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Courier Press, Leamington Spa, England.

Description

The present invention relates to containers or bottles of the type consisting of a cylindrical body with either an integral or seamed bottom and having a narrow upper end with a neck which is associated with a closure.

Various closures for the small diameter neck are available. Typical closures are shown in U.S. Patents: 3,251,499, 3,317,070, 3,348,719, 3,998,354, 3,999,678 and 4,149,651.

After considering various types of snap-in closures of the types heretofore discussed, a number of problems were noted. Some of the most objectionable problems have been the lack of consistent positive closure under pressure and which is also relatively easy to open and simple to adapt to high speed manufacture and application. Structures of the general type under consideration have been bulky and costly and the best designs require a closure which must be torn away from the plug. This type of structure requires extremely accurately machined dies and the section to be torn apart must be precisely dimensioned not only to withhold the pressure but also be capable of rupturing when being tensioned by the pulling effort exerted by the person wanting to open the closure.

German Published Application No. 2,338,777 discloses a closure for a container including a cup-shaped flexible plug which is axially movable with respect to a cap. The cap has a stem which projects into the plug to deflect the plug radially outwardly into engagement with the interior surface of the container neck when the cap is moved axially toward the plug. When the cap is moved in the opposite direction the plug resumes its original shape.

The closure disclosed in German Published Application No. 2,338,777, is subject to the disadvantage that the closure may be accidentally dislodged.

The object of this invention is to provide a closure for a container which provides a positive seal and yet may be opened relatively easily.

Accordingly, the present invention provides a closure for a container having a neck member and a closure member including a plastic deflectable plug insertable in said neck member for closing a pour opening in the neck member, means for inhibiting deflection of said plug in a preselected region, and means for displacing said last-mentioned means to reduce the resistance to deflection of said plug and for deflecting the plug in said region and thereat initiating removal of the plug from the neck member, said means for inhibiting deflection of said plug comprising a vent assembly having a closed position in which the parts thereof act to rigidify said plug and an open position accommodating flexure of said plug to facilitate release of said plug from said neck member.

In a preferred embodiment the closure of the present invention minimizes the amount of material used, facilitates opening of the container

and enhances the integrity of the seal. In the preferred embodiment venting mechanism is placed in a position wherein when the parts are interlocked in closing position, they supplement the closure function and when these parts are separated to vent, the plug is unsupported in the area of initial separation and thus is more flexible in this area and more readily deflects to release the interlocking parts whereby facilitating opening of the closure.

In a further embodiment a hinge connects the plug and leverage structure and the hinge is formed to releasably interlock with a catch formed on one of the other parts of the closure.

In a further embodiment there is provided a structure which permits easy insertion of the plug into the bore in the neck member. The structure guides the plug into the bore in a canted position and interlocking a portion of the shoulder on the plug partly under a portion of the shoulder on the neck. The portions which are hooked together provide a fulcrum for the plug at one side and the plug being canted, invites the user to press down on the opposite or high side. The radial expanse of the plug serves as a lever between the fulcrum and the point of pressure and because of the mechanical advantage obtained, the plug is easily pivoted to upright position in alignment with the neck bore and snapped down thus locking the shoulders.

These and other features inherent in and encompassed by the invention will become more apparent from the specification and the drawings wherein:

Figure 1 is a perspective view of the novel container incorporating the invention;

Figure 2 is a top plan view thereof taken on line 2—2 of Figure 1, fragmentary;

Figure 3 is an enlarged cross-sectional view taken substantially on line 3—3 of Figure 2;

Figure 4 is a fragmentary enlarged sectional view taken substantially on line 4—4 of Figure 1;

Figure 5 is an enlarged perspective view of the closure structure;

Figure 6 is a cross-sectional view taken on line 6—6 of Figure 5;

Figure 7 is a perspective view of a second embodiment of the invention;

Figure 8 is a top plan view thereof;

Figure 9 is an enlarged cross-sectional view taken substantially on line 9—9 of Figure 8;

Figure 10 is a fragmentary enlarged sectional view showing the vent open position of the closure;

Figure 11 is a fragmentary enlarged sectional view showing the prying position of the lever;

Figure 12 is a sectional view showing the opening position of the closure;

Figure 13 is a sectional view showing the open position;

Figure 14 is a top view of the closure in open position;

Figure 15 is a top view with the container and closure hand held in position;

Figure 16 is a fragmentary top plan view of a

third embodiment of the invention;

Figure 17 is a top view thereof with the container and the closure hand held in open position;

Figure 18 is an enlarged side elevational view thereof;

Figure 19 is an enlarged cross-sectional view taken substantially on line 19—19 of Figure 16;

Figure 20 is a fragmentary enlarged sectional view similar to Figure 17 showing the hinged open position of the closure;

Figure 21 is a sectional view of a fourth embodiment of the invention showing the open position of the closure;

Figure 22 is a similar or sectional view showing a closing position of the closure;

Figure 23 is a similar or sectional view showing the open position, parts being broken off; and

Figure 24 is a top view on a different scale of the closure in open position.

With reference to Figures 1 to 6, an embodiment of the invention is shown incorporated in a container 2 made of metal such as aluminum and comprises a cylindrical body 3 with an integral outwardly convexed bottom 5 which is provided with outwardly protruding dimples 6 upon which the container rests.

The upper open end portion 8 of the body portion is necked in at 9 and fits into an annular skirt portion 10 of a dome member 12 which forms the upper end of the container. A suitable adhesive 13 bonds the portion 8 to the skirt 10. The dome portion has a series of stepped annular sections 14 and 16 and at its uppermost end is formed with an intumed frusto-conical lip 18 converging inwardly and providing a sharp closure-retaining edge 20 and defining the pour opening 22 at the upper end of the container.

A plastic closure 25 is provided at the upper end of the container and comprises a neck portion 26, a closure plug portion or cap 28 and a venting portion 30 to which is attached a finger grip or handle 32.

The neck portion 26 is a cylindrical member which at its lower end 34 is tapered at 36 and is tightly wedged through the opening 22 and then expands radially outwardly and engages its shoulder 38 under the edge 20 of the lip 18.

The neck portion 26 has a pair of axially spaced sealing rings 40, 42; triangular shaped in cross section tightly pressed at their apices 44, 46 against the frusto-conical external surface 45 of the lip 18 to provide a fluid-tight pressure seal.

The interior bore surface 50 of the neck portion is provided with a locking ring member or shoulder 52 which has a downwardly sloping upper surface 56 merging into an apical edge 58 with a bottom locking surface or face 60 which extends normal to the axis of the neck portion. Above the ring 52 the bore surface is of frusto-conical shape which widens toward the upper end to facilitate entry of the lower end portion 62 of the closure plug portion 28. The plug portion 28 has a cylindrical side wall 65 which intermediate its upper and lower edges is provided with an annular locking ring or shoulder 66 which is of triangu-

lar cross-section having a lower downwardly tapered pilot surface 67 which is adapted to be guided upon engagement with the upper similarly tapered face 56 of the neck locking ring past the apex 58 when the plug portion is pressed into the neck opening or bore 50 whereupon an apical edge 68 of the rib 66 is deflected with edge 58 and the rib portion 66 is stepped under the shoulder 52 of the neck portion and a flat radially outwardly extending surface 69 at the upper end of the shoulder 66, normal to the axis of the neck portion, locks under the face 60.

The plug portion 28 has a top wall 70 integral with its upper end 64 and wall 70 has a peripheral portion 72 extending beyond the perimeter of the side wall 65. The peripheral portion 72 is annular and has a rib 74 on its underside pressed, in the closed position, against the top surface 75 of an annular flange 76 integral with and extending radially outwardly from the upper end of the neck portion 26. The bottom side 77 of flange 76 presses against the crest of an annular U-shaped ridge 78 formed at the juncture of the dome wall 79 and the lip 18.

A tether in the form of a narrow strap 80 connects a peripheral edge portion 81 of flange 72 with a peripheral edge portion 82 of the flange 76 of the neck portion 26.

The cap is provided with a vent opening 84 in an area diametrically opposite to the tether 80 close to the plug adjacent to its interior surface and the vent opening 84 is coaxial with a depending hollow tubular extension 85 formed on the underside of the top wall of the cap.

A frusto-conical pilot cavity 86 is formed at the upper end of opening 84 for guiding an enlarged head 88 of a vent pin or male closure element 89. The head has a downwardly tapered peripheral surface 90 which at its upper end has an annular shoulder 92 which in the closed position engages under a lower complimentary lower edge 93 on the bottom end of the tubular extension 85.

The upper end of the vent pin 89 depends from and is integrally connected with a lever lug 95 intermediate its ends, the lever 95 has an inner fulcrum end 96 which engages with the top side 97 of the top wall radially inwardly of the vent opening. The other end 98 of the lever lug 95 extends radially outwardly and is connected to the inner periphery 99 of a lift ring 32 which in the closed position of the closure lies flat with its lower side 102 against the flat upper face 97 of the cap top wall 70. The ring has its outer periphery 106 connected to one end of a narrow strap 108 which is folded and which has its other end 109 connected to the outer edge of wall 70 in an area diametrically opposite the strap 80.

Thus, to open the closure shown closed in Figure 3, the user inserts his finger through the ring hole 112 and lifts on portion 114 diametrically opposite the lever 95 thus lifting the end portion 98 upwardly and fulcruming the inner end 96 against the top wall 70 of the cap. A second class lever action obtains and the vent closure pin 89 is lifted out of the vent opening 84 attendant to

slight deformation of the head. Removal of the pin 89 removes the support for the plug wall in the immediate area and thus enhances the flexure of the portion of the neck wall in the region of the vent opening whereby as the ring is further lifted, it pulls on the tether 108 which, in turn, curls the portion 120 of the top wall 70 upwardly and causes the adjacent portion of the wall 70 contiguous to the vent opening to warp radially inwardly thus facilitating partially unhooking of the ledge or shoulder 66 from the shoulder 52 and disengaging the locking face 69 from face 60. The plug then easily lifts out of the neck opening and with the handle portion lays to one side of the pour opening the neck.

To reclose the closure, the plug of the cap is pressed into the neck opening until the shoulder 52 snaps under the shoulder 66. Then the handle is folded over the cap and the vent plug or pin 89 is pressed into the vent opening until the shoulder 92 snaps under the lower edge 93 of the vent tube.

A second embodiment of the invention is shown in Figures 7 through 15 in which like reference numerals refer to parts already described with reference to Figures 1 through 6. In the embodiment of Figures 7 through 15 the container 2 has an upper portion or dome member 12 which provides at its neck 115 a shoulder 116 and an access opening 22 (Fig. 10) at the upper end of the container, the neck 115 terminating in a curl 24.

The neck portion 26 of plastic closure 25 is tightly wedged through the opening 22 and then expands radially outwardly and engages its shoulder 38 under the edge of shoulder 116 of the neck 115.

The neck portion has an upper outwardly projecting annular flange 117 which engages the top edge of the curl 24 and provides a fluid-tight pressure seal.

The plug portion or cap 28 has a top wall 70 integral with the upper end of the plug 28, the wall 70 extending beyond the perimeter of the plug and forms an annular rim portion 72 which on its underside is pressed in position against the top surface 75 of the annular flange 117 integral with and extending radially outwardly from the upper end of the neck portion 26. The bottom side 77 of flange 117 presses against the crest (Fig. 9) of the curl 24 of the metal neck 14. A fulcrum post 97 is formed on the top side of the flange 40.

To open the closure shown closed in Figures 15 and 10, the user inserts his finger through the ring hole 112 and lifts on portion 114 diametrically opposite the strap 108 thus lifting the fulcrum end portion 96 outwardly and withdrawing the vent plug 30 from opening 84. Continued rotation of the lever or handle engages the fulcrum portion 96 against the post or ledge 97 and further pivotal movement leftwardly (Figures 10—12) pries the plug 28 out of the sleeve 26. Removal of the pin or plug 30 removes the support for the plug wall 65 in the immediate area and thus enhances the flexure of that portion of the wall 65, that is, in the

region of the vent opening whereby as the lever is fulcrumed, it pulls on the tether 108 which, in turn, curls the adjacent portion 72 of the top wall 70 upwardly and causes the portion of the wall 70 contiguous to the vent opening to warp radially inwardly thus facilitating partially unhooking of the ledge or shoulder 66 from under the shoulder 52 and disengaging the locking face 69 from the face 60. The plug 28 then easily lifts out of the neck or sleeve opening and with the handle or lever portion 30 lays to one side of the pour opening 50 and may be grasped by the user as seen in Fig. 15.

To reclose the closure, the plug 28 of the closure is pressed into the sleeve opening until the shoulder 52 snaps under the shoulder 66. Then the handle or lever is folded over the cap 28 and the vent plug or pin 30 is pressed into the vent opening 84.

The third embodiment of the invention is shown in Figures 16 through 20 in which like reference numerals refer to parts already described with reference to the first embodiment of Figures 1 through 6 and the second embodiment of Figures 7 through 15.

In this embodiment, the closure 25 includes a novel hinge arrangement 125 which comprises not only the straps 80 which define a gap or slot 126 therebetween, but also an upright post 128 of fusiform shape having a middle thick diameter section 130 and upper and lower tapered ends 132 and 133. The post is connected at its inner side by a thin upright stand-off bracket wall 135 to the outside periphery 136 of a mounting ring 138 which is tightly fitted over the outer edge of the curl 24 of the neck portion 14 of the container and an enlarged lower end portion 140 of the neck 14.

As best seen in Figs. 16 and 18, the straps 80 in the closed position of the closure flank the upper end portion 132 of the post and are partially spread apart and will wedge past the central enlarged catch section 130 when the plug is withdrawn and is positioned with the lever 32 at one side of the neck 14. It will be seen in Figure 20 that portions of the straps 80 outwardly of the vertical axis of the post are below the enlarged catch portion 130 and thus will hold the plug and handle essentially as shown in Figure 17. Of course, the container may be rotated 90° from that shown in Figure 18 so that the user may drink over the lip 118.

To reclose, the handle 32 is lifted with the plug 28, releasing it from the post catch 130 and allowing the plug 28 to be snapped into the neck sleeve whereupon the handle 32 is folded over the top of the plug entering member 30 into opening 84. The hinge 125 then assumes the position of Figure 20 with the straps 80, 80 partly embracing the upper portion 132.

In this embodiment the interior bore surface 50 of the neck portion is provided with a locking ring member or shoulder 52 which at one diametrical side has a downwardly sloping upper C-shaped surface 56 (Figures 23 and 24) in top plan merging into an apical edge 58 which a bottom locking

surface 60 extends normal to the axis of the neck portion. Above the ring 52 the limited bore surface 56 is of frusto-conical shape which widens toward its upper end to facilitate entry of the lower end portion 62 of the closure plug 28.

A portion 59 of the shoulder 52 diametrically opposite the sloping portion 56 is formed semi-cylindrical in shape and curved in plan about the axis X (Fig. 24) of the closure and provides an unobstructed downward entry for a contiguous portion of the shoulder the locking ring 66 on a cylindrical side wall 65 of the plug 28 so that the plug will locate in a canted position as shown in Figure 24 upon its being initially pressed downwardly within the bore 50 as seen in Figure 25. The radial extent L (Fig. 21) diametrically of the plug, serves as a lever between the point or area of application of force at P and the fulcrum point F in the region of the limited catch of the shoulder 66 under the shoulder 52. Since the plug will invariably cant when pressed-in, the natural inclination for the person closing the closure is to press at P. The leverage obtained multiplies the force application such that even a young child can, without much difficulty, snap the closure shut.

Claims-

1. A closure (25) for a container (2), said closure having a neck member (26) and a closure member including a plastic deflectable plug (28) insertable in said neck member (26) for closing a pour opening in the neck member, means (89) for inhibiting deflection of said plug (28) in a pre-selected region, and means for displacing said last-mentioned means (89) to reduce the resistance to deflection of said plug (28) and for deflecting the plug (28) in said region and thereat initiating removal of the plug (28) from the neck member (26), wherein said means for inhibiting deflection of said plug (28) comprises a vent assembly having a closed position in which the parts thereof act to rigidify said plug and an open position accommodating flexure of said plug to facilitate release of said plug from said neck member.

2. The closure according to Claim 1, characterized in that said neck member (26) is insertable into an opening in a container sealed tight fit therein and has a bore (50) providing said pour opening with an annular shoulder (38) therein, and said plug (28) has a transverse top wall (70) and a cylindrical wall (65) depending therefrom with an annular shoulder (66) thereabout adapted to be pressed under said shoulder (38) on said neck member (26).

3. The closure according to Claim 2, characterized in that said vent assembly comprises a vent opening (84) in said top wall (70), and a male element (89) extending in sealing position through said vent opening and having a lower end with a shoulder (92) thereabout seated against the underside (93) of said vent opening (84) and abutting against said section of the plug

in buttressing relation thereto against lateral deflection.

4. The closure according to Claim 3, characterized by means for withdrawing said male element (89) from said vent opening (84) comprising a lever element (95) tethered at one end to a peripheral edge of the top wall (70), said lever element having a handle (114) at one end, said lever element (95) being connected intermediate its ends to said male element (89) and having a second end abutable against said top wall (70) for fulcruming thereon.

5. The closure according to Claim 4, characterized by fulcrum means (97) on said neck member (26), said lever element (95) being swingable over said fulcrum means (97) for prying said plug (28) out of said bore (50) in said neck member (26).

6. The closure according to any of Claims 1 to 5, characterized by said neck member having axially spaced external annular shoulders, and said container having about said open end a frusto-conical lip portion (18) including a lower edge (20) sealingly bearing against one of said external shoulders (38) and presenting an internal frusto-conical surface (45) sealingly engaged with another of said external shoulders (40, 42).

7. The closure according to any of Claims 1 to 6, characterized by means (80) hinging said plug (28) to said neck member (26) and means (128) cooperating with said hinging means (80) to hold said plug (28) in open position at one side of said pour opening.

8. The closure according to Claim 7, characterized in that said hinging means comprises a pair of flexible straps (80) and a catch (128) positioned to enter between said straps in interlocking relation therewith.

9. The closure according to Claim 8, characterized by said catch being in the form of a post (128) mounted on said neck having a fusiform shape.

10. The closure according to any of Claims 3 to 9, characterized by means for guiding and facilitating the insertion of said plug (28) into said neck member (26) comprising a partial truncated conical surface (56) at the outer end of said bore (50) merging circumferentially into a generally semi-cylindrical contoured surface portion (59), said truncated conical portion (56) being at one side of the axis of said bore (50) and said generally semi-cylindrical portion (59) being at the opposite side of said axis.

11. The closure according to Claim 10, said plug member having a generally frusto-conical guide surface (67) disposed in guided opposition to said surfaces on said neck member (26) preparatory to insertion of said plug member.

Patentansprüche

1. Verschluß (25) für einen Behälter (2), welcher Verschluß ein Halsglied (26) und ein Verschlußglied aufweist, das einen biegungsfähigen Kunststoffstopfen (28), der in das Halsglied (26)

zum Schließen einer Ausgießöffnung im Halsglied einsetzbar ist, Mittel (89) zum Hemmen eines Biegens des Stopfens (28) in einem vorgeählten Bereich, und Mittel zum Verschieben der letztgenannten Mittel (89), um den Widerstand gegen ein Biegen des Stopfens (28) zu vermindern, und zum Biegen des Stopfens (28) im genannten Bereich und dabei zum Einleiten des Entfernens des Stopfens (28) vom Halsglied (26) enthält, wobei die Mittel zum Hemmen des Biegens des Stopfens (28) eine Lüftungsgruppe umfaßt, die eine Schließstellung, in der ihre Teile zur Versteifung des Stopfens wirken, und eine Offenstellung aufweist, die das Biegen des Stopfens aufnimmt, um das Lösen des Stopfens vom Halsglied zu erleichtern.

2. Verschuß nach Anspruch 1; dadurch gekennzeichnet, daß das Halsglied (26) in eine Öffnung in einem Beälter-dichten Festsitz einsetzbar ist und eine die Ausließöffnung vorsehende Bohrung (50) mit einer Ringschulter (38) darin hat, und der Stopfen (28) eine querverlaufende obere Wand (70) und eine davon nach unten abstehende zylindrische Wand (65) mit einer umlaufenden Ringschulter (66) hat, die unter die Schulter (38) am Halsglied (26) gedrückt werden kann.

3. Verschuß nach Anspruch 2, dadurch gekennzeichnet, daß die Lüftungsgruppe eine Lüftungsöffnung (84) in der oberen Wand (70) und ein Einsteckelement (89) umfaßt, das sich in der Verschließstellung durch die Lüftungsöffnung erstreckt und ein unteres Ende mit einer umlaufenden Schulter (92) hat, die an der Unterseite (93) der Lüftungsöffnung (84) sitzt und gegen den genannten Abschnitt des Stopfens unter Abstützung gegen seitliches Ausbiegen anliegt.

4. Verschuß nach Anspruch 3, gekennzeichnet durch Mittel zum Zurückziehen des Einsteckelementes (89) aus der Lüftungsöffnung (84), mit einem Hebelelement (95), das an einem Ende an einer Umfangskante der oberen Wand (70) angehängt ist, welches Hebelelement einen Griff (114) an einem Ende hat, welches Hebelelement (95) an einer Stelle zwischen seinen beiden Enden mit dem Einsteckelement (89) verbunden ist und ein zweites Ende hat, das gegen die obere Wand (70) zur Drehlagerung auf dieser anlegbar ist.

5. Verschuß nach Anspruch 4, gekennzeichnet durch Hebeldrehpunktmittel (97) am Halsglied (26), wobei das Hebelelement (95) über diese Hebeldrehpunktmittel (97) zum Herauszwängen des Stopfens (28) aus der Bohrung (50) im Halsglied (26) schwenkbar ist.

6. Verschuß nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, daß das Halsglied in axialem Abstand voneinander äußere Ringschultern aufweist und der Behälter um das offene Ende einen kegelstumpfförmigen Lippenteil (18) hat, der eine dicht gegen eine der äußeren Schultern (38) anliegende untere Kante (20) enthält und eine innere Kegelstumpffläche (45) in dichter Anlage an einer anderen der äußeren Schultern (40, 42) aufweist.

7. Verschuß nach einem der Ansprüche 1 bis 6, gekennzeichnet durch Mittel (80) zum Anlenken

des Stopfens (28) am Halsglied (26) und Mittel (128), die mit den Anlenkmitteln (80) zusammenarbeiten, um den Stopfen (28) in der Offenstellung an einer Seite der Ausgießöffnung zu halten.

8. Verschuß nach Anspruch 7, dadurch gekennzeichnet, daß die Anlenkmittel ein Paar biegsamer Streifen (80) und eine Raste (128) umfassen, die in einer Position angeordnet ist, zum zwischen den Streifen im Sinne einer gegenseitigen Verriegelung einzutreten.

9. Verschuß nach Anspruch 8, dadurch gekennzeichnet, daß die Raste in Form eines Stiels (128) vorliegt, der am Hals angebracht ist und eine spindelförmige Gestalt aufweist.

10. Verschuß nach einem der Ansprüche 3 bis 9, gekennzeichnet durch Mittel zum Führen und Erleichtern des Einsetzens des Stopfens (28) in das Halsglied (26) mit einer Teil-Kegelstumpffläche (56) am äußeren Ende der Bohrung (50), die in Umfangsrichtung in einen im allgemeinen halbzyklindrischen, der Kontur folgenden Flächen-teil (59) übergeht, wobei der Kegelstumpfteil (56) an einer Seite der Achse der Bohrung (50) und der im allgemeinen halbzyklindrische Teil (59) an der gegenüberliegenden Seite der Achse vorhanden ist.

11. Verschuß nach Anspruch 10, wobei das Stopfenglied eine im allgemeinen kegelstumpfförmige Führungsfläche (67) hat, die vor dem Einsetzen des Stopfengliedes den genannten Fläche am Halsglied (26) unter Führung gegenüberliegt.

Revendications

1. Un obturateur (25) de récipient (2), cet obturateur comportant un élément formant col (26) et un élément d'obturation comprenant un bouchon (28) déformable en plastique insérable dans l'élément formant col (26) pour obturer une ouverture de versage de l'élément formant col, des moyens (89) pour empêcher la déformation de ce bouchon (28) dans une région prédéterminée, ainsi que des moyens de déplacement des moyens précités (89) pour déformer le bouchon (28) dans ladite région et ainsi amorcer le retrait du bouchon (28) de l'élément formant col (26), dans lequel lesdits moyens pour empêcher la déformation du bouchon (28) comprennent un système d'évent avec une position fermée dans laquelle ces éléments agissent, de manière à rigidifier le bouchon, et une position ouverte autorisant le fléchissement du bouchon pour aider le retrait de celui-ci de l'élément formant col.

2. L'obturateur de la revendication 1, caractérisé en ce que l'élément formant col (26) est insérable dans une ouverture de récipient avec étanchéité par ajustement étroit en possède un orifice (50) pour que ladite ouverture soit pourvue d'un épaulement annulaire (38), et en ce que le bouchon (28) possède une paroi supérieure transversale (70) et une paroi cylindrique (65) alternante avec un épaulement annulaire (66) sensiblement adapté pour être comprimé sous

l'épaulement (38) de l'élément formant col (26).

3. L'obturateur de la revendication 2, caractérisé en ce que le système d'évant comporte une ouverture d'évent (84) dans ladite paroi supérieure (70), et un élément mâle (89) s'enfonçant, et position d'obturation, dans cette ouverture d'évent et possédant une extrémité inférieure pourvue d'un épaulement (92) sensiblement en appui contre la partie inférieure (93) de l'ouverture d'évent (84) et venant en butée contre la partie du bouchon pour étayer celui-ci à l'encontre d'une déformation latérale.

4. L'obturateur de la revendication 3, caractérisé par des moyens pour extraire ledit élément mâle (89) de l'ouverture d'évent (84), comprenant un élément formant levier (95) attaché à l'une de ses extrémités à un bord périphérique de ladite paroi supérieure (70), cet élément formant levier possédant une poignée (114) à l'une de ses extrémités, étant relié à mi-distance de ses extrémités audit élément mâle (89), et possédant une seconde extrémité susceptible de venir en butée contre la paroi supérieure (70) pour y constituer un pivot.

5. L'obturateur de la revendication 4, caractérisé par des moyens formant pivot (95), situés sur ledit élément formant col (26), ledit élément formant levier (95) pouvant basculer autour de ces moyens formant pivot (97) pour peser sur le bouchon (28) afin de le faire sortir de l'orifice (50) de l'élément formant col (26).

6. L'obturateur de l'une des revendications 1 à 5, caractérisé en ce que ledit élément formant col possède des épaulements annulaires extérieurs axialement étagés, et en ce que le récipient possède au voisinage de son extrémité ouverte une partie tronconique formant lèvre (18) et comprenant un bord inférieur (20) venant en appui

étanche contre l'un desdits épaulements extérieurs (28) et présentant une surface interne tronconique (45) emboîtée de manière étanche avec un autre desdits épaulements extérieurs (40, 42).

7. L'obturateur de l'une des revendications 1 à 6, caractérisé par des moyens (80) d'articulation du bouchon (28) à l'élément formant col (26), et par des moyens (128) coopérant avec ces moyens d'articulation (80) de manière à retenir le bouchon (28) en position ouverte sur l'un des côtés de ladite ouverture de versage.

8. L'obturateur de la revendication 7, caractérisé en ce que les moyens d'articulation comprennent une paire de bandes flexibles (80) et un loquet (128) positionné de manière à s'introduire entre lesdites bandes en relation de verrouillage avec celles-ci.

9. L'obturateur de la revendication 8, caractérisé en ce que ledit loquet a la forme d'une protubérance (128) fusiforme montée sur le col.

10. L'obturateur de l'une des revendications 3 à 9, caractérisé par des moyens pour guider et faciliter l'insertion du bouchon (28) dans l'élément formant col (26), comprenant une partie de surface conique (56) partiellement tronquée au bord extérieur dudit orifice (50), se raccordant circonférentiellement à une partie de forme générale semi-cylindrique (59), la partie conique tronquée (56) se trouvant d'un côté de l'axe de ladite ouverture (50) et la partie de forme générale semi-cylindrique (59) se trouvant du côté opposé de cet axe.

11. L'obturateur de la revendication 10, dans lequel l'élément d'obturation possède une surface de guidage (67) dans l'ensemble tronconique, orientée pour le guidage en regard desdites surfaces de l'élément formant col (26) afin de préparer l'insertion de l'élément d'obturation.

40

45

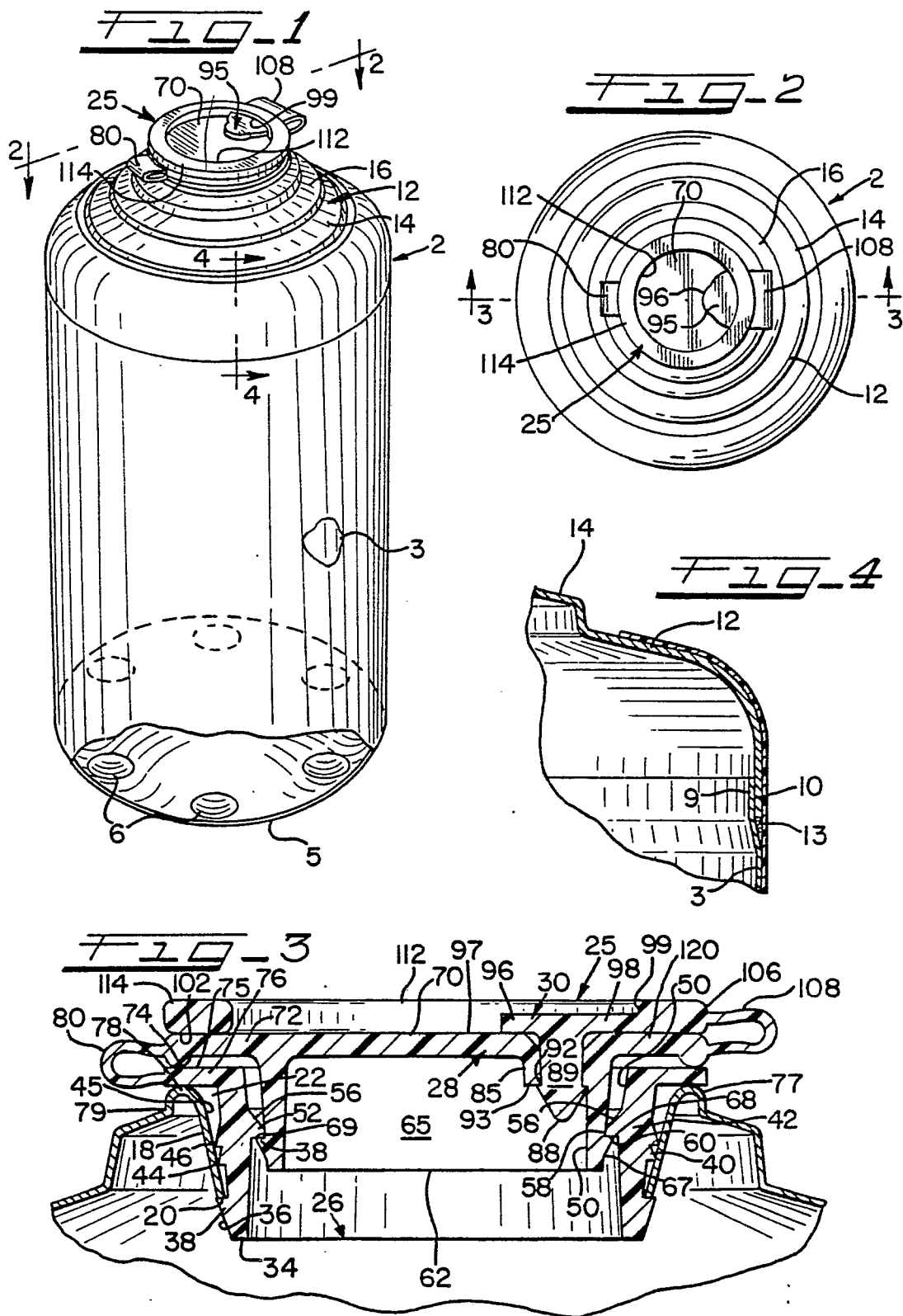
50

55

60

65

7



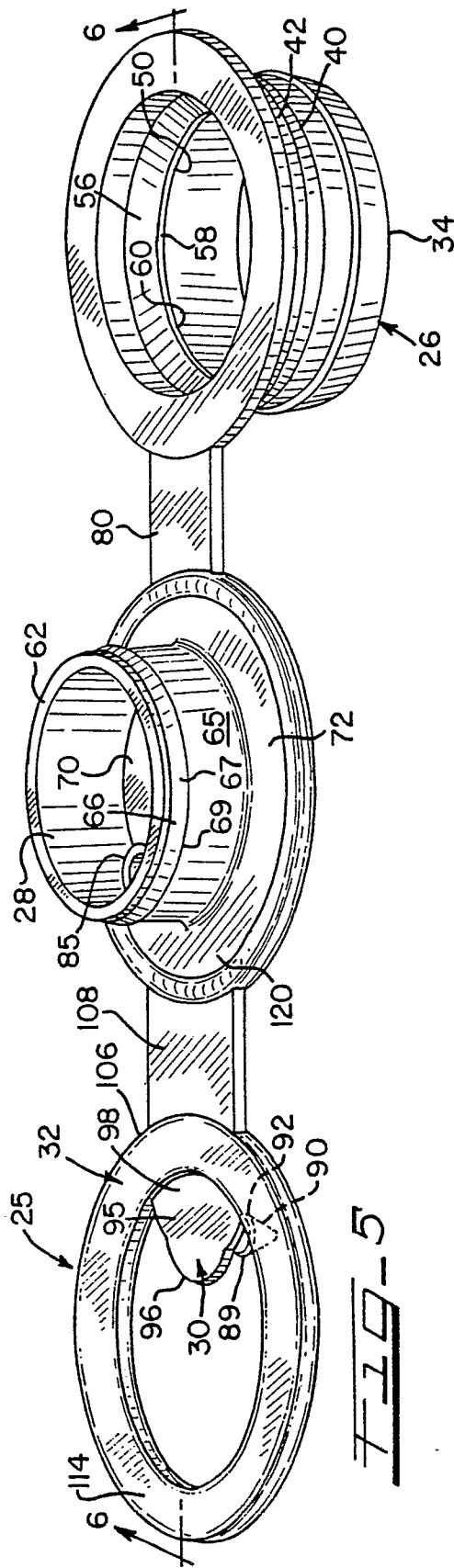


FIG. 5

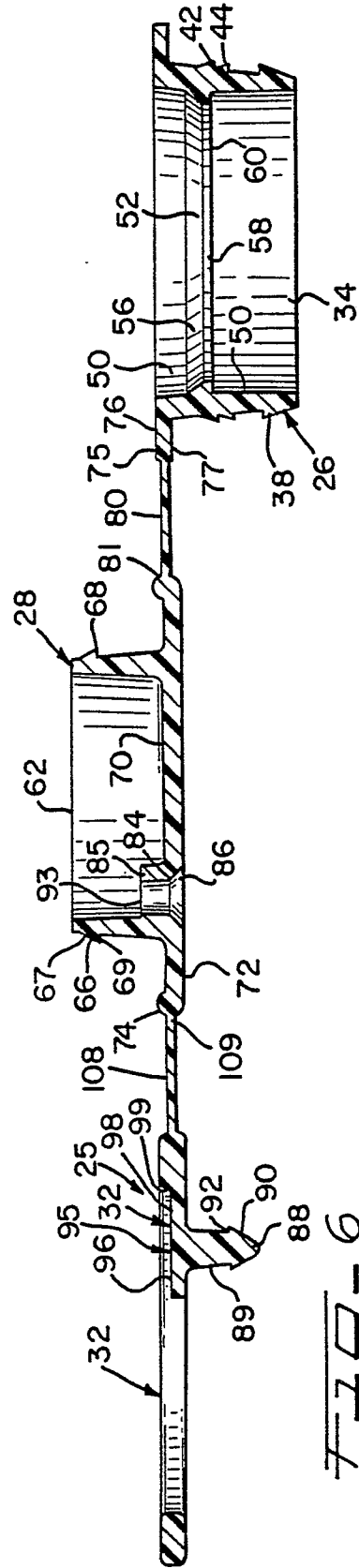
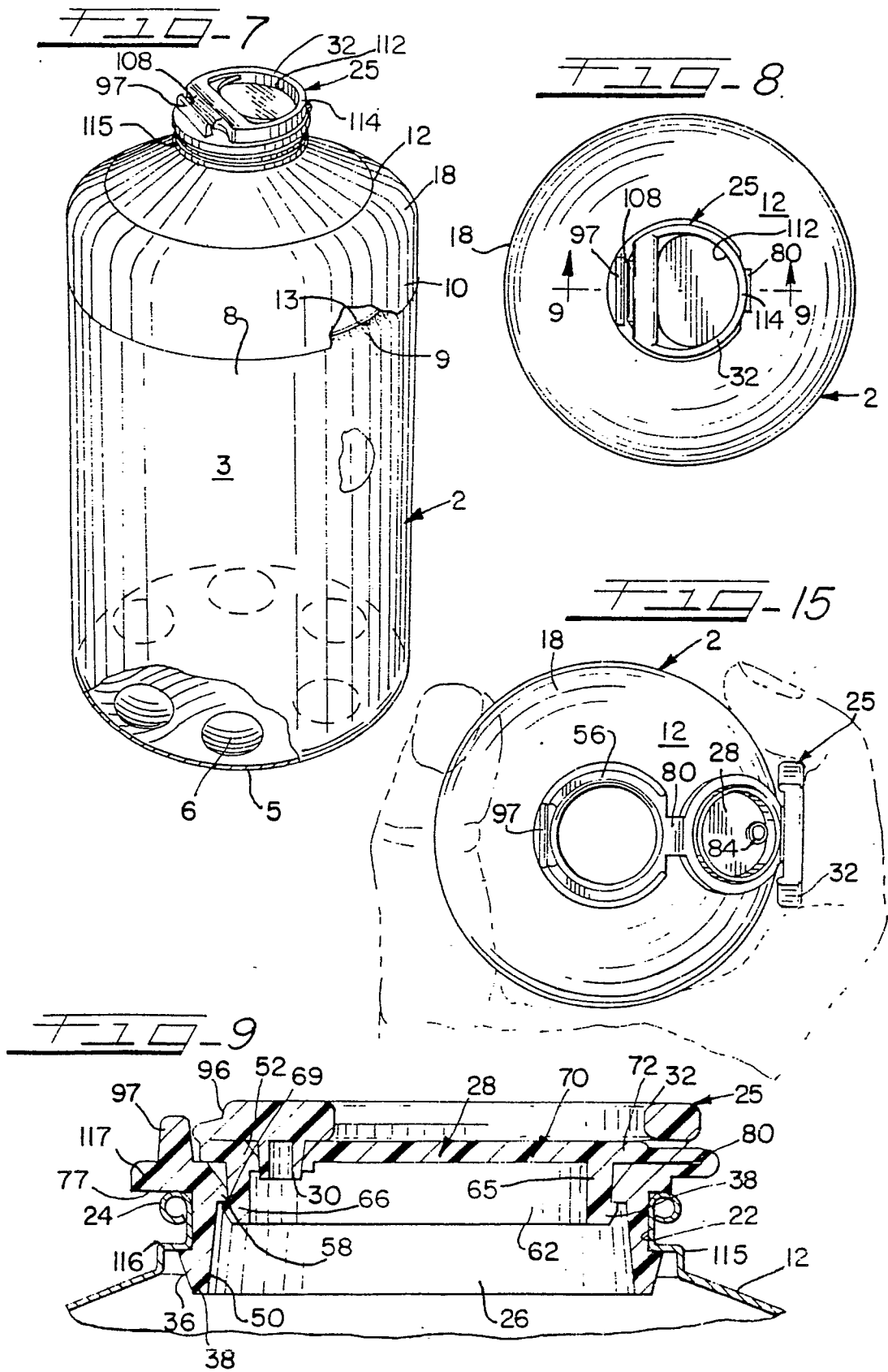


FIG. 6



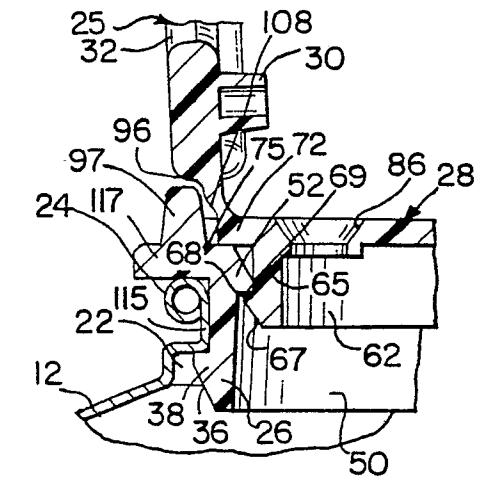


FIG. 10

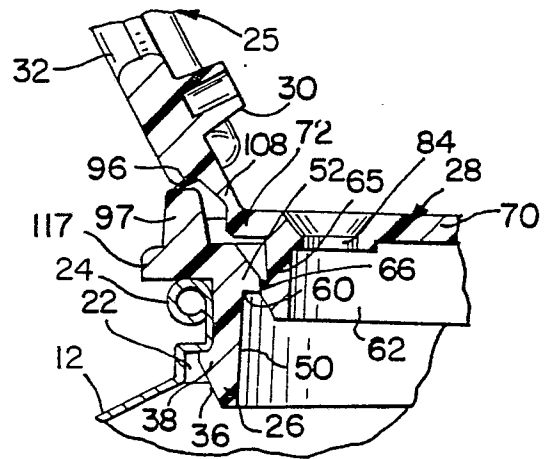


FIG. 11

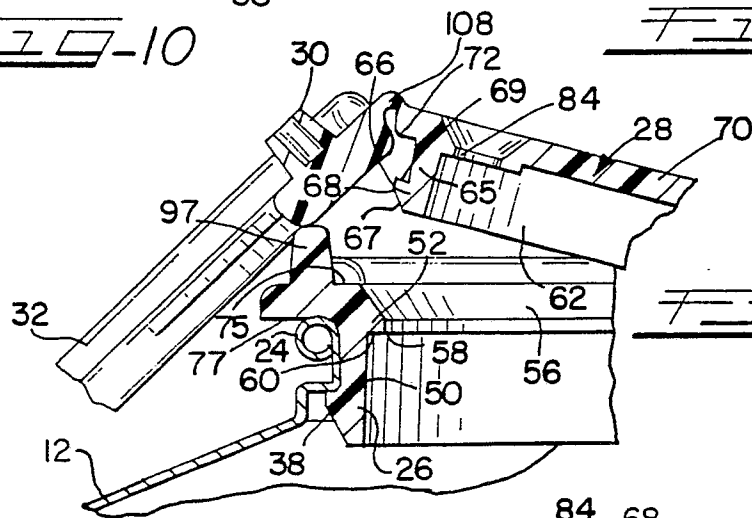


FIG. 12

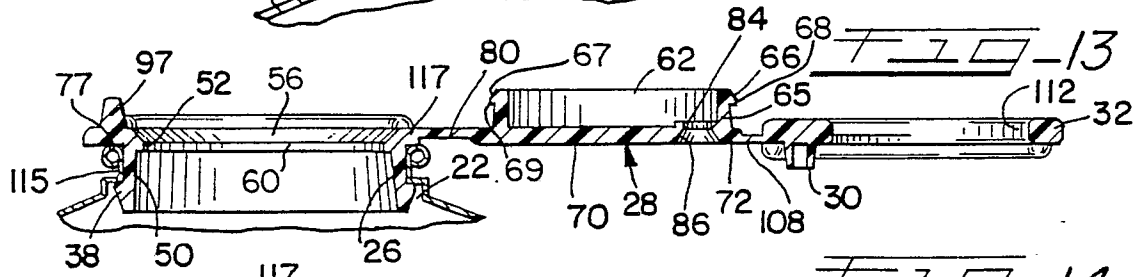


FIG. 13

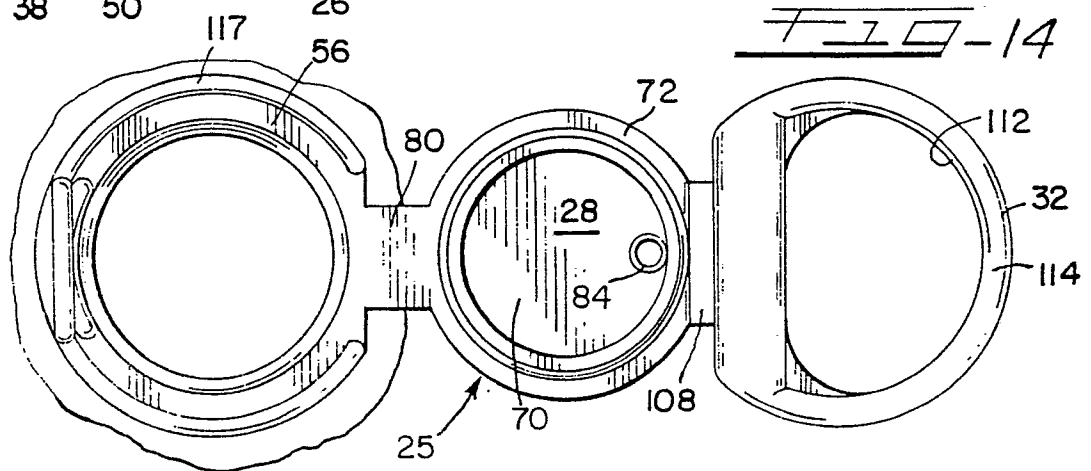


FIG. 14

