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(54) **DOUBLE SHELL DISPENSER**

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(51) **Int. Cl.**
B67D 5/33 (2006.01)

(52) **U.S. Cl.** **222/153.14**; 222/153.02; 222/153.04; 222/153.09; 222/521; 222/549

(58) **Field of Classification Search** 222/153.02, 222/153.04, 153.09, 153.14, 519, 520, 521, 222/548, 549
See application file for complete search history.

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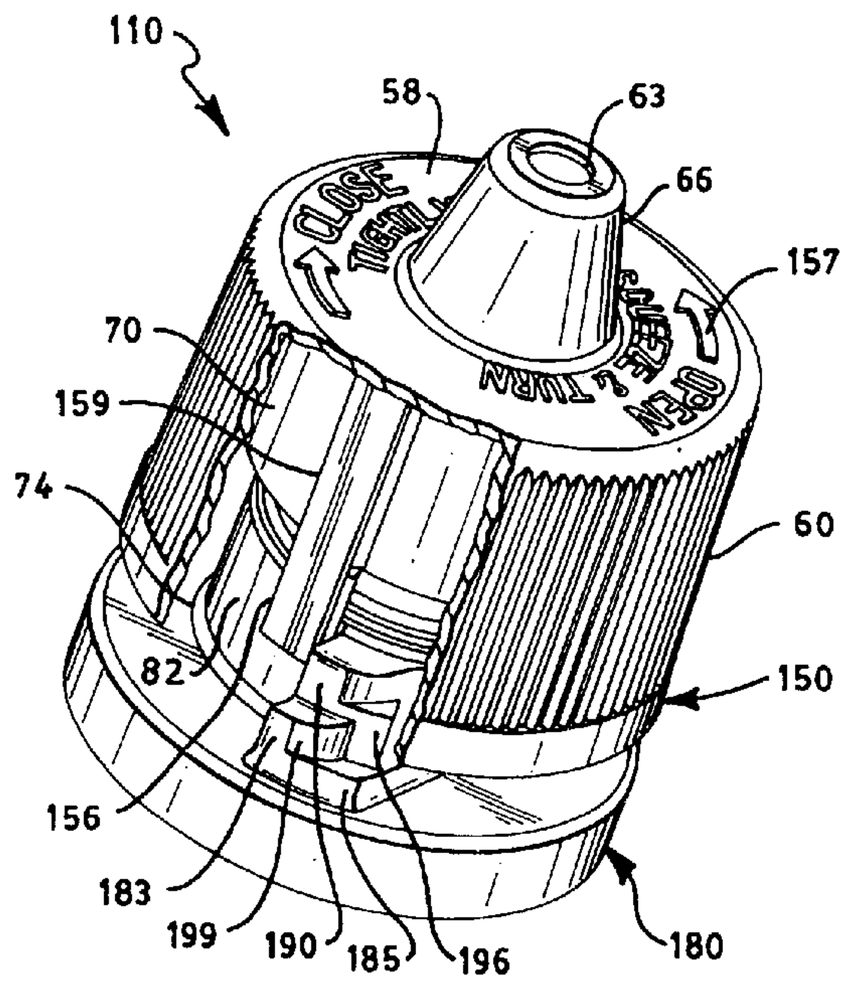
(57) **ABSTRACT**

A dispenser closure is provided having a stopping mechanism that limits the rotation of the closure and generally prevents removal of the closure cap from the container. The dispenser closure includes a cap body, fitment and container finish. The cap body has a double shell design, which includes at least one drop lug projecting from the inner shell. When the cap body is rotated about the container finish, the drop lug engages at least one lug stop located on the container finish so as to limit the rotation, thereby preventing removal of the cap body from the container finish.

10 Claims, 7 Drawing Sheets



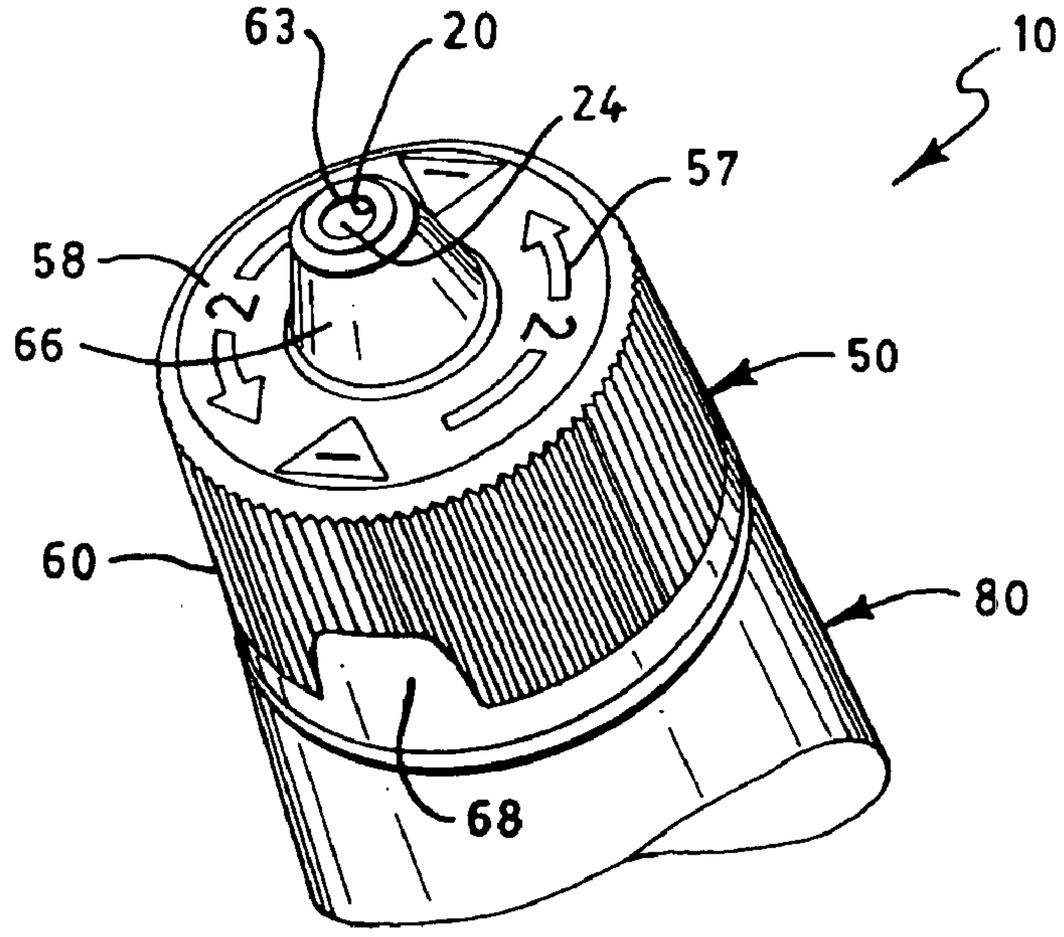


FIG. 1

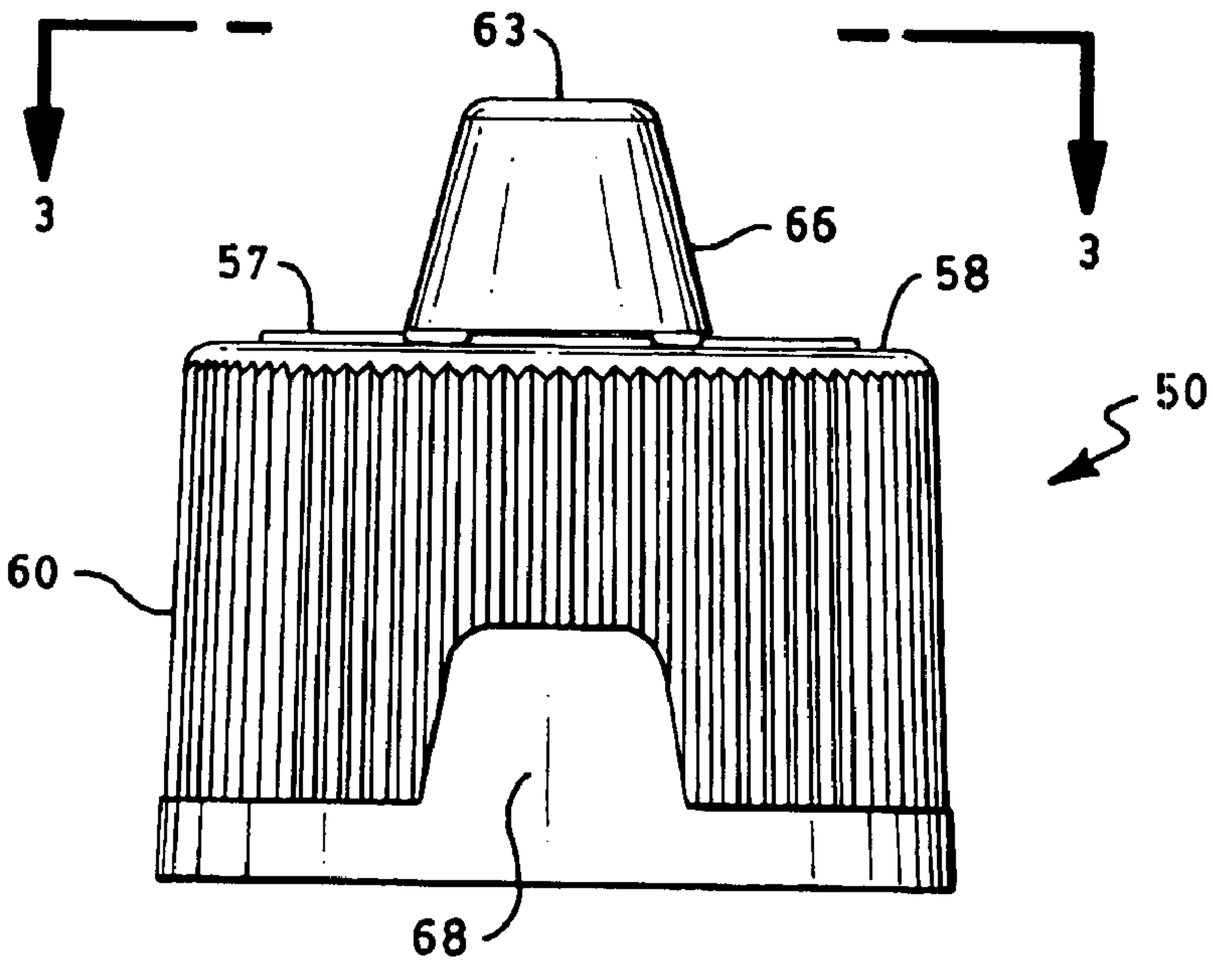
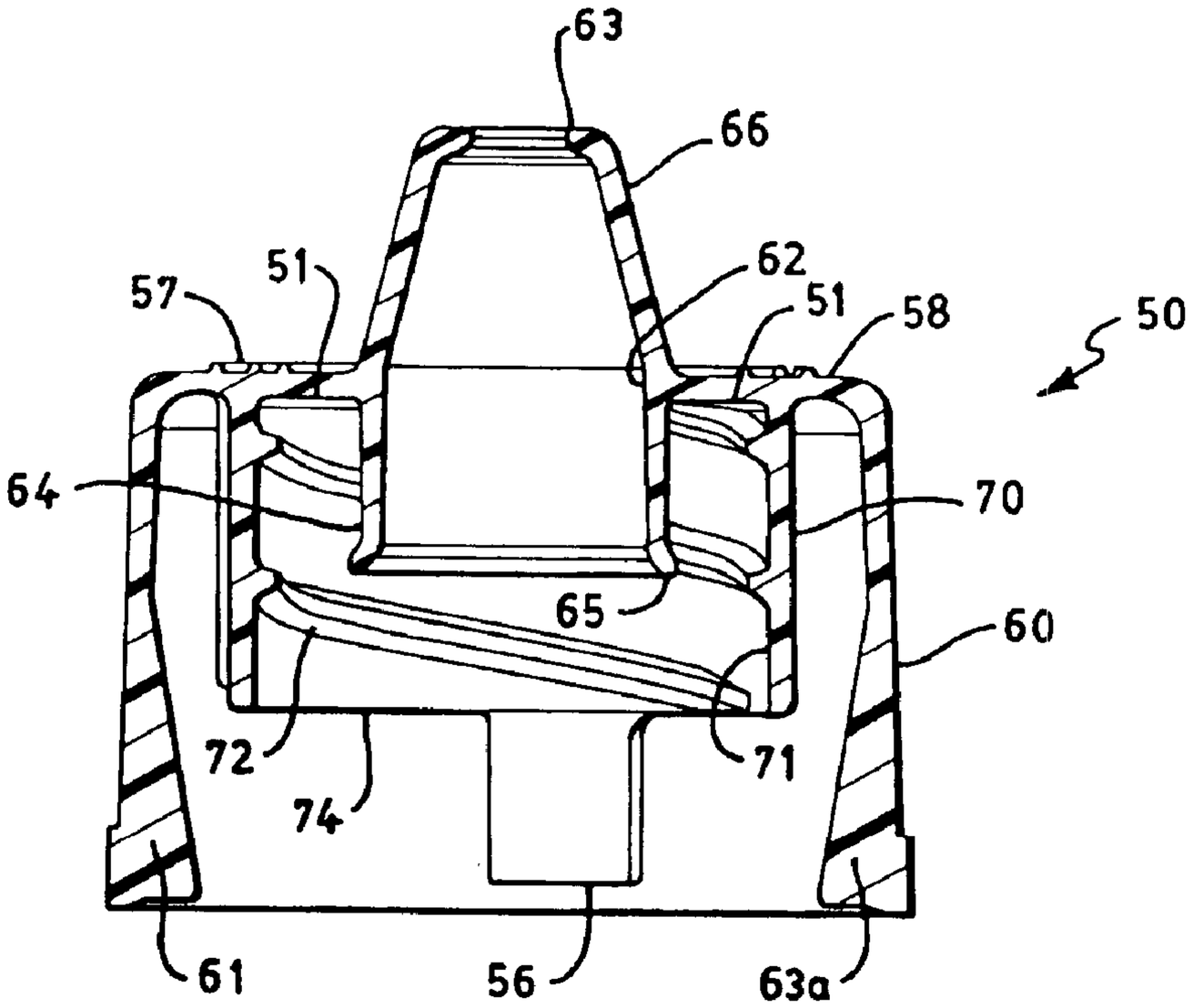


FIG. 2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63a

FIG. 3

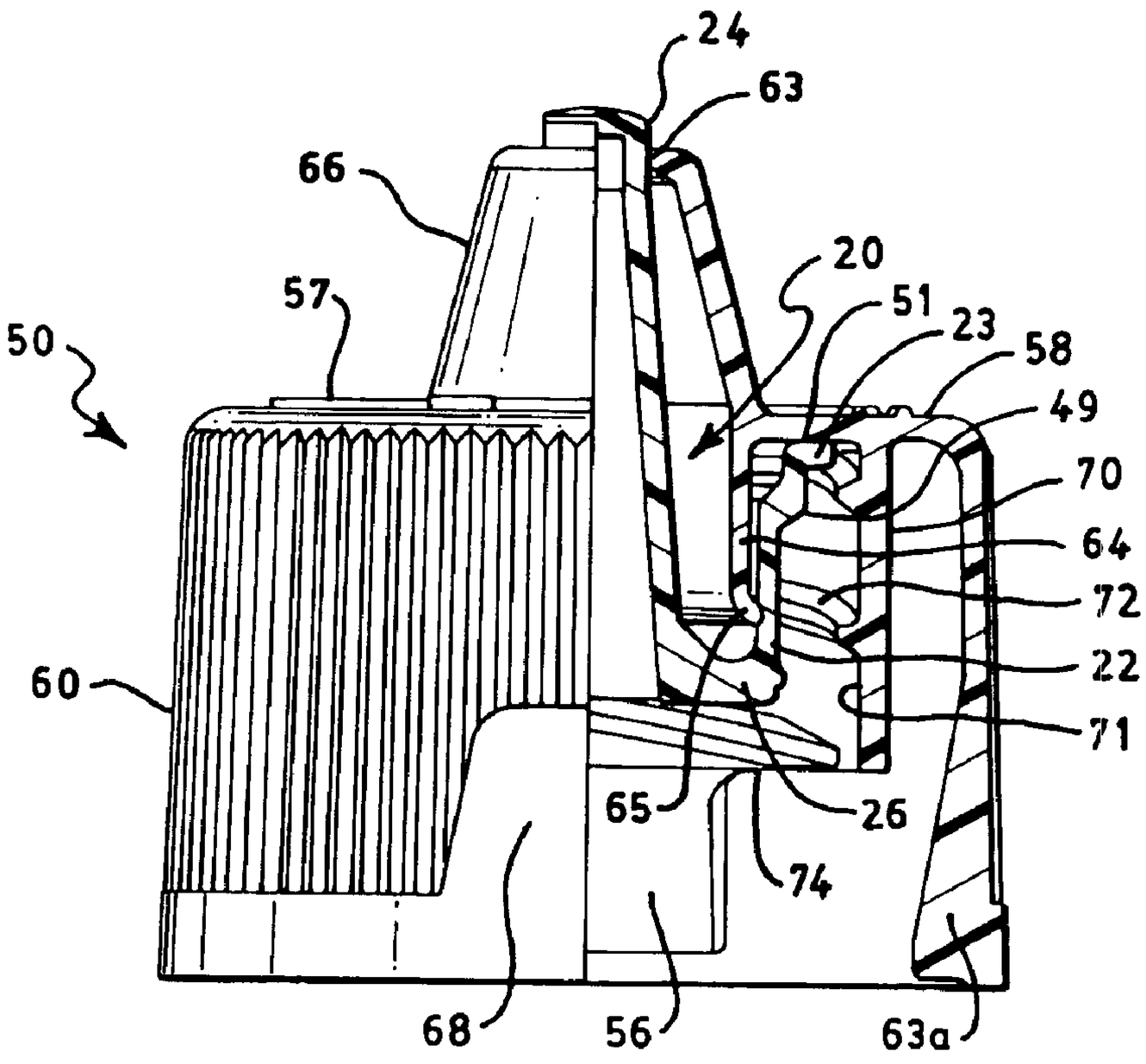
24
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FIG. 4

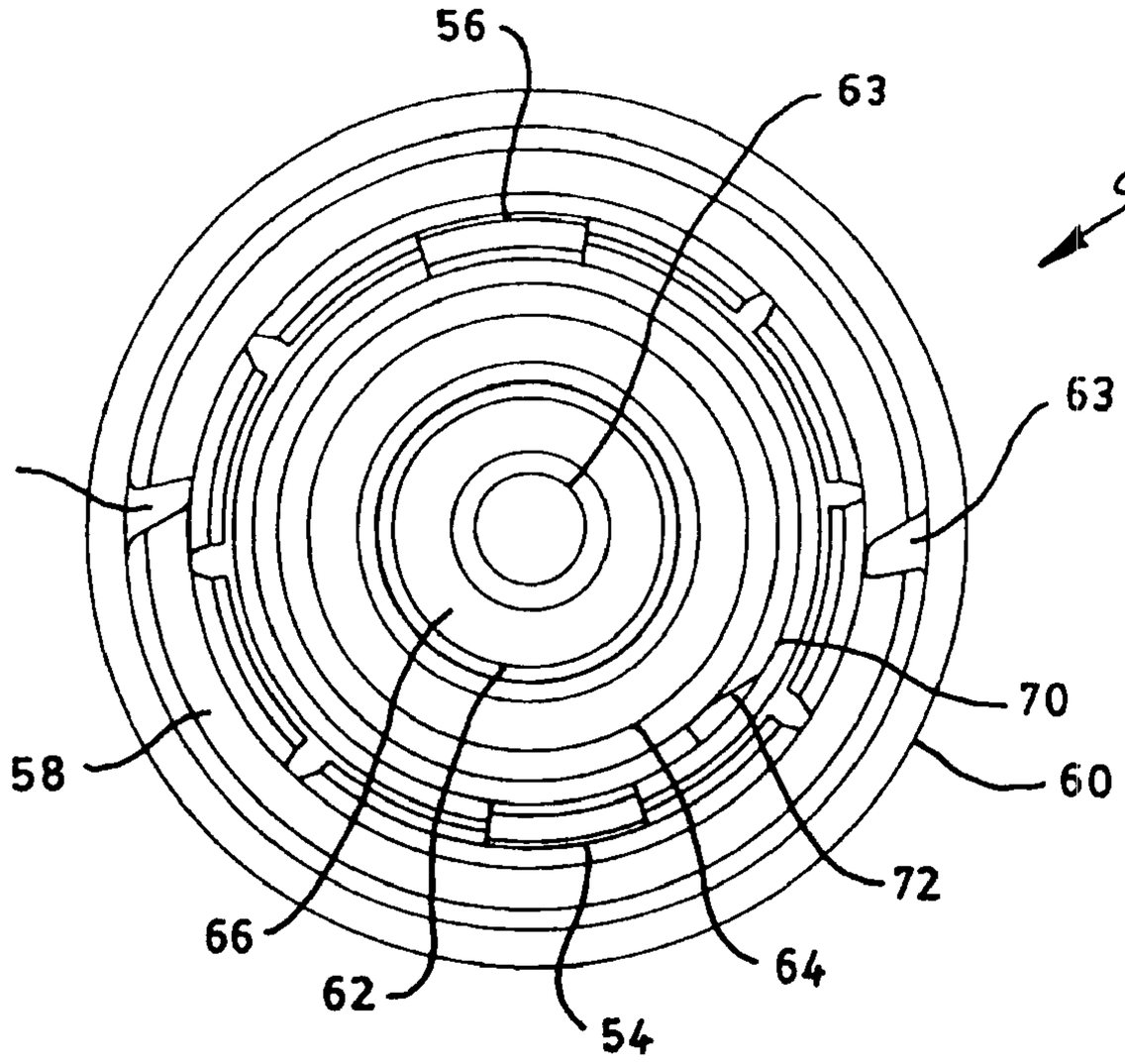

FIG. 5

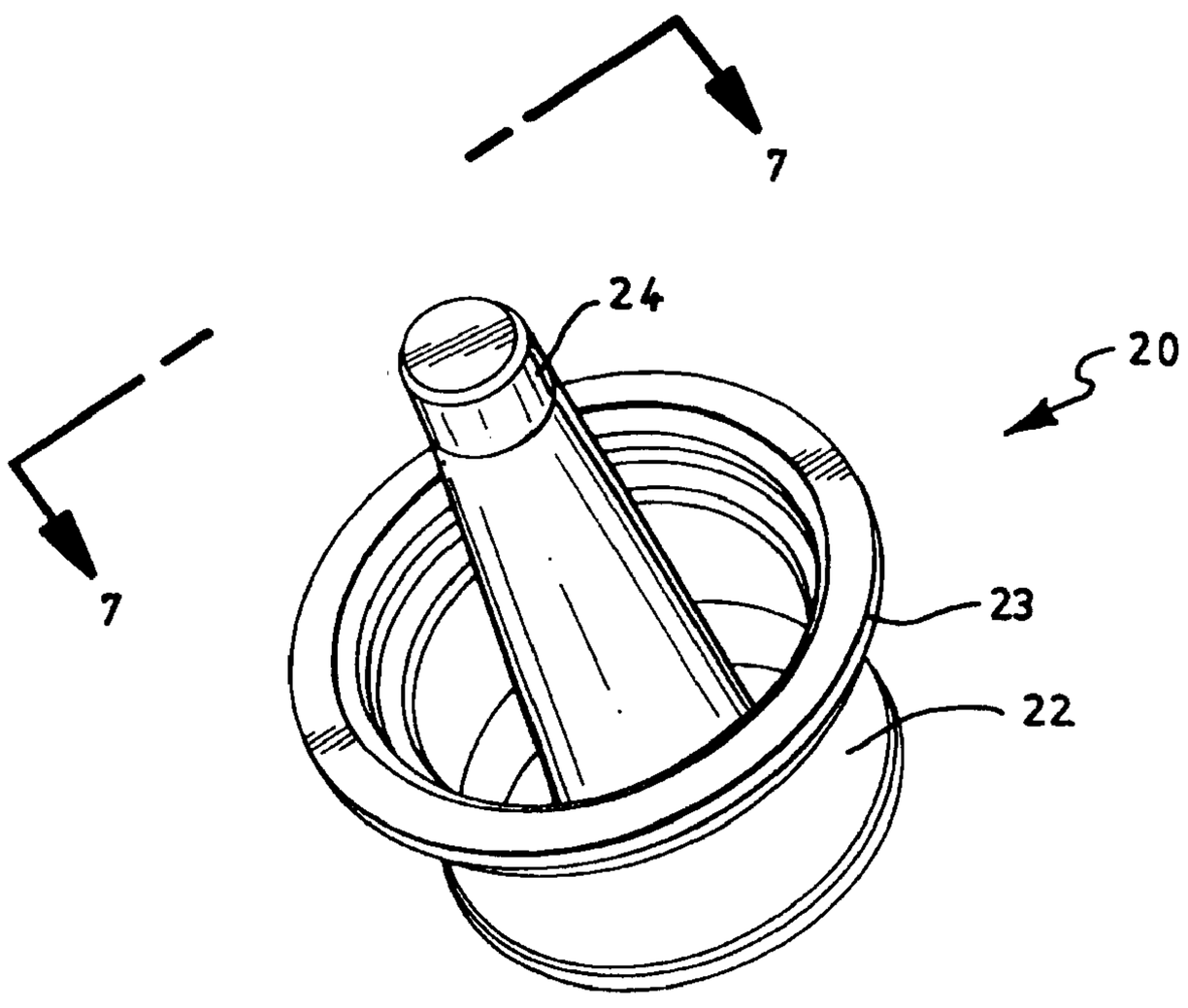

FIG. 6

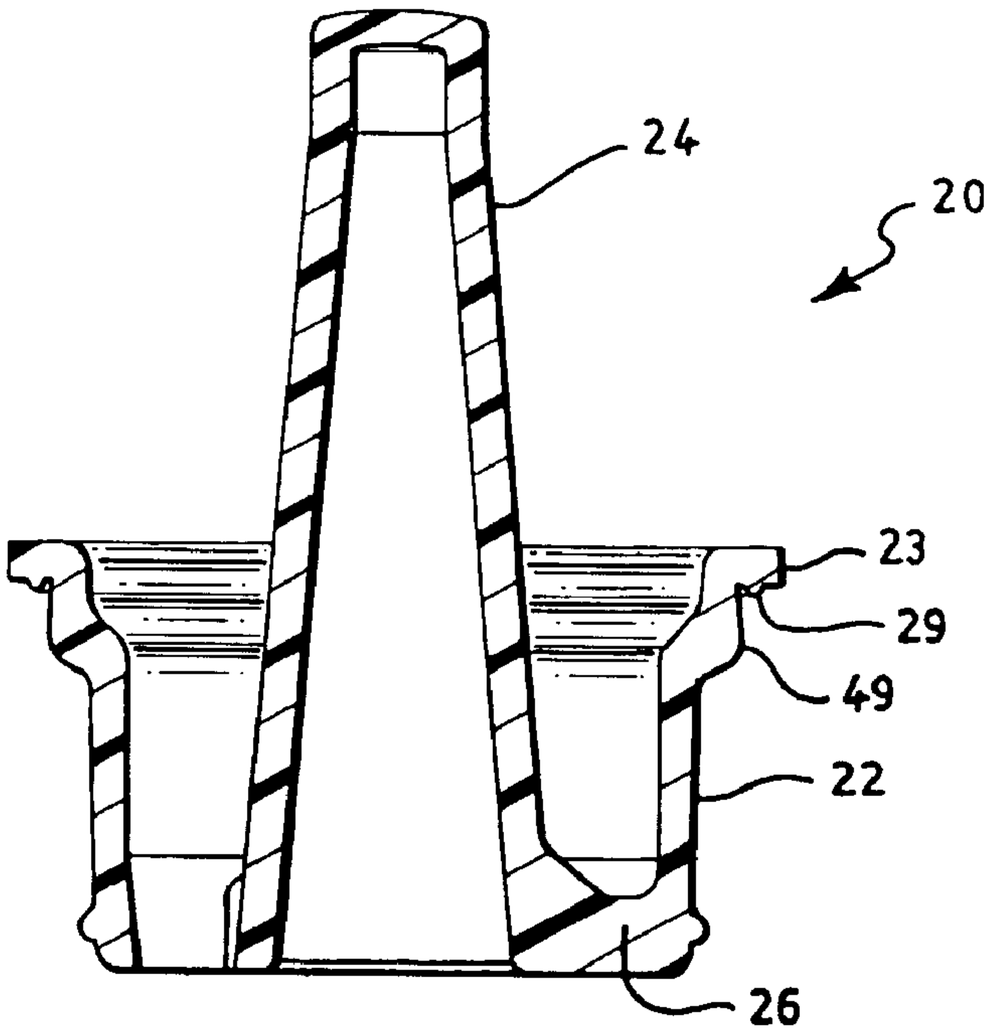

FIG. 7

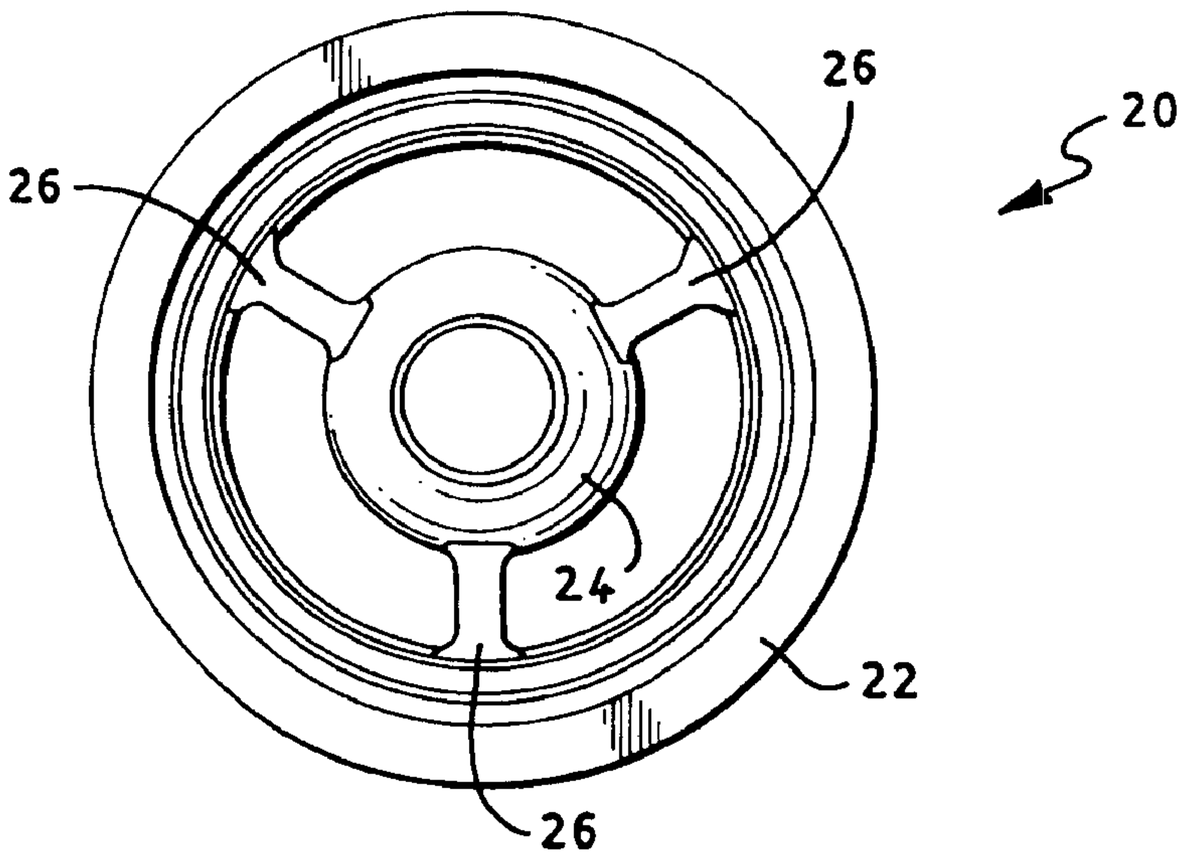

FIG. 8

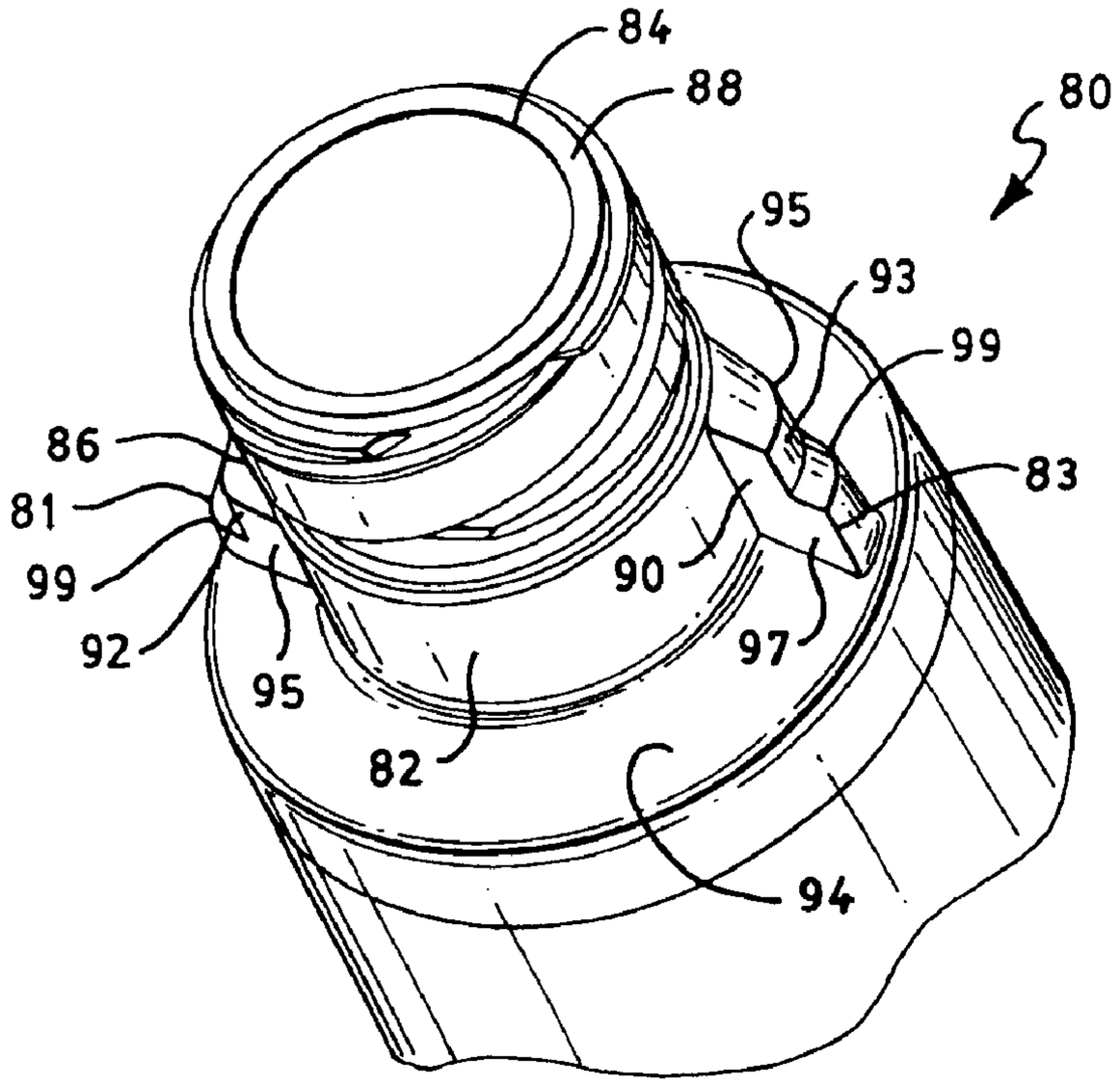
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FIG. 9

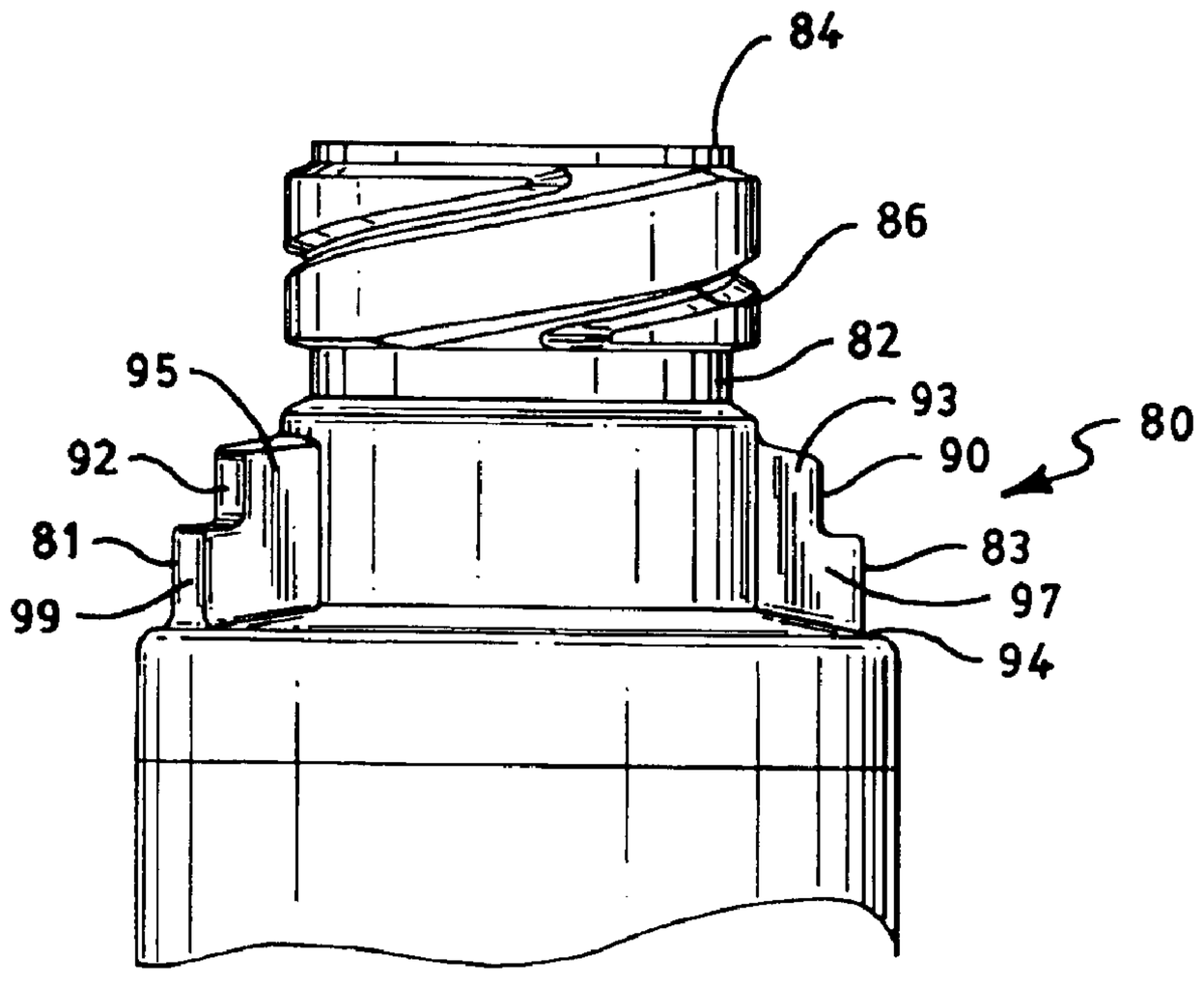
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FIG. 10

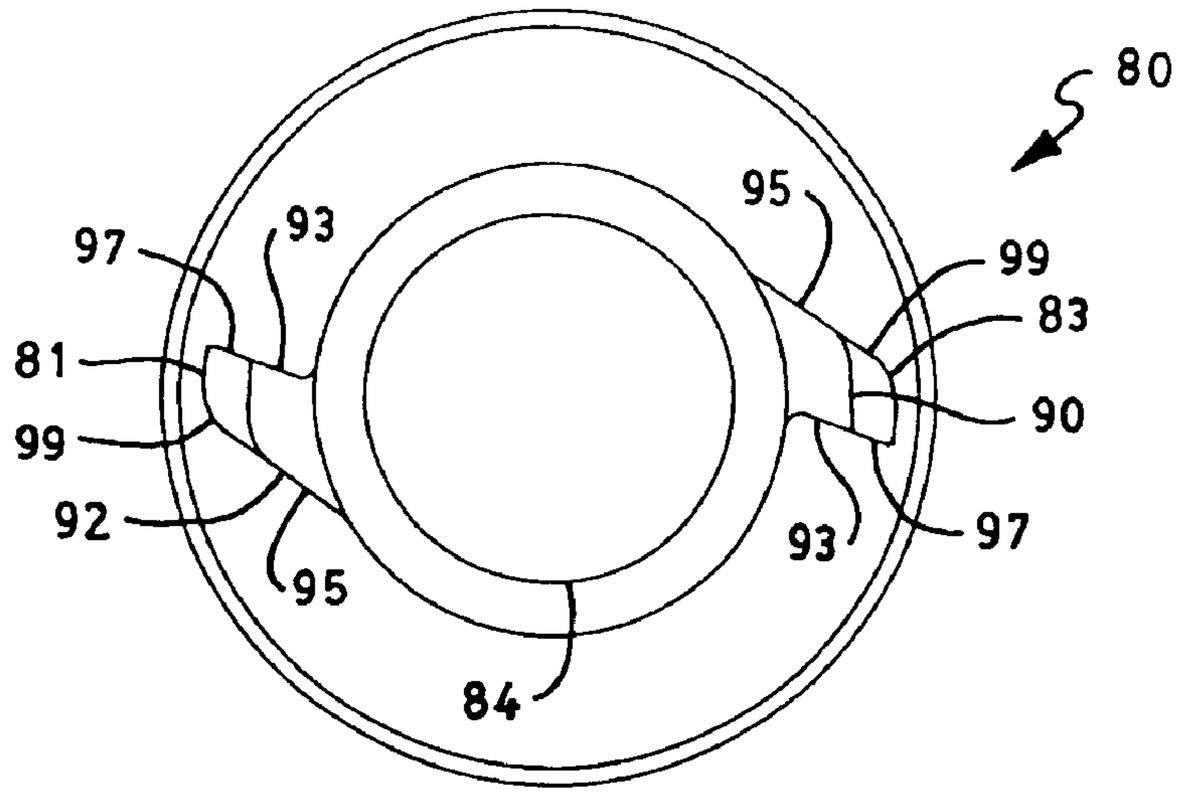

FIG. 11

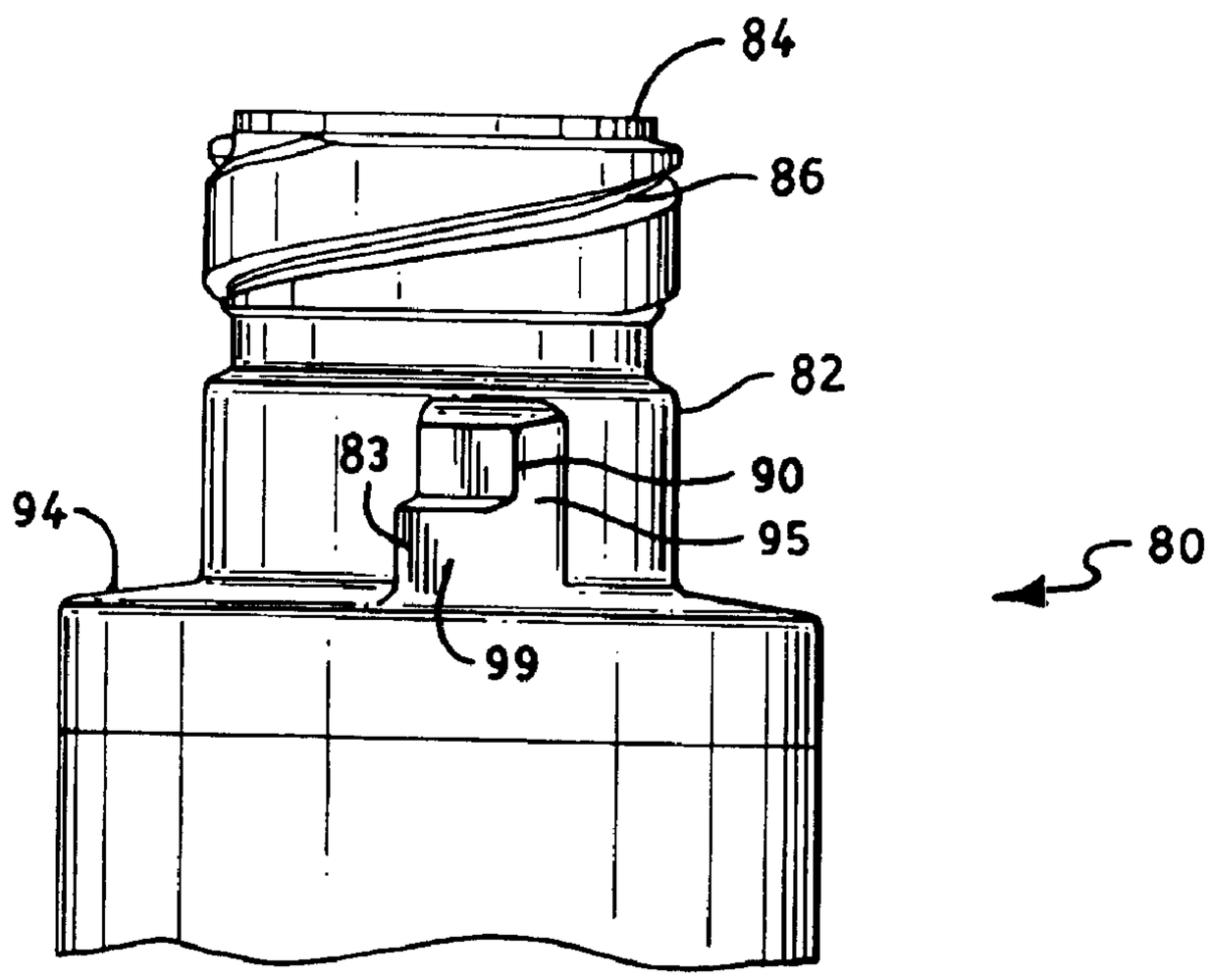

FIG. 12

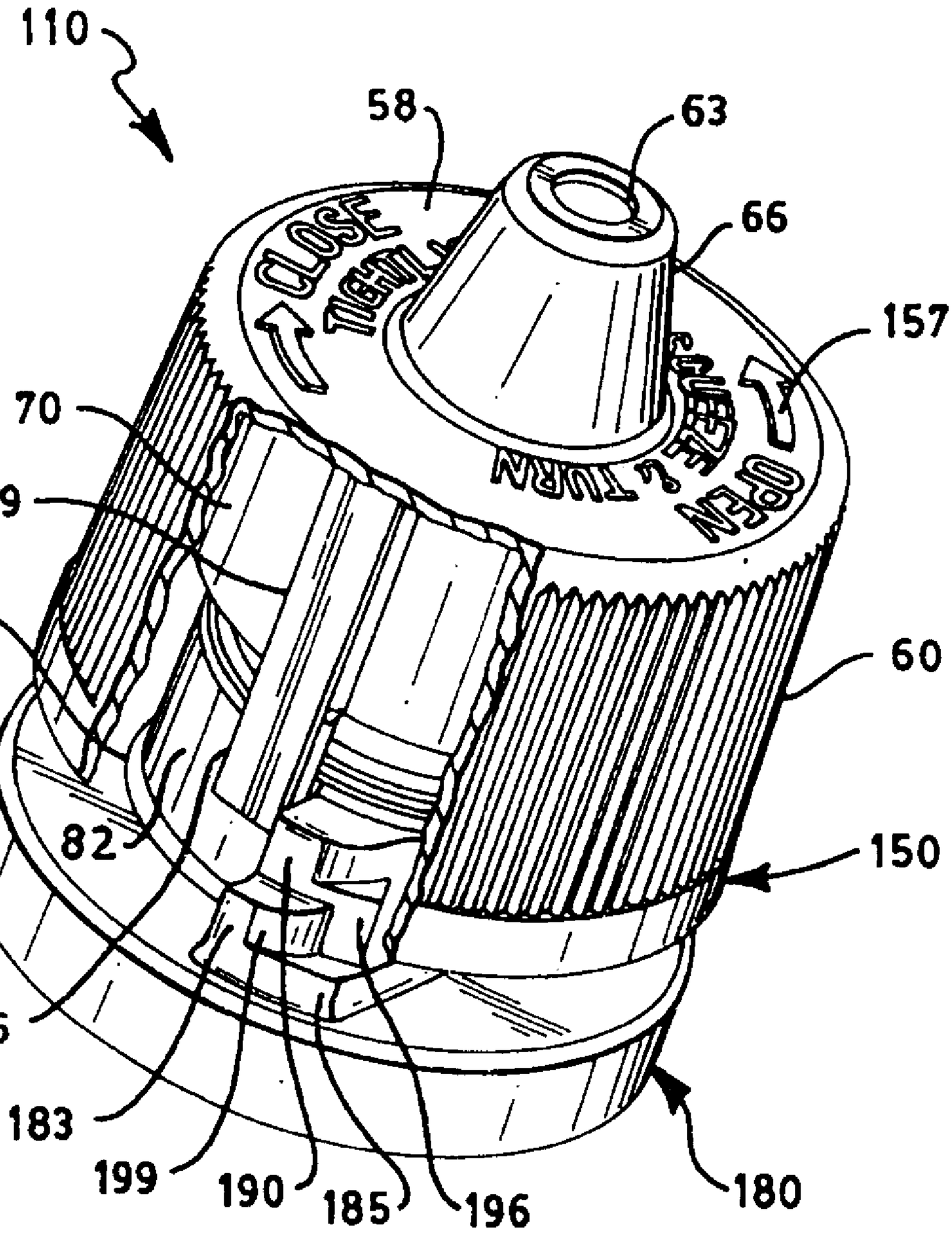

FIG. 13

DOUBLE SHELL DISPENSER

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to dispenser closures. More particularly, the present invention relates to threadably movable dispenser closures with stopping mechanisms.

2. Discussion of the Prior Art

Dispenser closures that open by the axial movement of a cap along a container finish are generally known in the art. Such a closure commonly includes a cap portion that is threadably attached to the finish of a container in such a way that the cap may be threadably moved from a closed position to an open position so as to access the contents of the container. The cap of this type of closure commonly has a limited range of rotation, so that the cap may remain affixed to the container even while in the open position.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a closure having a dispensing feature.

It is another object of the present invention to provide a double shell dispenser closure having a stopping mechanism which limits the range of rotation of a closure cap about a container finish.

More particularly, the apparatus of the present invention includes a double shell closure having a dispensing mechanism. The dispenser closure includes a cap body that is threadably attached to a container finish and a fitment placed in an aperture of the container and operably disposed between the cap body and the container finish. The container finish includes a neck portion with an opening therein, at least one thread and at least one lug stop thereon. The fitment has a plurality of spokes that connect an annular side wall with a post that is concentrically aligned therein. The cap body includes an inner wall and an outer wall concentrically aligned. In one embodiment, both the inner wall and the outer wall are annular and are concentrically aligned with an opening in a top wall of the cap body. The inner wall may include at least one thread on an inner surface thereof. The inner wall also has at least one drop lug projecting from a lower portion thereof. In one embodiment, two drop lugs are diametrically aligned and project downwardly from the terminating edge of the annular inner wall. The drop lugs are positioned to engage the lug stops located on the container finish, so as to prevent the threadable removal of the cap body from the container finish. The double shell dispenser closure may be partially opened to allow dispensing of the contents of the container, but may not be removed from the container due to the stopping mechanism.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the invention will be had upon reference to the following description in conjunction with the accompanying drawings in which like numerals refer to like parts and wherein:

FIG. **1** is a perspective view of a preferred embodiment of the closure of the present invention;

FIG. **2** is a side view of the cap body of the closure of FIG. **1**;

FIG. **3** is a sectional view of the cap body of FIG. **2** taken along line **2-2**;

FIG. **4** is a side view of the cap body and fitment of the present invention with portions cut away;

FIG. **5** is a bottom view of the cap body of FIG. **2**;

FIG. **6** is a perspective view of the fitment of the closure of the present invention;

FIG. **7** is a sectional view of the fitment of FIG. **6** taken along line **7-7**;

FIG. **8** is a bottom view of the fitment of FIG. **6**;

FIG. **9** is a perspective view of the container finish of the closure of the present invention;

FIG. **10** is a side view of container finish of FIG. **9**;

FIG. **11** is a top view of the container finish of FIG. **9**;

FIG. **12** is another side view of the container finish of FIG. **9**;

FIG. **13** is an alternative embodiment of the closure of the present invention with portions cut away.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the FIGS. **1-13**, a closure of the present invention is provided having a dispensing feature with a stopping mechanism which facilitates the dispensing of the contents of a tube, bottle or similar container, but prevents removal of the closure from the container. Closure **10** may be formed of any material well known in the art, such as polypropylene and polyethylene. As shown in FIG. **1**, the closure **10** includes a cap body **50**, a fitment **20** and a container finish **80**. The cap body **50** is threadably attached to the container finish **80**, so that the cap body **50** may threadably rotate axially along the neck portion **82** of the container finish **80**. In this manner, the cap body **50** may be rotated from a closed position to an open position in order to access the contents of the container (not shown) upon which the container finish **80** is disposed. The fitment **20** is positioned within closure **10** so that the opening **63** in the spout portion **66** of the cap body **50** is sealed by the post **24** of the fitment **20**, when the cap body **50** is in the closed position. The present invention also provides a stopping mechanism by which the rotation of cap body **50** about container finish **80** is limited. This stopping mechanism prevents the threadable removal of the cap body **50** from the container finish **80**.

As shown in FIG. **2**, the cap body **50** includes an outer shell or wall **60** depending from a top wall **58** from which projects a spout portion **66**. Spout portion **66** includes an opening **63** from which the contents of a container (not shown) may be dispensed. As shown in FIG. **3**, cap body **50** includes an inner shell or wall **70**, in addition to outer wall **60**. Outer wall **60** may be annular or any other appropriate shape. Inner wall **70** is also annular and may include at least one thread **72** projecting from an inner surface **71** thereof. The stopping mechanism of the present invention includes at least one drop lug **56** formed on a lower portion or termination edge **74** of inner wall **70**. In a preferred embodiment, inner wall **70** includes two drop lugs **54** and **56** projecting downwardly therefrom. As shown in FIG. **5**, drop lugs **54** and **56** are diametrically disposed along the terminating edge **74** of inner wall **70**. However, the drop lugs of the present invention may be disposed in any alignment in which the rotation of cap body **50** is usefully limited. As shown in FIG. **3**, drop lug **56** is generally rectangular, although other shapes are contemplated by the present invention. However, when drop lug **56** meets lug stop **90** or **92** on container finish **80**

as discussed herein below, the shape of drop lug **56** and the extent of its attachment to inner wall **70** should be sufficient to oppose twisting force applied by the user. Drop lug **56** is formed so as to resist deformation as rotational pressure is applied to cap body **50**. As shown in FIG. **3**, drop lug **56** may have an untapered connection with the terminating edge **74** of inner wall **70**. The extent of the untapered connection between drop lug **56** and inner wall **74**, as well as the overall width of the drop lug **56**, imparts to drop lug **56** sufficient rigidity to resist deformation as rotating pressure is applied to cap body **50**. Drop lug **56** engages lug stop **90** on container finish **80**, when the closure **10** is rotated counterclockwise, so as to prevent rotation of cap body **50**, as described herein below.

As shown in FIGS. **3** and **4**, outer wall **60** may include at least one child-resistant lock **63** formed thereon. In a preferred embodiment, as shown in FIGS. **3** and **5**, cap body **50** includes two child-resistant locks **61** and **63**a diametrically aligned along the outer wall **60** Cap body **50** also includes a top wall **58** from which both inner wall **70** and outer wall **60** depend. Top wall **58** includes an opening **62** disposed therein. A spout portion **66** projects from top wall **58** and is concentrically aligned with opening **62**. Indeed, inner wall **70** and outer wall **60** are also concentrically aligned with opening **62**. In one embodiment, as shown in FIGS. **3** and **4**, cap body **50** includes a skirt **64** depending from top wall **58** flush with opening **62**. Skirt **64** is provided within the cap body so as to operably engage an annular wall **22** of fitment **20**, as shown in FIG. **4**. In one embodiment, skirt **64** includes a skirt sealing head **65** which engages annular wall **22**. By this engagement, the contents of the container (not shown), to which the closure **10** is attached, are prevented from contacting inner wall **70**.

As shown in FIGS. 6-8, in addition to annular wall 22, fitment 20 includes a post 24 connected to annular wall 22 by a plurality of spokes 26. Post 24 is centrally aligned within the fitment 20 such that, when annular wall 22 engages skirt 64, post 24 extends through both opening 62 and spout portion 66. When cap body 50 is in the closed position, post 24 extends through opening 63 of spout portion 66, as shown in FIG. 4. Whereas, when cap body 50 is in the open position, post 24 extends through only a portion of spout portion 66 and extends short of opening 63. Annular wall 22 includes a locking bead 49 formed therein, as well as flange 23 projecting therefrom. Flange 23 includes a fitment sealing bead 29 formed thereon. When the closure 10 is assembled, fitment 20 is disposed within opening 84 of container finish 80, shown in FIG. 9. Fitment 20 is secured within opening 84 by the engagement of locking bead 49 with the inner surface of neck portion 82. Thus, as cap body 50 is threadably opened, fitment 20 remains secured in position relative to neck portion 82.

As shown in FIG. **4**, the cap body **50** and the fitment **20** cooperate to provide a double sealing mechanism, which includes the top wall sealing bead **51**, flange **23**, annular wall **22** and skirt sealing bead **65**. A first seal is provided by the engagement of skirt sealing bead **65** contacting annular wall **22**, as shown in FIG. **4**. Skirt sealing bead **65** is disposed so as to sealably engage annular wall **22** throughout the range of axial rotation through which the cap body **50** may rotate. The first seal formed by skirt sealing bead **65** and annular wall **22** prevents the contents of the container (not shown) from leaking past skirt **64**. A second seal is formed by the engagement of top wall sealing bead **51** and flange **23**, as shown in FIG. **4**. This second seal is forced only when the cap body **50** is in a generally closed position, since top wall **58** must be adjacent to flange **23** in order for top wall sealing bead **51** to engage flange **23**. The second seal provides leakage protection that is in addition to the protection offered by the first seal, which is maintained throughout all the various orientations of the closure **10**. In addition to the sealing mechanism provided by the cooperation of cap body **50** and fitment **20**, a third seal is provided by the cooperation between fitment **20** and container finish **80**. More particularly, when fitment **20** is disposed in the opening **84** of the container finish **80**, fitment sealing bead **29** engages the upper surface **88** of neck portion **82**, thereby forming the third seal. This third seal prevents the contents of the container (not shown) from leaking through opening **84** and past fitment **20**.

As shown in FIGS. **2** and **4**, outer wall **60** may include a thumb pad **68** disposed on an outer surface thereof. In a preferred embodiment, outer wall **60** is formed of an appropriate polymeric material and thickness as to make it deformable. A cap body **50** including a deformable outer wall **60** may include two thumb pads **68** diametrically aligned thereon. Outer wall **60** may be deformable by the application of pressure by the user to the points on the outer wall **60** where the thumb pads **68** are disposed so as to cause outer wall **60** to deform inwardly at those points, while also deforming outwardly at points approximately 90° away from those points. In such a preferred embodiment, child-resistant locks **61** and **63**a are disposed approximately 90° away from thumb pads **68** along outer wall **60**, so that, when outer wall **60** is deformed as described above, child-resistant locks **61** and **63**a are moved away from child-resistant stops **81** and **83**, shown in FIGS. **9-12**, disposed on container finish **80**, and prevent counterclockwise rotation and subsequent removal of the closure **10**.

As shown in FIGS. **9-12**, the container finish **80** includes a neck portion **82** with an opening **84** therein, whereby the contents of the container (not shown) may be accessed. The neck portion **82** includes at least one thread **86** disposed thereon. The container finish **80** also includes at least one lug stop **90** disposed thereon. In a preferred embodiment, the container finish **80** includes two lug stops **90** and **92** formed on a shoulder portion **94** of the container finish. Lug stop **90** is diametrically aligned with lug stop **92** along the outer surface of neck portion **82**. However, depending on the desired range of rotation of the cap body **50** about the container finish **80**, the container finish **80** of the present invention may include one or more lug stops that are disposed at various points around the container finish **80**. As discussed herein below, the lug stops **90** and **92** engage drop lugs **54** and **56** in order to limit the range of rotation of the cap body **50** about the container finish **80**.

Container finish **80** also may include at least one child-resistant stop **81** and/or **83**. In one embodiment, container finish **80** includes two child-resistant stops **81** and **83** diametrically aligned around the neck portion **82** and integrally formed with lug stops **90** and **92**, as shown in FIGS. **9** and **10**. However, the closure **10** of the present invention also encompasses child-resistant stops that are not aligned nor integrally formed with lug stops **90** and **92**. Child-resistant stops **81** and **83** cooperate with child-resistant locks **61** and **63**a so as to limit the user's ability to open the closure **10**, as discussed herein below. Child-resistant stops **81** and **83** differ from lug stops **90** and **92** in their size and positioning. More particularly, child-resistant stops **81** and **83** are smaller than lug stops **90** and **92** and are positioned radially beyond lug stops **90** and **92**. The size and positioning of child-resistant stops **81** and **83** facilitate the proper opening of the closure **10** and allow for the lug stops **90** and **92** to engage drop lugs **54** and **56** even when outer wall **60**

is being deformed so as to avoid the engagement of child-resistant stops **81** and **83** by child-resistant locks **61** and **63**a. As shown in FIG. **11**, each of the lug stops **90** and **92** and child-resistant stops **81** and **83** may include a generally flat side and a generally rounded side. More particularly, each of lug stops **90** and **92** may include a flat side or stop surface **93**, as well as a rounded side or cam surface **95**. Likewise, each of the child-resistant stops **81** and **83** may also include a flat or stop surface **97**, as well as a rounded or cam surface **99**. The stop surfaces **93** of lug stops **90** may engage drop lugs **56** and **54** so as to stop the axial rotation of cap body **50** about neck portion **82**. However, when cam surfaces **95** of lug stops **90** and **92** engages drop lugs **56** and **54**, the rounded surfaces of cam surfaces **95** allow the drop lugs **54** and **56** to slide over lug stops **90** and **92**, so as to allow for the initial attachment of cap body **50** to container finish **80**. Likewise, the stop surfaces **97** of child-resistant stops **81** and **83** engage child-resistant locks **61** and **63**a on outer wall **60** of cap body **50**, so as to prevent opening of the closure **10**. Whereas, the cam surfaces **99** of child-resistant stops **81** and **83**, when engaged, allow for the child-resistant locks **61** and **63**a to slide over the child-resistant stops **81** and **83**.

As shown in FIG. **5**, drop lugs **54** and **56** are disposed approximately 90° away from each of child-resistant locks **61** and **63**a, so that cap body **50** may be threadably rotated only approximately 90° about the container finish **80** before either a drop lug or a child-resistant lock engages a lug stop or a child-resistant stop. In this manner, the range of rotation of the cap body **50** about the container finish **50** is limited to approximately 90°. However, the present invention may include lugs, locks, and stops that are aligned differently so as to provide a varied range of rotation.

As shown in FIG. **13**, an alternative embodiment of the closure **110** is provided with at least one drop lug **156** having a reinforcing spine **159** projecting from inner wall **70**. The reinforcing spine **159** provides further rigidity to drop lug **156** so that the lug does not deform as it engages lug stop **190**. This alternative embodiment of the closure **110** also includes a lug stop **190** having a child-resistant stop **183** integrally formed therewith. Additionally, a cam **185** is also integrally formed with the child-resistant stop **183** so as to guide child-resistant lock **61** over the cam **199** of child-resistant stop **183**. The dispenser closure **110** also includes an over-torque barrier **196** integrally formed with the stop **190**. When cap body **150** is being threadably attached to container finish **180**, over-torque barrier **196** engages drop lug **156** so as to prevent cap body **150** from being threaded too far onto the container finish **180**. Over-torque barrier **196** also provides for the proper positioning of drop lugs **54** and **56** relative to lug stops **90** and **92** so that they may function properly.

In use, the closure **10** provides for the dispensing of the contents of a container (not shown). When closure **10** is assembled, fitment **20** is disposed over the opening **84** in the neck portion **82** of container finish **80**. Cap body **50** is positioned over fitment **20** so that post **24** extends through spout portion **66** and seal **65** engages a surface of annular wall **22** of fitment **20**. Cap body **50** is threadably attached to container finish **80** by the cooperation of at least one thread **72**, on the inner surface **71** of inner wall **70**, with at least one thread **86** on neck portion **82**. Each of the drop lugs **54** and **56** and the child-resistant locks **61** and **63**a are disposed between lug stops **90** and **92** and child-resistant stops **81** and **83**. In the closed position, cap body **50** is threaded axially down over neck portion **82**, such that post **24** of fitment **20** extends upward through each of opening **62**, spout portion **66** and opening **63**, thereby sealing opening **63** and the closure **10**. When closure **10** is opened, the user applies inward pressure to the outer wall **60** at the thumb pads **68**, thereby deforming the outer wall **60**. The child-resistant locks **61** and **63**a are disposed on the portions of the outer wall that deflect outward, when pressure is applied by the user. While this pressure is being applied, the user may then axially rotate the cap body **50**, so that the cap body **50** moves upward from neck portion **82** and fitment **20**. As the cap body **50** rotates axially, child-resistant locks **61** and **63**a rotate past child-resistant stops **81** and **83** without engaging them, since the outer wall **60** is deformed outwardly at those points where the child-resistant locks are located. If the outer wall **60** was not deformed as the axial rotation was occurring, then child-resistant locks **61** and **63**a would engage child-resistant stops **81** and **83**, thereby preventing the opening of the closure **10**. Nevertheless, as the child-resistant locks **61** and **63**a on the deformed cap body **60** move past the child-resistant stops **81** and **83**, the cap body **50** continues to rotate axially until one or both drop plugs **54** and **56** engage one or both stops **90** and **92**. Once drop lugs **54** and **56** engage stops **90** and **92**, further axial rotation of cap body **50** is prevented. At the point of engagement of drop lugs **54** and **56** with stops **90** and **92**, closure **10** is open, but cap body **50** is still attached to container finish **80**. In this manner, the dispenser closure **10** may dispense the contents of a container in which the closure **10** is attached without removing the cap body **50** from the container finish **80**.

The foregoing detailed description is given primarily for clearness of understanding and no unnecessary limitations are to be understood therefrom for modifications will become obvious to those skilled in the art upon reading this disclosure and made without departing from the spirit of the invention or the scope of the invention.

What is claimed is:

1. A dispenser closure comprising:

a container finish having at least one thread and at least one lug stop formed thereon; and,

a cap body threadably attached to said container finish, said cap body having a top wall with an opening therein, said top wall including an inner wall and an outer wall depending therefrom, said outer wall and said inner wall being concentrically aligned, said inner wall having at least one drop lug projecting from a terminating edge thereof;

said outer wall including at least one child-resistant lock formed therefrom, said container finish including at least one child-resistant stop formed thereon;

said child-resistant stop being integrally formed with said lug stop.

2. A dispenser closure comprising:

a container finish having at least one thread and at least one lug stop formed thereon; and,

a cap body threadably attached to said container finish, said cap body having a top wall with an opening therein, said top wall including an inner wall and an outer wall depending therefrom, said outer wall and said inner wall being concentrically aligned, said inner wall having at least one drop lug projecting from a terminating edge thereof;

said outer wall including at least one child-resistant lock formed therefrom, said container finish including at least one child-resistant stop formed thereon;

said at least one lug stop including an over-torque barrier integrally formed therewith.

3. A dispenser closure comprising:

a container finish including at least one lug stop and at least one child-resistant stop formed thereon; and,

a cap body threadably attached to said container finish, said cap body including a top wall with an inner wall and outer wall depending therefrom, said inner wall having at least one drop lug projecting downward therefrom, said outer wall including at least one child-resistant lock projecting therefrom;

said lug stop being integrally formed with said child-resistant stop.

4. A dispenser closure comprising:

a container finish including a neck portion and at least one lug stop integrally formed with at least one child-resistant stop formed on said neck portion; and,

a cap body attached to said container finish, an inner wall and an outer wall projecting from a top wall of said cap body, said inner wall including at least one drop lug formed thereon, and said outer wall including at least one child-resistant stop formed thereon.

5. The dispenser closure of claim **4**, further comprising a fitment attached to said container finish and sealably engaged to said cap body.

6. The dispenser closure of claim **5**, said cap body further including a skirt depending from said top wall, said skirt including a sealing bead formed thereon, said sealing bead engaging said fitment.

7. The dispenser closure of claim **4**, said at least one drop lug projecting downwardly from a terminating edge of said inner wall.

8. The dispenser closure of claim **4**, said at least one drop lug including two drop lugs projecting from said inner wall, said at least one child-resistant lock including two child-resistant locks projecting from said outer wall.

9. The dispenser closure of claim **4**, said at least one lug stop including an over-torque barrier integrally formed therewith.

10. The dispenser closure of claim **4**, said at least one child-resistant stop including at least one cam formed integrally therewith.

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