end and engaging said cylindrical sidewall to seal said package in said non-child-resistant mode of operation.
14. A closure and container package having child-resistant and non-child-resistant modes of operation, which includes:
- a container having an end with an open mouth surrounded by a cylindrical wall having an inside surface of revolution, a deflectable release element extending radially outwardly from an outer surface of said wall adjacent to said end, and at least one internal circumferential bead extending radially inwardly from said surface of revolution around said mouth, and

a closure that includes an annular base wall with inner and outer peripheral edges, a cylindrical skirt extending from said outer peripheral edge of said base wall, at least one axial locking lug on said skirt, a projection extending axially from said inner peripheral edge of said base wall in a direction opposite from said skirt, said projection having a cylindrical sidewall spaced radially inwardly from said outer peripheral edge of said base wall, and a circumferential bead extending radially outwardly from said cylindrical sidewall at a position spaced from said base wall,

said closure being adapted to be secured to said container in a child-resistant mode of operation with said lug on said skirt releasably engaged by said deflectable locking element on said container,

said closure being adapted to be secured to said container in a non-child-resistant mode of operation with said cylindrical sidewall of said projection received within said mouth and said bead on said cylindrical sidewall received by snap fit over said bead on said cylindrical wall.

15. The package set forth in claim 14 wherein said external bead on said closure lies in a plane parallel to said base wall.

16. The package set forth in claim 14 wherein said beads are round in profile.

17. The package set forth in claim 14 wherein spacing between said external bead and said base wall of said closure, and between said internal bead and said end of said container, are such that snap-fit of said external bead on said closure over said internal bead on said container brings said base wall into abutting engagement with said end of said container.

18. The package set forth in claim 14 wherein, said container has first and second radially inwardly extending internal circumferential beads around said mouth, with a first of said beads being spaced from said end and engaging said external bead on said closure in said non-child-resistant mode of operation, and a second of said beads being adjacent to said end and engaging said cylindrical sidewall to seal said package in said non-child-resistant mode of operation.

19. A closure for receipt on a container in child-resistant and non-child-resistant modes of operation, said closure including:

an annular base wall having concentric inner and outer peripheral edges, a cylindrical skirt extending from said outer peripheral edge of said base wall, at least one lock element on said skirt, a projection extending axially from said inner peripheral edge of said base wall coaxially with said skirt in a direction opposite from said skirt, said projection having a cylindrical sidewall spaced radially inwardly from said outer peripheral edge of said base wall, and a circumferential bead extending radially outwardly from said cylindrical sidewall in a plane parallel to and spaced from said base wall.

20. The closure set forth in claim 19 wherein said at least one locking lug comprises a plurality of circumferentially spaced locking lugs extending radially inwardly from said skirt.

21. The closure set forth in claim 19 wherein said at least one locking lug comprises at least one axial locking lug on an axial edge of said skirt.

22. The closure set forth in claim 21 further comprising an internal thread on said skirt.

23. A container for receiving a closure in child-resistant and non-child-resistant modes of operation, said container including:

an end with an open mouth surrounded by a cylindrical wall, at least one lock element extending radially outwardly from an outer surface of said cylindrical wall, and at least one internal circumferential bead extending radially inwardly from an inside surface of said wall adjacent to said mouth.

24. The container set forth in claim 23 wherein said inside surface of said cylindrical wall lies on a cylinder of revolution, and said bead on said container projects radially inwardly from said cylinder of revolution.

25. The container set forth in claim 24 further comprising a circumferentially continuous second bead extending radially inwardly from said inside surface of said second end.

26. The container set forth in claim 25 wherein said at least one lock element comprises a plurality of projections on said outer surface of said container and notches on undersides of said projections.

27. The container set forth in claim 25 wherein said at least one lock element comprises a deflectable release element on said outer surface of said container.

28. A method of making a closure and container package having child-resistant and non-child-resistant modes of operation, including the steps of:

(a) providing a container having an end with an open mouth surrounded by a cylindrical wall having an inside surface, at least one lock element extending radially outwardly from an outer surface of said wall, and at least one circumferential bead extending radially inwardly from said cylinder of revolution adjacent to said mouth, and

(b) providing a closure that includes an annular base wall with inner and outer concentric peripheral edges, a cylindrical skirt extending from said outer peripheral edge of said base wall, at least one second lock element on said skirt, a projection extending axially from said inner peripheral edge of said base wall in a direction opposite from said skirt, said projection having a cylindrical sidewall spaced radially inwardly from said outer peripheral edge of said base wall, and a circumferential bead extending radially outwardly from said cylindrical sidewall at a position spaced from said base wall,

said closure being adapted to be secured to said container in a child-resistant mode of operation with said at least one lock element on said container engaged with said at least one lock element on said skirt,

said closure being adapted to be secured to said container in a non-child-resistant mode of operation with said cylindrical sidewall being received within said mouth and said bead on said cylindrical sidewall being received by snap fit over said bead on said cylindrical wall.

29. The method set forth in claim 28 further comprising a second circumferential bead on said inside surface of said end, said second bead being circumferentially continuous

and making radial sealing engagement with a radially outer surface of said cylindrical sidewall in said non-child-resistant mode of operation.

30. The method set forth in claim 29 further comprising a sealing surface of revolution on said outer surface of said annular sidewall for sealing engagement with said second bead on said container in said non-child-resistant mode of operation.

31. The method set forth in claim 28 wherein said at least one first lock element comprises a plurality of projections and notches on undersides of said projections, and wherein said at least one second lock element comprises a plurality

of circumferentially spaced lugs extending radially inwardly from said skirt for receipt in said notches on said child-resistant mode of operation.

32. The method set forth in claim 28 wherein said at least one first lock element comprises a deflectable release element on said outer surface of said container, and wherein said at least one second lock element comprises at least one axial locking lug on said skirt for releasable engagement with said deflectable release element in said child-resistant mode of operation.

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