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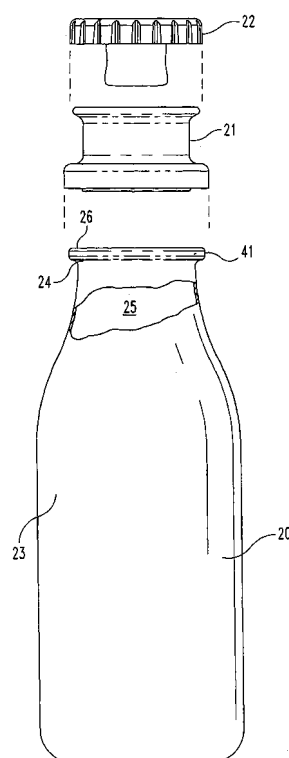
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(54) **Drinking spout and closure combination for a beverage container**

(57) A drinking spout and closure combination for a beverage container includes a drinking spout (21) constructed and arranged to snap onto a neck of the container (20) and a closure (22) constructed and arranged to snap onto the drinking spout. The neck of the beverage container defines an opening and the neck is shaped with an enlarged annular lip. The spout (21) includes an annular channel having an inwardly protruding ridge that cooperates with the annular lip of the neck for a snap-fit assembly onto the neck. An inner wall of the spout seals against an inner surface of the neck. The closure (85) is an annular generally cylindrical structure with an internally threaded sidewall (86), and the closure is for screwing onto co-operating external threads (84) on the spout.



**Fig. 1**

## Description

**[0001]** The present invention relates generally to closures for beverage containers and the manner of accessing the beverage content of such containers. In the context of the present invention, the beverage containers may be metal containers or cans that may be either steel coated or aluminum. More specifically, the present invention relates to a drinking spout and closure combination that can be added to such beverage containers to improve and enhance one's ability to drink directly from the beverage container. The present invention utilizes the geometry of the beverage container neck and neck opening to enable a snag-on assembly of the drinking spout directly to the container. This then provides the smooth plastic of the spout as the point of contact with the consumer. A related improvement offered by the present invention is the ability to reseal the container after initial opening. This keeps any unused or unconsumed portions of the beverage contents fresh and minimizes oxygen ingress.

**[0002]** While the present invention is not specifically directed to pull-tab soft drink cans, there are a variety of other beverage containers that are of a metal can construction. When such metal can beverage containers are opened, the consumer likely has a somewhat unpleasant experience whenever drinking directly from the metal container. Unless the beverage contents are poured from the metal container into another container, such as a drinking glass or cup, the consumer must drink directly from the metal container, causing the lips to contact the exposed metal edge of the opened beverage container.

**[0003]** This practice of drinking directly from the metal edge would constitute the aforementioned unpleasant experience. Further, these prior art containers do not have any effective closing and resealing component to keep any unused or unconsumed portions of the beverage contents fresh and free of contaminants. The present invention improves on both of these concerns and additionally provides a safe and secure spout and closure combination that can be used at the time of initial filling. Versatility is offered by the fact that the present invention can accept an aluminum foil seal and/or the spout can be co-injected with a nylon or ethylene vinyl alcohol (EVOH) copolymer center. The use of an oxygen scavenger is another option for the present invention.

**[0004]** A drinking spout and closure combination for a beverage container according to one embodiment of the present invention includes a spout that snaps onto the beverage container and a closure that snaps onto the spout. More specifically, the beverage container includes a neck that defines an opening and the neck is contoured with an enlarged annular lip. The spout includes an annular channel having a radially inwardly extending ridge wherein the channel is constructed and arranged for a snap-fit assembly onto the enlarged annular lip. The closure includes an annular channel having a radially inwardly extending ridge such that the closure channel is

configured for a snap-fit assembly onto an enlarged annular lip of the spout.

**[0005]** One object of the present invention is to provide an improved drinking spout and closure combination for a beverage container.

**[0006]** Related objects and advantages of the present invention will be apparent from the following description.

**[0007]** Preferred features of the present invention will now be described with reference to the accompanying drawings, in which:

FIG. 1 is an exploded view of a drinking spout and closure combination for a beverage container according to a typical embodiment of the present invention.

FIG. 2 is a front elevational view of the FIG. 1 drinking spout.

FIG. 3 is a top plan view of the FIG. 2 drinking spout.

FIG. 4 is a front elevational view, in full section, of the FIG. 2 drinking spout, as viewed along line 4-4 in FIG. 3.

FIG. 5 is a front elevational view of the FIG. 1 closure.

FIG. 6 is a top plan view of the FIG. 5 closure.

FIG. 7 is a front elevational view, in full section, of the FIG. 5 closure, as viewed along line 7-7 in FIG. 6. FIG. 8 is a front elevational of a drinking spout according to another embodiment of the present invention.

FIG. 9 is a front elevational view, in full section, of the FIG. 8 drinking spout.

FIG. 10 is a front elevational view of a closure configured for receipt by the FIG. 8 drinking spout.

FIG. 11 is a front elevational view, in full section, of the FIG. 10 closure.

FIG. 12 is a perspective view of a drinking spout according to another embodiment of the present invention.

FIG. 13 is a front elevational view, in full section, of the FIG. 12 drinking spout.

FIG. 14 is a perspective view of a closure configured for receipt by the FIG. 12 drinking spout.

FIG. 15 is a front elevational view, in full section, of the FIG. 14 closure.

FIG. 16 is a bottom plan view of the FIG. 14 closure.

FIG. 17 is a perspective view of the assembly between the FIG. 12 drinking spout and the FIG. 14 closure.

FIG. 18 is a front elevational view, in full section, of the FIG. 17 assembly.

**[0008]** For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiments illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated device, and such further applications of the principles of the in-

vention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

**[0009]** Referring to FIG. 1, there is illustrated a metal beverage container 20 with a drinking spout 21 and closure 22 according to the present invention. Container 20 includes a hollow body 23 tapering into a smaller neck 24 defining an opening 25 for filling the container body 23 with a selected beverage. Opening 25 later functions for consuming or dispensing the beverage contents. Without the benefit of the present invention, the consumer would typically drink directly from opening 25, with the lips of the consumer contacting the metal neck 24 and/or upper edge 26. While one option is to pour some or all of the beverage contents into another container, such as a glass or cup, one aspect of the present invention focuses on improving the experience for the consumer when drinking directly from the container. This improvement is provided by fitting the neck opening with the plastic drinking spout 21.

**[0010]** Referring now to FIGS. 2, 3, and 4, drinking spout 21 is a unitary, injection molded plastic component that snaps onto neck opening 25 so as to be securely retained thereon with a tightly sealed annular interface. Spout 21 includes an annular body 30, an offset, lower annular wall 31, and an offset, outer annular wall 32. Lower annular wall 31 is spaced apart from and is radially inwardly of outer annular wall 32. Body 30 includes an annular lip 33 that is shaped, contoured, and finished so as to provide a smooth and comfortable drinking surface for the lips of the consumer. Annular lip 33 is enlarged in terms of the outside diameter of body 30 so as to protrude radially outwardly as illustrated in FIGS. 2-4. This enlarged annular lip 33 not only provides a comfortable drinking surface and shape for the lips of the consumer, but also provides a structurally effective way to receive closure 22 with a secure snap-fit assembly.

**[0011]** The axial length of body 30 from lip 33 to offset radial shelf 34 is sufficient for the lower lip of the consumer to be positioned and compressed against body 30 without interfering with shelf 34 or wall 32. The smooth and curved surface of body 30 in this axial region contributes to the ease and comfort of using spout 21 for drinking directly from beverage container 20.

**[0012]** Lower annular wall 31 is constructed and arranged with a radially outwardly protruding or extending annular ridge 37 and an axially adjacent concave recess 38. In what should be described as a cooperating manner, outer annular wall 32 is constructed and arranged with a radially inwardly protruding or extending annular ridge 39 that is generally radially aligned with ridge 37. The open annular channel 40, defined by walls 31 and 32 in cooperation with shelf 34, is constructed and arranged to receive the upper portion of neck 24 with a snap-on fit and assembly.

**[0013]** Referring to FIG. 1, it will be seen that neck 24 extends axially in an upward direction, terminating at annular lip 41. Annular lip 41 is considered enlarged in terms

of the outside diameter surface of neck 24. As is illustrated, enlarged annular lip 41 extends radially outwardly beyond the outer surface of neck 24 so as to provide an undersurface recess adjacent lip 41 to facilitate the snap-on assembly of spout 21. While the opposed ridges 37 and 39 can be viewed as providing a clamping action onto neck 24, ridge 37 further provides a sealing interface against the inner cylindrical surface of neck 24, as annular wall 31 slides down inside of neck opening 25. Cooperating ridge 39 protrudes radially inwardly below lip 41 such that there is a snap-fit or snap-on assembly of the spout 21 by means of channel 40 onto neck 24 by utilizing lip 41.

**[0014]** The inwardly directed taper of lower portion 42 of wall 31 provides an easy initial or starting insertion for spout 21 into opening 25. This then permits the relative sizing of spout 21 relative to neck opening 25 to be designed for some degree of interference so as to establish a sealed annular interface between ridge 37 and the inside surface of opening 25. As spout 21 is advanced axially downwardly, into and onto neck 24 and lip 41, the fit of wall 31 into opening 25 becomes tighter. Ultimately, ridge 37 provides a compressed, tight seal against the inner surface of neck 24. At or about the same time, ridge 39 applies a tight sealing pressure against the outer surface of neck 24 beneath lip 41. Ridge 39 projects radially inwardly far enough to function both for a tight seal against liquid leakage and for a secure, snap-fit assembly of the spout 21 onto the neck 24 of container 20.

**[0015]** With reference to FIGS. 5, 6, and 7, the details of closure 22 are illustrated. Closure 22 is a unitary, injection molded plastic component that includes a generally circular upper wall 45 that is surrounded by an axially depending, annular outer wall 46. A radially inner wall 47, also annular and axially depending, is substantially uniformly spaced from the outer wall 46 so that in combination with upper wall 45, an annular channel 48 is defined. The inner surface 49 of outer wall 46 includes an annular, raised ridge 50 that extends or protrudes radially inwardly toward the inner wall 47. The lower tip of inner wall 47 is tapered so that it inserts easily into the open interior of spout 21 as the enlarged annular lip 33 of spout 21 fits into annular channel 48.

**[0016]** The outer surface 54 of outer wall 46 is contoured with axially-extending (recessed) grooves 55 causing the alternating portions 56 of the outer surface 54 to have the appearance of axially-extending ribs. A weakened score line groove 57 extends from lower edge 58 upwardly to top surface 59 and around a portion of upper wall 45 in a part-circular path, see FIG. 6. A unitary pull tab 60, as part of outer wall 46, extends downwardly from the lower edge 58 and curves outwardly, as illustrated in FIGS. 5 and 7. The concave shape of pull tab 60 positions tip 61 outwardly away from closure 22 as well as outwardly away from drinking spout 21 and container 20, thus enabling adequate clearance for any easy grasping of pull tab 60 by the index finger and thumb of the user for removal of closure 22. What actually occurs

is that the upward and outward pulling on pull tab 60 causes the weakened score line for groove 57 to fracture or sever, thereby permitting the outer portion of outer wall 46 to separate from the remainder of closure 22. Once the closed circumferential/cylindrical form of outer wall 46 is broken open or partially severed by the use of pull tab 60, the remainder of outer wall 46 is able to be freed from spout 21.

**[0017]** Annular channel 48 is constructed and arranged to receive annular lip 33 with a secure, leak-free fit. Channel 48 is open at its lower end 65 and closed at the opposite end by wall 45. Open end 65 has a reduced radial width due to the inwardly extending raised ridge 50. This construction permits ridge 50 to lock below lip 33 for a secure, snap-on interfit between the drinking spout 21 and closure 22. It will be seen that the opening shape of channel 48 at the closed end has a shape that closely corresponds to the shape of the enlarged, annular lip 33, helping to ensure the leak-free, snap-on interfit.

**[0018]** The inner annular wall 47 is constructed and arranged for a slight interference fit against the inner cylindrical surface 66 of body 30. Due to the plastic construction of closure 22 and drinking spout 21, some slight flexibility is inherent in both parts and the interfering surfaces of wall 47 and body 30. This creates a secondary seal around the interior of the drinking spout 21 to prevent any liquid leakage from beverage container 20.

**[0019]** At the time of filling container 20, but after filling, the drinking spout 21 is securely snapped onto the neck 24 of container 20. Thereafter, the closure 22 is securely snapped onto drinking spout 21. This completes the initial assembly and represents how the filled beverage container is made available to the consumer. When it is time to open the container, the pull tab 60 is lifted or pulled upwardly and outwardly, causing portion 67 to separate from the remainder of closure 22 as the thin web 68 of material at the base of the score line groove is torn. The tearing of the thin web 68 up the outer wall and around a portion of the upper wall pulls section 67 out of engagement with drinking spout 21. This in turns allows the closure 22 to be removed from the drinking spout 21 so that the consumer is able to drink directly from the spout 21 in order to consume a portion of the beverage contents in container 20. The closure 22 can be fitted back onto drinking spout 21 in order to reseal the container 20 whenever some of the beverage remains in the container.

**[0020]** The closed annular form of closure 22 enables it to be forcibly snapped onto drinking spout 21 by a downward axial force. Removal of closure 22, without the use of (i.e., tearing) the score line groove 57 would be difficult to accomplish and unlikely without destroying the closure. However, once the outer wall 46 is segmented by tearing through web 68 so that the outer portion 67 is separated from the remainder of the closure, the free ends of the outer wall can be easily pulled apart or spread apart and thereafter the closure 22. is easily pulled off of drinking spout 21.

**[0021]** Once the closure 22 is removed from spout 21,

the consumer can access the contents of container 20 by comfortably and easily drinking directly from spout 21. If the beverage contents of the container are not consumed after initial opening, the design of the present invention allows the closure 22 to be reapplied to spout 21. As the illustrated structures would denote, the inner wall 47 can be reinserted into the neck opening 25 in order to reseal the container 20 closed. This removal and replacement cycle for closure 22 can be repeated as often as necessary until the beverage contents are consumed. At each time the closure is removed, the smooth, rounded lip 33 of drinking spout 21 is exposed, providing the consumer with an easy, comfortable, and sanitary way to drink directly from the beverage container 20.

**[0022]** Suitable plastics for the injection molding of drinking spout 21 and of closure 22 include, but are not limited to, polypropylene, high density polyethylene, low density polyethylene, and polyethylene terephthalate. Since the expected use for the present invention is with metal beverage containers and carbonated beverages, it is desirable to include a barrier to protect the contents from oxygen ingress. As described herein, the drinking spout 21 is constructed and arranged to accept an aluminum foil seal. This constitutes one type of suitable barrier that is effective to protect the beverage contents from oxygen ingress. Further options contemplated as part of the present invention to protect the contents from oxygen ingress include co-injecting the spout 21 with a nylon or an ethylene vinyl alcohol (EVOH) copolymer center or with an oxygen scavenger. Closure 22 is constructed and arranged to accept a liner in order to seal in pressure. The closure is also able to be molded with a barrier.

**[0023]** Referring to FIGS. 8-11, another embodiment of the present invention is illustrated. In the embodiment of FIGS. 1-7, a drinking spout 21 is used in cooperation with a closure 22 in order to convert a beverage container 20 into a structure that provides for safe and comfortable drinking of the container contents. The closure allows the container to be reclosed in the event a portion of the container contents remain after initial opening. The drinking spout 21 is configured so as to snap into and onto the neck finish of the container, thereby converting the container into a structure for comfortable drinking directly from the spout.

**[0024]** In the combination of FIGS. 8-11, the unitary, molded plastic drinking spout 80 has an annular lower portion 81 that is constructed and arranged the same as the lower portion of drinking spout 21 such that drinking spout 80 is constructed and arranged to snap onto neck 24 of container 20. In terms of structural similarities between drinking spout 21 and drinking spout 80, drinking spout 80 includes a lower annular wall 31, an outer annular wall 32, a radial shelf 34, an annular ridge 37, a concave recess 38, an annular ridge 39, an annular channel 40, and a lower portion 42. With this structural configuration for drinking spout 80, it will be clear that drinking spout 80 is totally compatible with the construction of container 20 for the desired snap-on fit in a secure and

reliable manner.

**[0025]** The upper portion of drinking spout 80 includes a generally cylindrical body 82 that is externally threaded and terminates in an upper annular lip 83 that is shaped, contoured, and finished so as to provide a smooth and comfortable drinking surface for the lips of the consumer. The external threads 84 are used for the assembly of screw-on closing cap 85 (see FIGS. 10 and 11).

**[0026]** Closing cap 85 is an annular, generally cylindrical structure with an internally-threaded sidewall 86 and a closing top panel 87. Preferably, closing cap 85 is a unitary, molded plastic component. The outer surface 88 of sidewall 86 is formed with a plurality of axially-extending shallow grooves 89. Grooves 89 provide a gripping surface for ease in threading cap 85 onto drinking spout 80 and for removing cap 85 from drinking spout 80.

**[0027]** Referring to FIGS. 12-18, another embodiment of the present invention is illustrated. This embodiment includes a unitary, molded plastic drinking spout 100 with a lug finish 101 as part of the upper body 102. The second component is the unitary, molded plastic lug closure 103 that assembles onto drinking spout 100 to close the open end 104. The assembly of closure 103 onto drinking spout 100 is illustrated in FIGS. 17 and 18. Drinking spout 100 includes an annular lower portion 105 that is constructed and arranged to snap onto the neck of a container, similar to container 20. As a way to show the variations that are contemplated for the present invention, the lower portion 105 is configured slightly different from the lower portion 81 and the lower portion of drinking spout 21. Lower portion 105 includes a lower annular wall 106, an outer annular wall 107, a connecting radial shelf 108, an inner annular ridge 109, a concave recess shaped as an annular channel 110, an outer annular ridge 111, an annular channel 112, and an annular lower portion 113. This structure enables the drinking spout 100 to easily and reliably snap onto the neck finish of a corresponding container.

**[0028]** The upper cylindrical body 82 includes an annular, circumferential stop 116, an upper lip 117, and three lug rails 118 positioned between the stop 116 and the upper lip 117. The upper lip 117 is shaped, contoured, and finished so as to provide a smooth and comfortable drinking surface for the lips of the consumer. Each lug rail 118 is shaped into two sections. An upper, near horizontal section 118a is connected to a lower, inclined ramp section 118b. The lower end of each section 118b is integral with stop 116.

**[0029]** The lug closure 103 includes a closed upper panel 121, a surrounding sidewall 122, and three equally-spaced lugs 123 on the inner surface of lug closure 103. Each lug 123 is sized, shaped, and spaced apart to fit beneath a corresponding one of the lug rails 118 when closure 103 is placed onto drinking spout 100. Initially, closure 103 will not seat properly on drinking spout 100 until the closure is turned such that each lug 123 is positioned between each lug rail 118. This allows the inner surface of upper panel 121 to rest on the upper edge of

lip 117. Then, as closure 103 is turned in a clockwise direction relative to drinking spout 100, the lugs 123 ride beneath the rails 118 and, as the ramp sections 118b are encountered, the continued clockwise rotation of closure 103 draws the closure down tightly against the upper edge of lip 117. This tight assembly thereby establishes a securely closed container by way of drinking spout 100. In order to open drinking spout 100 and the corresponding container for drinking or removal of any remaining container contents, the lug closure 103 is simply turned in a counter clockwise direction, allowing the lugs 123 to ride along the rails 118 until such time as the lugs are positioned between adjacent rails so that the lug closure can be lifted off of the drinking spout 100.

**[0030]** While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only the preferred embodiment has been shown and described and that all changes and modifications that come within the scope of the claims are desired to be protected.

## Claims

1. A drinking spout and closure combination for a beverage container (20) that includes a neck (24) defining an opening (25), said neck having an enlarged annular lip (26), said combination comprising:

a spout (80) with an annular channel (40) wherein said spout annular channel is defined by an outer wall (32) that includes a radially inwardly extending ridge (39) and an inner wall (31) having an outwardly protruding ridge (37) that sealingly fits into said neck opening, said channel being constructed and arranged for a snap-fit assembly onto said enlarged annular lip; and a closure arranged for connection with said spout to seal the container.

2. The drinking spout and closure combination of claim 1 wherein said spout is a unitary component, preferably injection molded out of plastic.
3. The drinking spout and closure combination of claim 1 or 2 wherein said closure is a unitary component, preferably injection molded out of plastic.
4. The drinking spout and closure combination of any of the preceding claims wherein the inwardly protruding ridge of the outer wall of the spout and the outwardly protruding ridge of the inner wall of the spout are substantially radially aligned.
5. The drinking spout and closure combination of any of the preceding claims wherein the spout and closure comprise co-operating threads so that the clo-

sure can be screwed onto the spout.

6. The drinking spout and closure combination of claim 5 wherein the closure is internally threaded and the spout is externally threaded. 5
7. The drinking spout and closure combination of any of claims 1 to 4 wherein the closure comprises a plurality of lugs and the spout comprises a plurality of corresponding lug rails, and the closure is connected to the spout by placing it on the spout and turning it so that the lugs are positioned beneath the corresponding lug rails. 10

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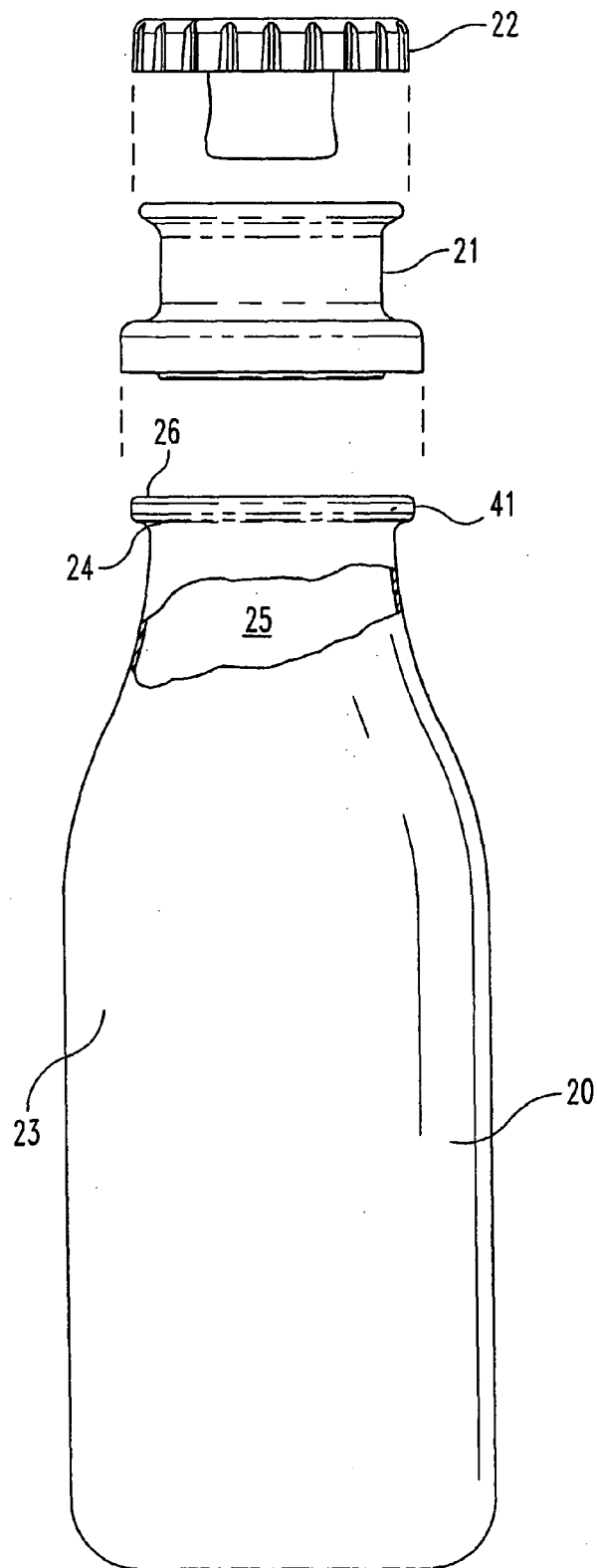
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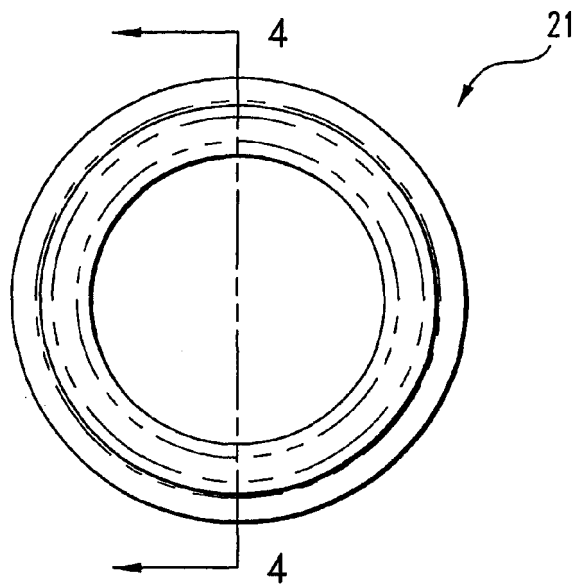
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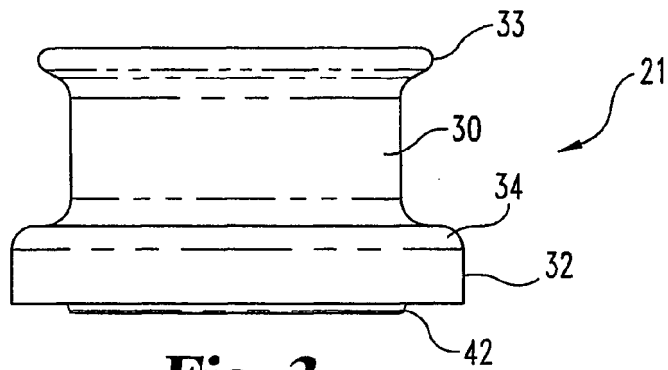
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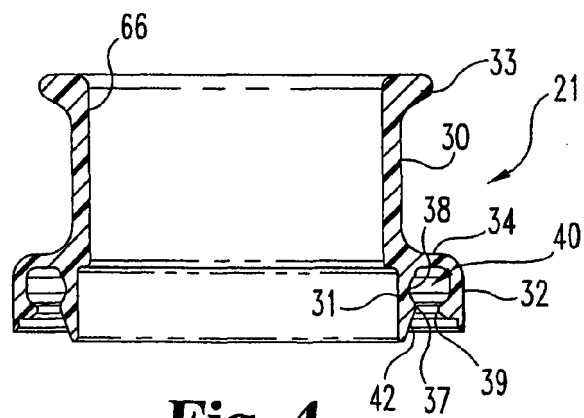
**Fig. 1**



**Fig. 2**

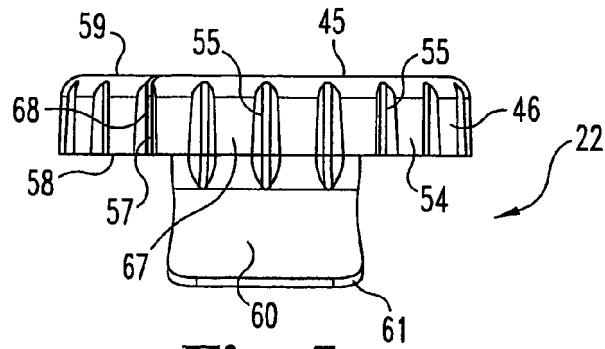


**Fig. 3**

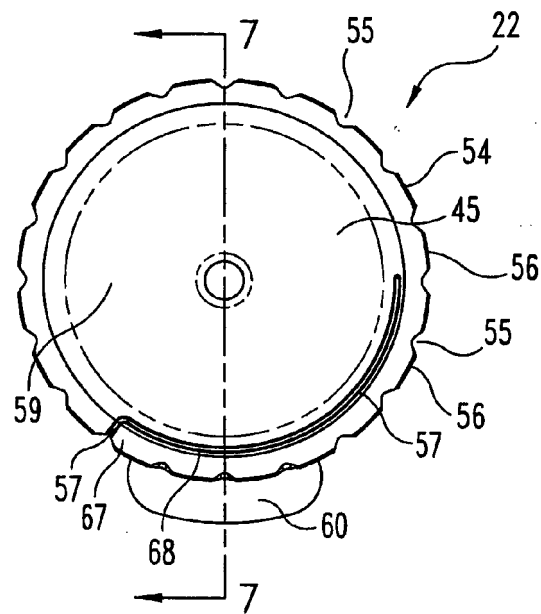


**Fig. 4**

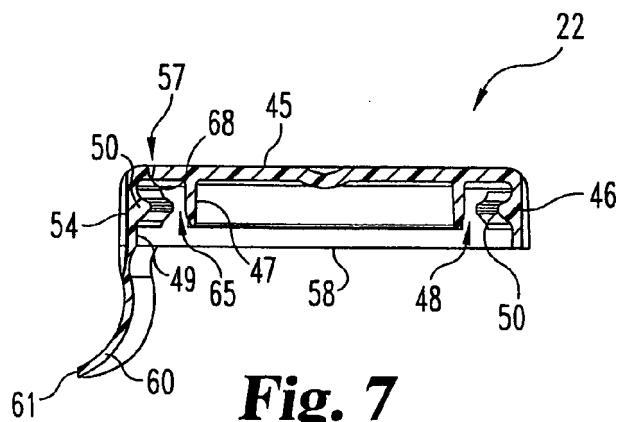




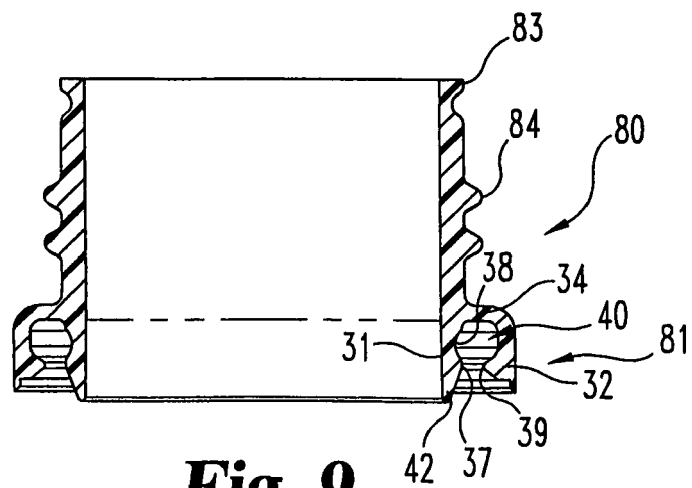
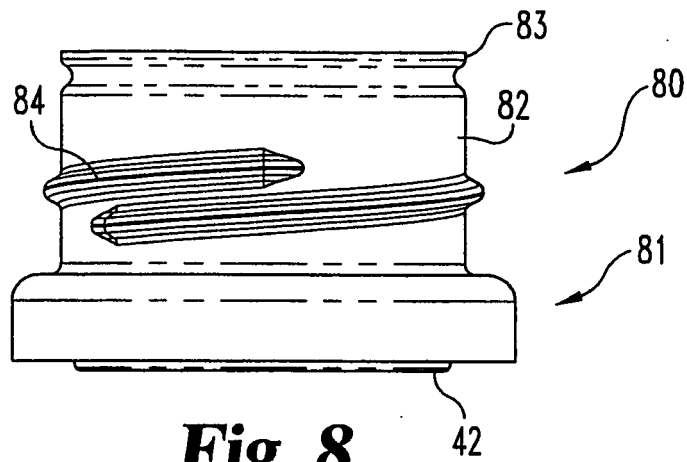
**Fig. 5**

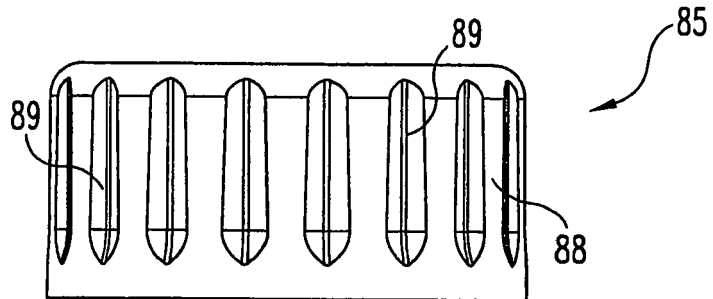


**Fig. 6**

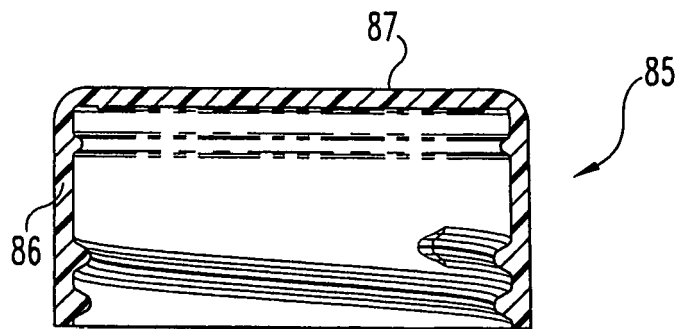


**Fig. 7**

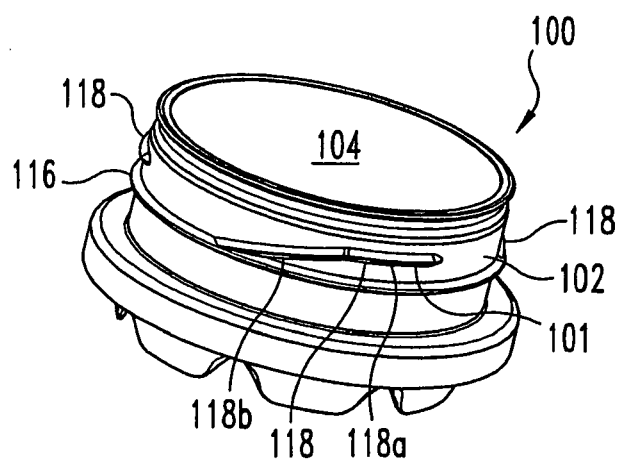




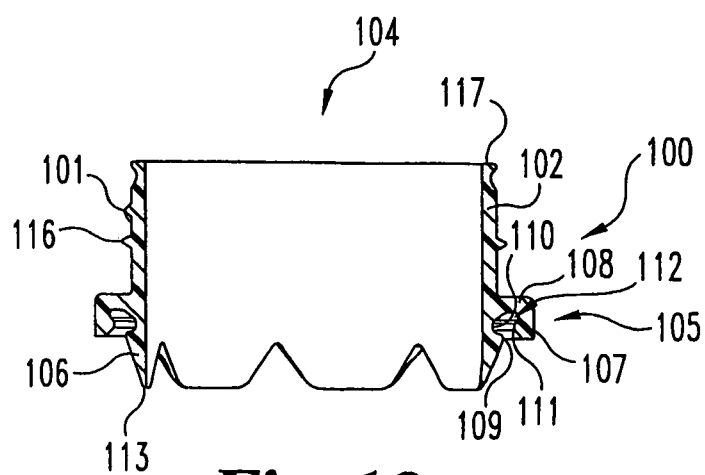
**Fig. 10**



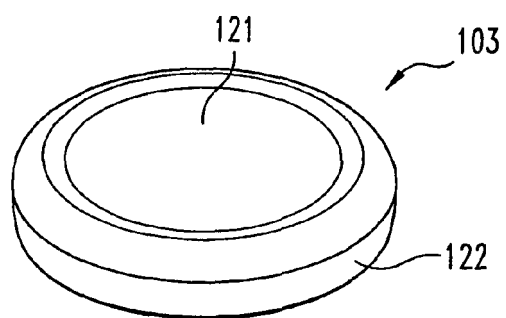
**Fig. 11**



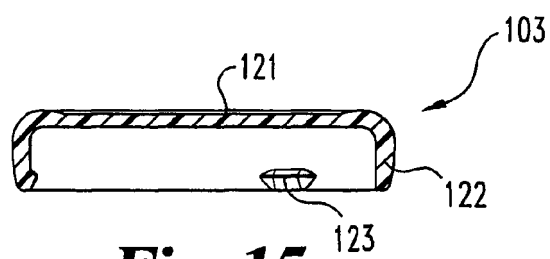
**Fig. 12**



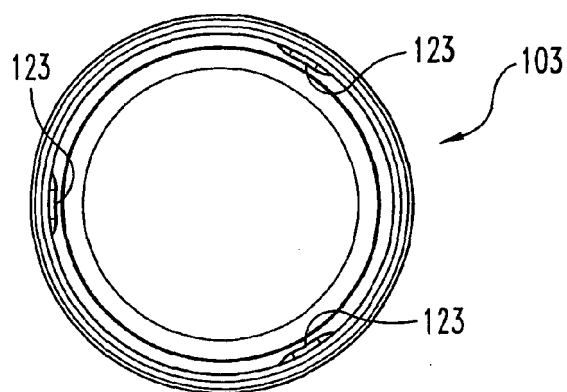
**Fig. 13**



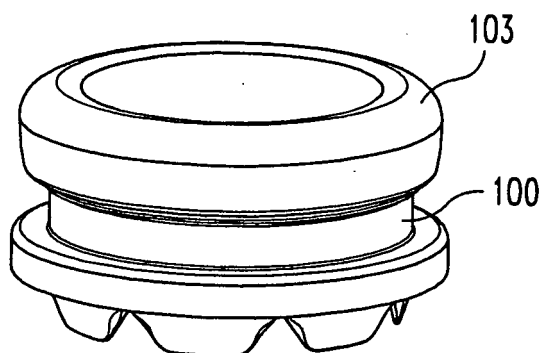
**Fig. 14**



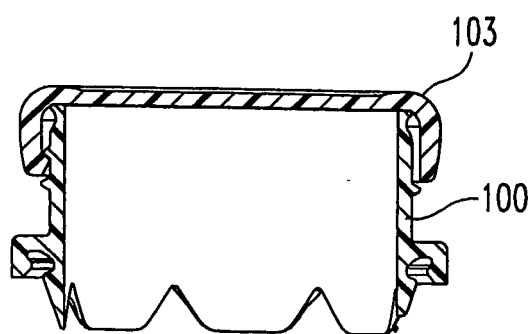
**Fig. 15**



**Fig. 16**



**Fig. 17**



**Fig. 18**



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 07 01 9271

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 026 100 A (YOSHINO KOGYOSHO CO LTD [JP]) 9 August 2000 (2000-08-09)	1-6	INV. B65D47/12 A47G19/22
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Y	FR 1 436 748 A (ALCA SA) 29 April 1966 (1966-04-29) * the whole document *	7	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			B65D A47G
Place of search		Date of completion of the search	Examiner
Munich		19 November 2007	Balz, Oliver
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document</p> <p>T : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  D : document cited in the application  L : document cited for other reasons</p> <p>&amp; : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 01 9271

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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19-11-2007

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