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(54) DUAL-ACTION CHILD-RESISTANT PACKAGE AND CHILD-RESISTANT CLOSURE FOR SUCH A PACKAGE

KINDERSICHERE VERPACKUNG MIT ZWEIFACH-BETÄTIGUNG UND KINDERSICHERER VERSCHLUSS FÜR EINE SOLCHE VERPACKUNG

EMBALLAGE DE SÉCURITÉ POUR ENFANTS À DOUBLE ACTION ET FERMETURE DE SÉCURITÉ POUR ENFANTS POUR UN TEL EMBALLAGE

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(73) Proprietor: **Rexam Healthcare Packaging Inc.**
Perrysburg, OH 43551 (US)

(72) Inventor: **DELAGRANGE, Donald P.**
Toledo, OH 43611 (US)

(74) Representative: **Mergel, Volker**
Blumbach - Zinngrebe
Patentanwälte
Alexandrastrasse 5
65187 Wiesbaden (DE)

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EP-A- 1 357 049
US-A- 4 553 678
US-A1- 2004 222 181

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Description

[0001] The present disclosure relates to child-resistant packages, and more particularly to a package that is adapted to be opened in either of (at least) two child-resistant modes of operation.

Background and Summary of the Disclosure

[0002] US 2004/0222181A1 discloses a package having a child-resistant closure with internal lugs cooperating with external lugs on the container neck finish. The closure is removable by laterally squeezing the closure skirt to ovalize the skirt and release the lugs.

[0003] US 4553678 discloses a package having a child-resistant closure with internal lugs that cooperate with external lugs on the container neck finish. The closure is removable by axially pressing the closure against a spring disposed between the closure and the container neck finish to release the lugs and permit unthreading of the closure.

[0004] EP 1357049A2 (corresponding to US 6866164B2) discloses a child-resistant package that includes a lid hinged to a base and closeable over a dispensing opening in the base. There are opposed-motion child-resistant features that releasably couple the lid to the base. The base is threadable onto a container neck finish, and there are engageable internal lugs on the closure skirt and external lugs on the container finish to prevent unthreading of the closure base. The closure base can be ovalized so that the lugs move out of engagement and the closure can be unthreaded from the container neck finish.

[0005] A general object of the present disclosure is to provide a child-resistant package, and to provide a closure and a container for such a package, in which the package can be opened to dispense product in either of (at least) two child-resistant modes of operation.

[0006] This object is obtained by the package of appended claim 1 and the closure of appended claim 7.

[0007] The present disclosure embodies a number of aspects that can be implemented separately from or in combination with each other.

[0008] A dual-action child-resistant package in accordance with the present diclosure includes a container having a neck finish with an open mouth, at least one external thread segment, and at least one external lug spaced from the thread segment and having an angled cam surface facing axially toward the open mouth. A closure has a peripheral skirt, at least one internal thread segment for engagement with the at least one external thread segment on container neck finish an internal angled cam surface on the skirt, at least one internal lug on the skirt for engagement with the at least one external lug on the neck finish, and a flexible resilient spring for engaging the neck finish and biasing the closure away from the neck finish. The closure is threaded onto the neck finish until the internal lug on the skirt moves over the external lug on the neck finish to resist unthreading of the closure from the neck finish. The closure is removable from the neck finish by:(1) squeezing the skirt to ovalize the skirt such that the at least one internal lug on the skirt moves radially and wordly from the at least one external. lug on the neck finish whereupon the closure can be unthreaded from the neck finish, and (2) pushing the closure over the neck finish against the spring until the cam surface on the at least one external lug engages the internal angled cam surface on the skirt to ovalize the skirt until the at least one internal lug on the skirt moves radially outwardly from the at least one external lug on the neck finish whereupon the closure can be unthreaded from the neck finish. The peripheral skirt of the closure preferably includes a first portion on which the at least one internal thread segment is disposed, and a second portion extending from the first portion on which the internal cam surface and the at least one internal lug are disposed.

Brief Description of the Figures

[0009] The disclosure, together with additional objects, features, advantages and aspects thereof, will best be understood from the following description, the appended claims and the accompanying drawings, in which:

FIG. 1 is a perspective view of a closure and container package in accordance with an exemplary embodiment of the present disclosure;
FIG. 2 is a fragmentary sectional view of a portion of the package illustrated in FIG. 1;
FIG. 3 is a sectional view taken substantially along the line 3-3 in FIG. 2;
FIG. 4 is a fragmentary sectional view on an enlarged scale of the portion of FIG. 2 within the area 4;
FIG. 5 is a fragmentary sectional view similar to that of FIG. 4 showing a first child-resistant mode of operation of the package;
FIG. 6 is a fragmentary sectional view similar to that of FIG. 2 showing a second child-resistant mode of opening the package;
FIG. 7 is a fragmentary sectional view on an enlarged scale of the portion of FIG. 6 within the area 7;
FIG. 8 is a fragmentary elevational view of the package in FIG. 1 in a non-child-resistant mode of operation;
FIG. 9 is a fragmentary elevational view that illustrates the neck finish of the container in the package of FIGS. 1-8;
FIG. 10 is a fragmentary perspective view of the container neck finish in FIG. 9;
FIG. 11 is a sectional view of the closure in the package of FIGS. 2-7;
FIG. 12 is a fragmentary perspective view of a child-resistant package in accordance with a second exemplary embodiment of the present disclosure;
FIG.13 is a sectional view taken substantially along the line 13-13 in FIG.12; and

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

Detailed Description of Preferred Embodiments

[0010] FIGS. 1-11 illustrate a dual-action child-resistant package 20 in accordance with a first exemplary embodiment of the present disclosure. Package 20 includes a child-resistant closure 22 threaded onto the neck finish 24 of a container 26. Container neck finish 24 includes at least one external thread segment 28 for securement of closure 22 in a child-resistant mode of operation. (The term "thread segment" is employed in its usual broad sense to include both single and multiple threads, and both interrupted and continuous threads.) Neck finish 24 also includes at least one external lug 30, preferably diametrically opposed external lugs 30 as best seen in FIGS. 3 and 9. Each external lug 30 has an angled cam surface 32 that faces axially toward or in the direction of the open end or mouth of neck finish 24. Cam surfaces 32 preferably are flat, although conical, convex or concave cam surfaces could be employed. Closure 22 includes a base wall 34 having a peripheral flexible resilient annular skirt 36. Skirt 36 includes at least one internal thread segment 38 for engagement with external thread segment 28 on neck finish 24 to secure closure 22 to neck finish 24 in a dual-action child-resistant mode of operation. Internal thread segment 38 is disposed on a first portion of skirt 36 adjacent to base wall 34. A second portion of skirt 36 extending remotely of base wall 34 includes an angled internal cam surface 40. Cam surface 40 preferably is conical, and most preferably extends entirely around skirt 36 except where interrupted by internal lugs as will be described. Internal surface 40 preferably is formed on a portion 42 of skirt 36 that flares radially outwardly at the open edge of the skirt and terminates in a cylindrically extending portion 44.

[0011] At least one internal first lug is disposed on the lower portion of skirt 36, preferably a pair of diametrically opposed internal first lugs 46 as best seen in FIG. 3. Each internal first lug 46 preferable has an angled cam surface 48, by means of which lugs 46 ride over lugs 30, ovalizing flexible resilient skirt 36 until internal first lugs 46 snap behind external lugs 30. Each internal first lug 46 preferably has an associated adjacent internal second lug 50 spaced from lug 46 so that external lugs 30 can be received between lugs 46,50. Lugs 50 prevent additional or over-threading of the closure onto the neck finish. A flexible resilient spring 52 is carried by closure 22 for engaging neck finish 24 and biasing closure 22 away from the neck finish. In the illustrated embodiment of FIGS. 2 and 11, spring 52 comprises a segmented annular conical spring having angularly spaced segments 54. A liner disk 56 (FIG. 2) preferably is captured between spring 52 and the open end of neck finish 24. Liner disk 56 can be induction or conduction sealed to neck finish 24 after package 20 has been filled with product and closure 22 applied to the neck finish. As an alternative, spring 52 could be a continuous annular spring that engages the neck finish both to seal the package and to bias closure 22 away from neck finish 24. Spring segments 54 preferably extend downwardly and inwardly from closure base wall 34, as best seen in FIG. 11. As an alternative, spring segments 54 (or a continuous annular spring) could extend from the inside surface of skirt 36 adjacent to base wall 34. Skirt 36 preferably includes a pair of diametrically opposed external finger pads 58 (FIGS. 1 and 3) at 90° spacing from internal lugs 46.

[0012] With closure 22 threaded onto container 26 as illustrated in FIGS. 1-3, closure 22 is removable in either of two child-resistant modes of operation. In a first child-resistant squeeze-and-turn mode of operation illustrated in FIGS. 4-5, flexible resilient skirt 36 is squeezed at finger pads 58 to ovalize the skirt and thereby move internal lugs 46 radially outwardly with respect to external lugs 30. When the skirt has been squeezed sufficiently that lugs 46 clear lugs 30 as shown in FIG. 5, the closure can be unthreaded from the container neck finish. The second child-resistant push-and turn mode of operation is illustrated in FIGS. 6-7. Closure 22 is pushed downwardly against the force of spring 52. During such downward motion of the closure, internal cam surface 40 on closure skirt 36 engages external cam surfaces 32 on external lugs 30 to spread and ovalize the closure skirt. When the closure skirt is sufficiently ovalized, the closure can be unthreaded from the container neck finish.

[0013] FIG. 8 illustrates package 20 in a non-child-resistant mode of operation in which closure 22 is inverted and received by press fit, snap fit or threaded fit onto the open end of neck finish 24. Examples of such inverted non-child-resistant operation are illustrated in US patent documents 2004/0173561 and 2004/0178165.

[0014] FIGS. 12-14 illustrate a dual-action child-resistant package 60 in accordance with another exemplary embodiment of the present disclosure. Package 60 includes a closure 62 secured to the neck finish 64 of a container 66. Neck finish 64 has one or more external thread segments 28 that are engaged by one or more internal thread segments 38 on the flexible resilient peripheral annular skirt 68 of closure 62. Closure 62 includes a base 70 of which skirt 68 is a part. Base 70 also includes a base wall 72 that covers the open mouth of neck finish 64, and a dispensing opening 74 in base wall 72. A lid 76 is coupled to base 70 by a hinge 79 (FIG. 14) so that lid 76 can be pivoted between the closed position illustrated in FIG. 14 overlying dispensing opening 74 and an open position spaced from the dispensing opening. Hinge 79 can be of any suitable type. At least one internal lug 78 (FIG. 13) is carried by skirt 68. Skirt 68 preferably has a pair of diametrically opposed internal lugs 78 as shown in FIG. 13. Skirt 68 also preferably has diametrically opposed external finger pads 58 at 90° spacing to internal lugs 78. Internal lugs 78 engage a pair of diametrically opposed external lugs 80 on container neck finish 64. Closure lid 76, in the closed position, preferably is coupled to closure base 70 by a child-resistant

latch mechanism 82. Latch mechanism 82 can be of any suitable type, with the type illustrated in U.S. patent document 2005/0023285 being preferred.

[0015] As closure 62 is threaded onto container neck finish 64, internal lugs 78 on closure skirt 68 engage and ride over external lugs 80 on neck finish 64 until lugs 78 snap behind lugs 80 in the child-resistant position of FIG. 13. The entire closure 62 can be removed from container neck finish 64 in a squeeze-and-turn first child-resistant mode of operation, in which finger pads 58 are squeezed to ovalize skirt 68 until lugs 78 clear lugs 80, at which point closure 62 can be unthreaded from the container neck finish. The package alternatively can be opened in a second child-resistant mode of operation by releasing latch 82 and pivoting lid 76 away from base 70 to enable product be dispensed through opening 74.

[0016] There thus have been disclosed a dual-action child-resistant package, and closures and containers for such a package, that fully satisfy all of the objects and aims previously set forth. The disclosure has been presented in conjunction with several exemplary embodiments, and modifications and variations have been described. Other modifications and variations readily will suggest themselves to persons of ordinary skill in the art in view of the foregoing description. For example, the disclosure has been presented in conjunction with so-called single-wall closures in which the internal thread segments and the chid-resistance lugs are disposed on the inside of a single wall or skirt. However, the disclosure can as readily be implemented in conjunction with a dual-wall or multiple-wall closure, in which the thread segments are disposed on an inner wall for securing the closure to a container neck finish and, the child-resistance mechanisms are disposed on intermediate and/or outer walls spaced from the inner wall. The exemplary closures are comprised of one-piece plastic shells. However, additional components can be included, such as sealing liners or discs. The disclosure is intended to embrace these and all other modifications and variations as fall within the scope of the appended claims .

Claims

1. A dual-action child-resistant package that includes:

a container (26) having a neck finish (24) with an open mouth, at least one external thread segment (28), and at least one external lug (30) spaced from said external thread segment and having an angled cam surface (32) facing axially toward said mouth, and

a closure (22) having a peripheral skirt (36), at least one internal thread segment (38) for engagement with said at least one external thread segment on said neck finish, an internal angled cam surface (40) on said skirt, at least one internal lug (46) on said skirt for engagement with said at least one external lug on said neck finish, and a flexible resilient spring (54) for engaging said neck finish and biasing said closure away from said neck finish,

said closure being threadable onto said container neck finish until said internal lug (46) on said skirt moves over said external lug (30) on said neck finish to resist unthreading of said closure from said neck finish,

said closure being removable from said neck finish by: (1) squeezing said skirt to ovalize said skirt such that said at least one internal lug on said skirt moves radially outwardly from said at least one external lug on said neck finish whereupon said closure can be unthreaded from said neck finish, and (2) pushing said closure over said neck finish against said spring until said cam surface on said at least one external lug engages said internal cam surface on said skirt to ovalize said skirt until said at least one internal lug on said skirt moves radially outwardly from said at least one external lug on said neck finish whereupon said closure can be unthreaded from said neck finish.

2. the package set forth in claim 1 wherein said peripheral skirt (36) includes a first portion on which said at least one internal thread segment (38) is disposed, and a second portion extending from said first portion on which said internal cam surface (40) and said at least one internal lug (46) are disposed.

3. The package set forth in claim 1 wherein said internal cam surface (40) on said skirt is conical.

4. The package set forth in claim 3 wherein said at least one internal lug (46) on said skirt includes a pair of lugs (46, 50) on said skirt angularly spaced from each other to receive said at least one external lug (30) when said closure is threaded onto said neck finish.

5. The package set forth in claim 4 wherein one of said pair of internal lugs has an angled cam surface (48) to cam said one lug over said external lug during threaded application of said closure to said neck finish.

6. The package set forth in claim 3 wherein said neck finish has a pair of said external lugs (30) diametrically spaced from each other on said neck finish, and said closure has a pair of said internal lugs (46) diametrically spaced from each other on said skirt.

7. A closure that includes a one-piece plastic shell having a flexible resilient annular skirt (36) with a first portion having at least one internal thread segment (38), a second portion extending from said first portion and having an internal cam surface (40) angled

away from said first portion, at least one internal lug (46) on said second portion of said skirt, and a flexible resilient spring (54) for engaging a container neck finish when said closure is threaded onto the neck finish.

8. The closure set forth in claim 7 wherein said cam surface (40) is conical.

9. The closure set forth in claim 8 wherein said at least one internal lug includes diametrically opposed internal lugs (46) on said skirt.

10. The closure set forth in claim 9 wherein said skirt includes a pair of diametrically opposed external finger pads (58) at 90° spacing to said internal lugs.

Patentansprüche

1. Kindersichere Verpackung mit Zweifach-Betätigung, umfassend:

einen Behälter (26), der ein Halsende (24) aufweist, mit einer offenen Mündung, mindestens einem äußeren Schraubwindungssegment (28) und mit mindestens einer äußeren Nase (30) im Abstand zu dem äußeren Schraubwindungssegment, die eine schräge Auslenkfläche (32) aufweist, die in axialer Richtung der Mündung zugewandt ist, und
einen Verschluss (22), mit einer peripheren Ringwand (36), mindestens einem inneren Schraubwindungssegment (38) zum In-Anlage-Kommen an dem mindestens einen äußeren Schraubwindungssegment an dem Halsende, einer inneren schrägen Auslenkfläche (40) an der Ringwand, mindestens einer inneren Nase (46) an der Ringwand zum In-Anlage-Kommen an der mindestens einen äußeren Nase an dem Halsende, und mit einer flexiblen, nachgiebigen Feder (54) zum In-Anlage-Kommen an dem Halsende und zum Wegdrücken des Verschlusses von dem Halsende,
wobei der Verschluss auf das Halsende des Behälters aufschraubbar ist, bis die innere Nase (46) an der Ringwand über die äußere Nase (30) an dem Halsende hinweg bewegt ist, um einem Abschrauben des Verschlusses von dem Halsende einen Widerstand entgegenzusetzen,
wobei der Verschluss von dem Halsende entfernbar ist durch: (1) Zusammendrücken der Ringwand, bis die Ringwand ovalförmig ist, so dass die mindestens eine innere Nase an der Ringwand von der mindestens einen äußeren Nase an dem Halsende weg radial nach außen bewegt ist, worauf der Verschluss von dem Halsende abgeschraubt werden kann, und (2) Drücken des Verschlusses auf das Halsende entgegen der Feder, bis die Auslenkfläche an der mindestens einen äußeren Nase an der inneren Auslenkfläche an der Ringwand in Anlage kommt, um so die Ringwand in eine ovalförmige Form zu bringen, bis die mindestens eine innere Nase an der Ringwand von der mindestens einen äußeren Nase an dem Halsende weg radial nach außen bewegt ist, worauf der Verschluss von dem Halsende abgeschraubt werden kann.

2. Verpackung nach Anspruch 1, wobei die periphere Ringwand (36) einen ersten Abschnitt aufweist, an dem das mindestens eine innere Schraubwindungssegment (38) angeordnet ist, und einen zweiten Abschnitt, der sich von dem ersten Abschnitt aus erstreckt, an dem die innere Auslenkfläche (40) und die mindestens eine innere Nase (46) angeordnet sind.

3. Verpackung nach Anspruch 1, wobei die innere Auslenkfläche (40) an der Ringwand konisch ist.

4. Verpackung nach Anspruch 3, wobei die mindestens eine innere Nase (46) an der Ringwand zwei Nasen (46, 50) an der Ringwand in einem Winkelabstand zueinander zum Aufnehmen der mindestens einen äußeren Nase (30), wenn der Verschluss auf das Halsende aufgeschraubt wird, umfasst.

5. Verpackung nach Anspruch 4, wobei eine der beiden inneren Nasen eine schräge Auslenkfläche (48) aufweist, um beim Aufschrauben des Verschlusses auf das Halsende die eine Nase über die äußere Nase hinweg auszulenken.

6. Verpackung nach Anspruch 3, wobei das Halsende zwei äußere Nasen (30) aufweist, mit diametralem Abstand zueinander an dem Halsende, und wobei der Verschluss zwei innere Nasen (46) aufweist, mit diametralem Abstand zueinander an der Ringwand.

7. Verschluss, der eine einteilige Kunststoffschale umfasst, die eine flexible, nachgiebige Ringwand (36) aufweist, mit einem ersten Abschnitt, der mindestens ein inneres Schraubwindungssegment (38) aufweist, einem zweiten Abschnitt, der sich von dem ersten Abschnitt aus erstreckt und eine innere Auslenkfläche (40) aufweist, die sich schräg von dem ersten Abschnitt weg erstreckt, mindestens eine innere Nase (46) an dem zweiten Abschnitt der Ringwand, und mit einer flexiblen, nachgiebigen Feder (54) zum In-Anlage-Kommen an dem Halsende, wenn der Verschluss auf das Halsende aufgeschraubt wird.

8. Verschluss nach Anspruch 7, wobei die Auslenkfläche (40) konisch ist.

9. Verschluss nach Anspruch 8, wobei die mindestens eine innere Nase (46) diametral einander gegenüberliegende Nasen (46) an der Ringwand umfasst.

10. Verschluss nach Anspruch 9, wobei die Ringwand zwei diametral einander gegenüberliegende äußere Fingerauflageflächen (58) in einem Abstand von 90° zu den inneren Nasen umfasst.

Revendications

1. Emballage à double action à l'épreuve des enfants qui comporte :

un contenant (26) ayant un goulot (24) à gueule ouverte, au moins un segment de filetage mâle (28), et au moins un ergot externe (30) espacé dudit segment de filetage mâle et ayant une surface de came inclinée (32) en vis-à-vis de ladite gueule dans le sens axial, et
une fermeture (22) ayant une jupe périphérique (36), au moins un segment de filetage femelle (38) pour s'engager avec ledit au moins un segment de filetage mâle sur ledit goulot, une surface de came inclinée interne (40) sur ladite jupe, au moins un ergot interne (46) sur ladite jupe pour s'engager avec ledit au moins un ergot externe sur ledit goulot, et un ressort élastique souple (54) pour engager ledit goulot et maintenir ladite fermeture éloignée dudit goulot,
ladite fermeture pouvant être vissée sur ledit goulot de contenant jusqu'à ce que ledit ergot interne (46) sur ladite jupe se déplace sur ledit ergot externe (30) sur ledit goulot afin de résister à un dévissage de ladite fermeture à partir dudit goulot,
ladite fermeture pouvant être retirée dudit goulot :

(1) en serrant ladite jupe pour ovaliser cette dernière de sorte que ledit au moins un ergot interne sur ladite jupe se déplace radialement vers l'extérieur dudit au moins un ergot externe sur ledit goulot après quoi ladite fermeture peut être dévissée dudit goulot, et
(2) en poussant ladite fermeture sur ledit goulot contre ledit ressort jusqu'à ce que ladite surface de came sur ledit au moins un ergot externe engage ladite surface de came interne sur ladite jupe pour ovaliser ladite jupe jusqu'à ce que ledit au moins un ergot interne sur ladite jupe se déplace radialement vers l'extérieur dudit au moins un ergot externe sur ledit goulot après quoi ladite fermeture peut être dévissée dudit goulot.

2. Emballage selon la revendication 1, dans lequel ladite jupe périphérique (36) comporte une première partie sur laquelle est disposé ledit au moins un segment de filetage femelle (38), et une deuxième partie s'étendant de ladite première partie sur laquelle sont disposés ladite surface de came interne (40) et ledit au moins un ergot interne (46).

3. Emballage selon la revendication 1, dans lequel ladite surface de came interne (40) sur ladite jupe est de forme conique.

4. Emballage selon la revendication 3, dans lequel ledit au moins un ergot interne (46) sur ladite jupe comporte une paire d'ergots (46, 50) sur ladite jupe qui sont angulairement espacés l'un de l'autre pour recevoir ledit au moins un ergot externe (30) lorsque ladite fermeture est vissée sur ledit goulot.

5. Emballage selon la revendication 4, dans lequel un ergot de ladite paire d'ergots internes a une surface de came inclinée (48) pour réaliser un effet de came dudit un ergot sur ledit ergot externe durant une application de vissage de ladite fermeture audit goulot.

6. Emballage selon la revendication 3, dans lequel ledit goulot a une paire desdits ergots externes (30) qui sont diamétralement espacés l'un de l'autre sur ledit goulot, et ladite fermeture a une paire desdits ergots internes (46) qui sont diamétralement espacés l'un de l'autre sur ladite jupe.

7. Fermeture qui comporte une coque en plastique mono-pièce ayant une jupe annulaire élastique souple (36) avec une première partie ayant au moins un segment de filetage femelle (38), une deuxième partie s'étendant de ladite première partie et ayant une surface de came interne (40) inclinée éloignée de ladite première partie, au moins un ergot interne (46) sur ladite deuxième partie de ladite jupe, et un ressort élastique souple (54) pour engager un goulot du contenant lorsque ladite fermeture est vissée sur le goulot.

8. Fermeture selon la revendication 7, dans laquelle ladite surface de came (40) est conique.

9. Fermeture selon la revendication 8, dans laquelle ledit au moins un ergot interne comporte des ergots internes (46) diamétralement opposés sur ladite jupe.

10. Fermeture selon la revendication 9, dans laquelle ladite jupe comporte une paire de coussinets tactiles externes (58) diamétralement opposés et espacés à 90° desdits ergots internes.

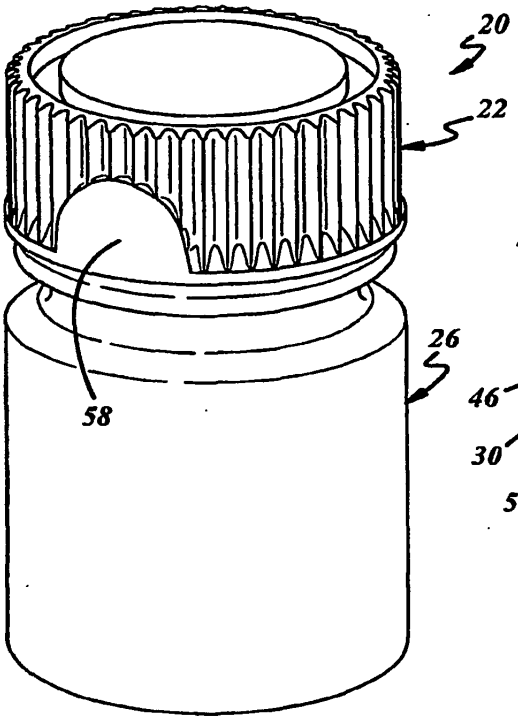


FIG. 1

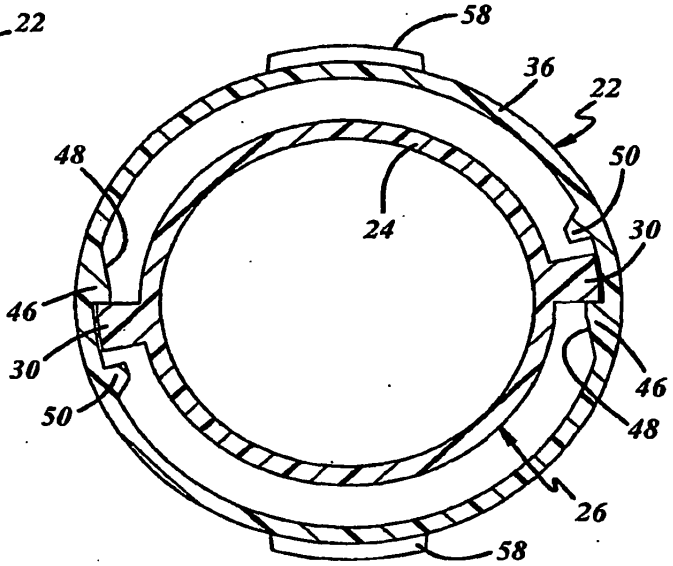


FIG. 3

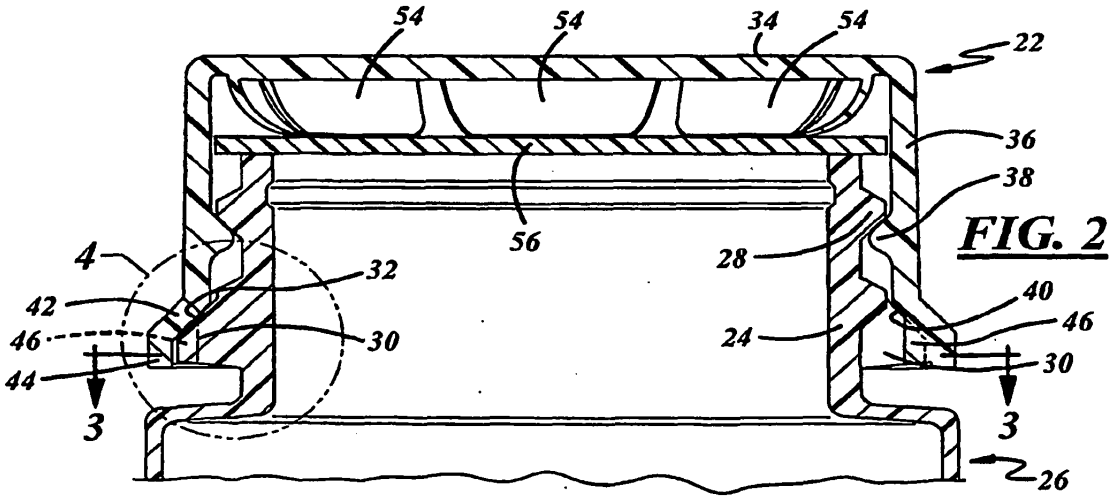


FIG. 2

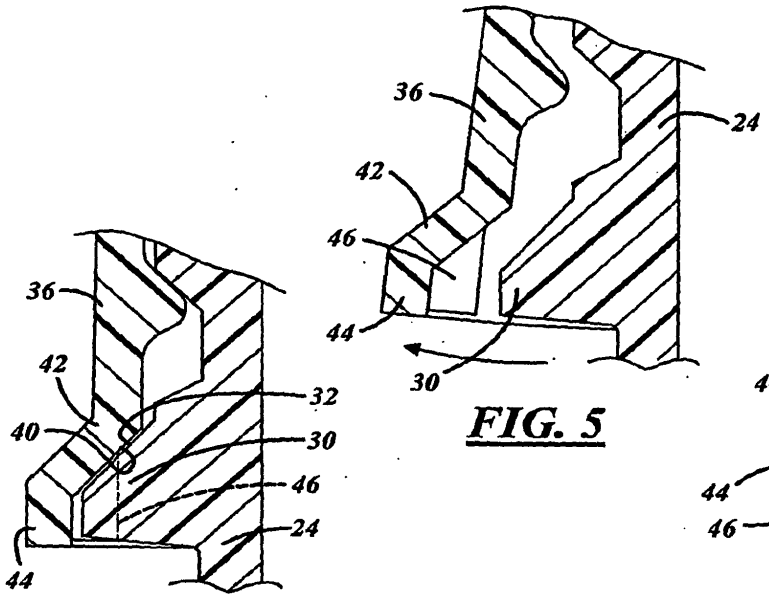


FIG. 5

FIG. 4

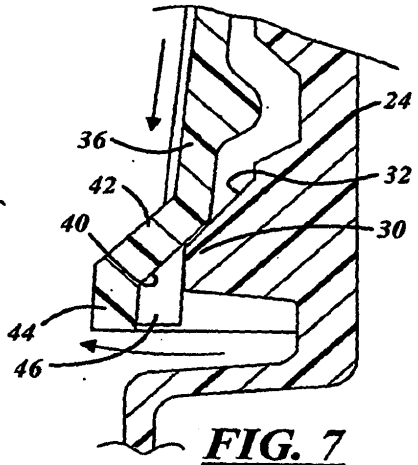


FIG. 7

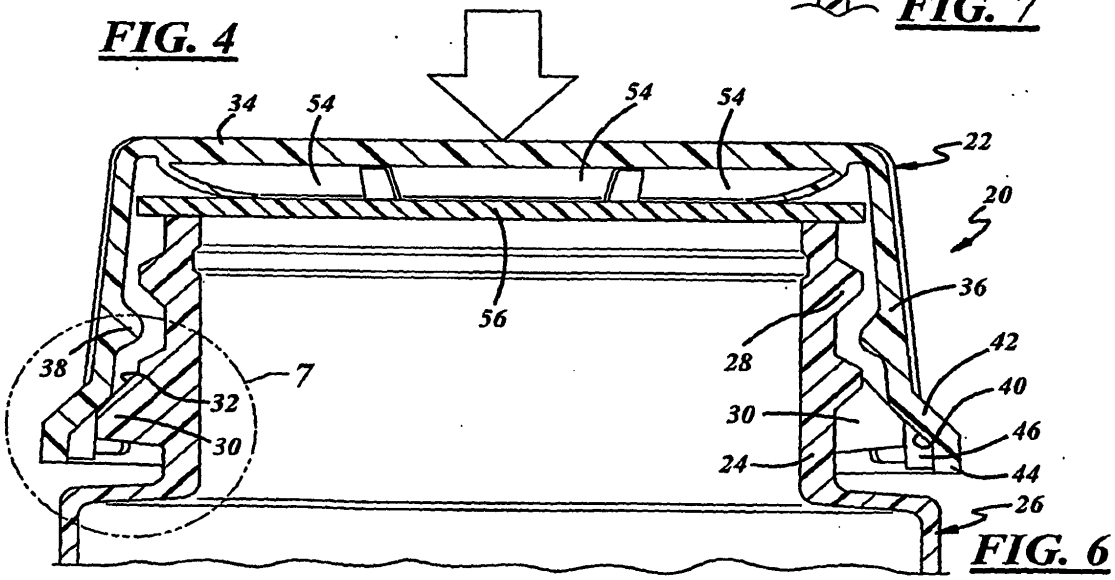


FIG. 6

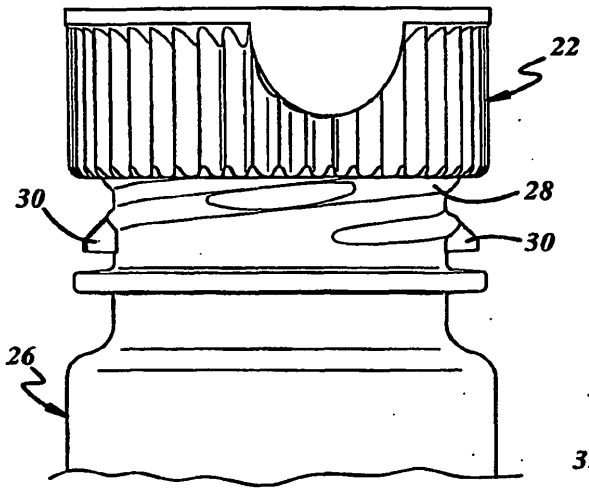


FIG. 8

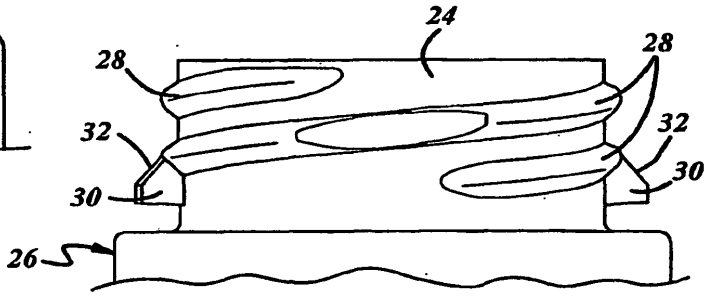


FIG. 9

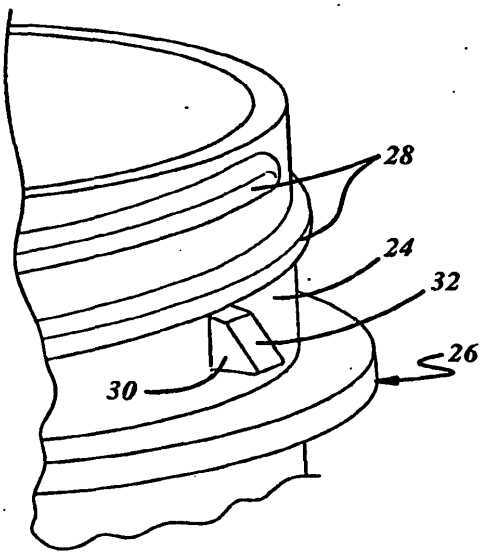


FIG. 10

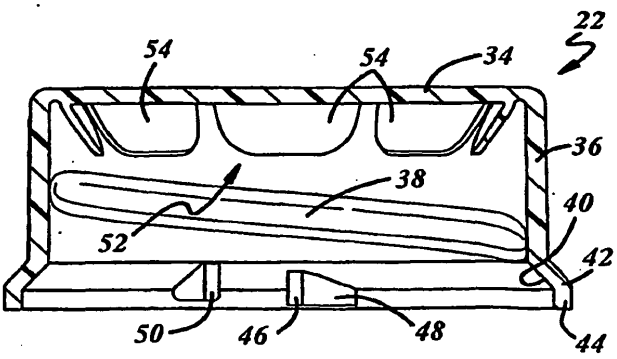


FIG. 11

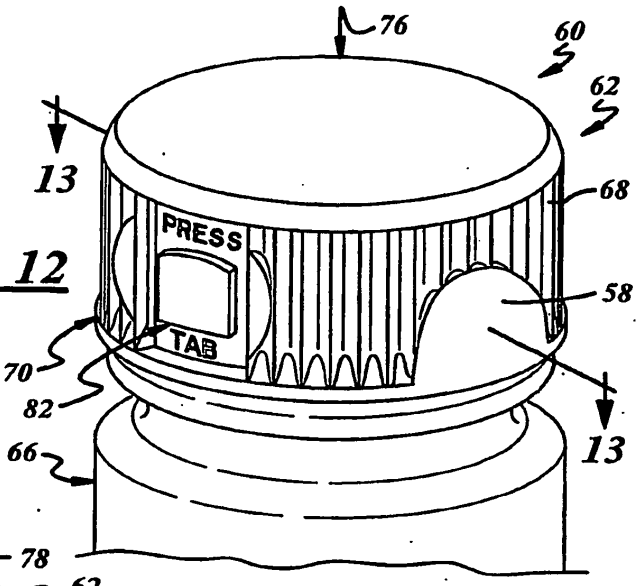


FIG. 12

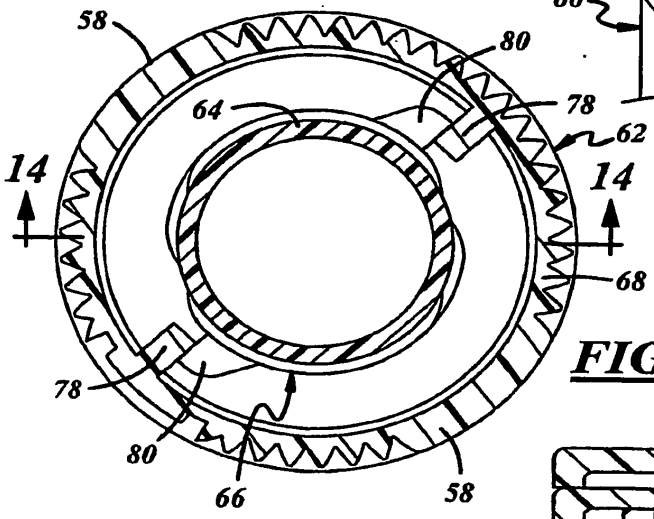


FIG. 13

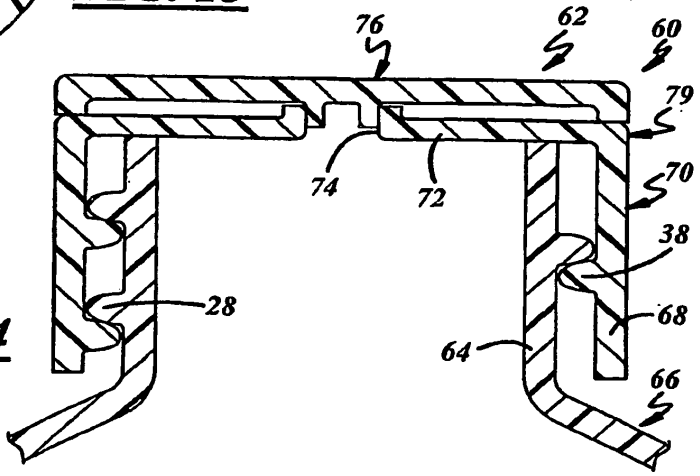


FIG. 14

REFERENCES CITED IN THE DESCRIPTION

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