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(54) **Container with child-resistent closure**

Behälter mit kindersicherem Verschluss

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## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to the field of packages, and more particularly to an improved child-resistant container with closure intended for storing potentially harmful substances.

### BACKGROUND OF THE INVENTION

**[0002]** Numerous child-resistant locking mechanisms for preventing access to containers storing dangerous substances such as prescription drugs, over-the-counter medications, pesticides, household chemicals or the like are known. Such locking mechanisms may take several forms, but the most common is a design that requires a tab to be pressed firmly as the lid is twisted. Many of them are complicated in design which may increase the cost for manufacture of the container as well as the cap.

**[0003]** US2752060 discloses a packaging structure with a container provided with external threads and an external annular shoulder, a cap of resilient material threadably mounted on said threads, and with a pair of inwardly turned opposing flanges on the side wall. The cap is removed from the container upon application of a squeezing force at specific zones located opposite to each other on the side wall, and subsequent rotation of the cap, thereby displacing said flanges into positions spaced from each other at a distance which is greater than the diameter of the external annular shoulder. Thereafter the cap is unscrewed and removed from the container neck. In order to be able to remove the cap it is important to apply the squeezing force at the specific zones indicated. For re-closure, the cap has to be repositioned onto the bottle neck, squeezed and thereafter rotated.

**[0004]** DE19740686 discloses a container with a neck having an external thread, below which two rounded cams are arranged at 180° opposite to each other. The cap for fitting on the container is cylindrical having an internal thread formed on the inside of the cylindrical section. Below the thread are two openings arranged at 180° opposite to each other. When the cap is secured to the neck of the container, the external threads are threaded into the internal threads and the rounded cams arranged on the neck of the container protrude through the openings of the cap. In order to remove the cap from the container, the user has to squeeze the cap on opposite sides simultaneously, and at 90° to the protruding cams, thereby ovalizing the cap which causes the protruding cams to withdraw from the openings. Thereafter the user has to rotate the cap to unthread the threads to be able to remove the cap completely. Again the cap has to be squeezed at specific locations in order to be able to rotate the cap successfully.

**[0005]** DE8223835 U discloses a container with a spray head cap made from elastically deformable material and carrying two oppositely arranged latching arms. Said latching arms have at their bottom inwardly projecting lugs, which in the locking position, project into a grove formed below an annular bead on the neck of the container. By simultaneously applying pressure on the upper part of the two latching arms, the lower part of said latching arms pivot outwards and release the projections from the groove and the spray head can be pulled upward from the container neck. No turning of the cap is required. It is questionable whether this solution would qualify as a child-resistant closure considering the requirement of two dissimilar motions for opening that normally is the minimum requirement for a child-resistant closure.

**[0006]** DE4413334 discloses a container closure containing an elastically deformable cap. The container neck is provided with an outer annular shoulder, and the cap is provided with two internal mounting collars wherein the inner periphery of the outer collar has knob-like projections that due to the elasticity of the cap will slide past the mounting collar and snap back below the annular shoulder on the container neck. The container closure further has a V-shaped lifting device with inclined surfaces arranged both on the outer mounting collar and the container neck, which with only a slight turning of the closure tap will shift in the axial direction and upwards such that the projections will slide upwards past the annular shoulder on the container and thereby free the cap. To unlatch the cap from the container neck it is necessary to compress the cap simultaneously on either side of the cap transverse to the diameter on which the V-shaped lifting device is located. Thereafter the cap is slightly rotated relative to the container and the cap is removed. Also this cap has to be squeezed at a specific location in order to be able to rotate the cap successfully.

**[0007]** US6612450 discloses a child-resistant closure in accordance with the preamble of appended claim 1, wherein a cap has a pair of longitudinal slots formed in the outer skirt and extending from its ends, and which define a tab which supports one or more tangs mounted to the inner surface of the tab proximate the first end. The tab is separated from the skirt by the slots but remains connected to the cap via the connection to the dividing wall, i.e. via connection to a portion of the dividing wall along a rear surface of the tab. This connection forms a flexible joint or fulcrum about which the tab pivots. The closure is engaged with the container by positioning an outer skirt of the cap over a flange on the neck of the container and pressing downwardly. When force is applied, a tapered surface on the flange urges the tab radially outwardly until the tangs clear the flange, whereupon the tangs snap back to their rest positions and become seated in the neck region. Once so positioned, the tangs engage the end of flange to "lock" the cap to the container, thereby preventing the contents from being readily accessed. In the locked position the first end of the outer skirt seats against an upper surface of a shelf. If the inner skirt is included so that the engagement section is present when the cap is in the locked position, the

flange becomes seated in the engagement section. To remove the child resistant closure, a force is applied to the tab, as by a thumb or forefinger, for dislodging the tangs from between the radial shelf and the flange, whereupon an upwardly directed force separates the cap from the container.

**[0008]** US2008/0142468 discloses a child-resistant package including a container having a neck finish with an open mouth, at least one external thread segment, and at least one external lug spaced from the thread segment and having an angled cam surface facing axially toward the open mouth. The closure has a peripheral skirt, at least one internal thread segment for engagement with the external thread segment on the container neck finish, an internal angled cam surface on the skirt, at least one internal lug on the skirt for engagement with the external lug on the neck finish, and a flexible resilient spring for engaging the neck finish and biasing the closure away from the neck finish. The closure is threaded onto the neck finish until the internal lug on the skirt moves over the external lug on the neck finish to resist unthreading of the closure from the neck finish. The closure is removable from the neck finish by: (1) squeezing the skirt to ovalize the skirt such that the internal lug on the skirt moves radially outwardly from the external lug on the neck finish whereupon the closure can be unthreaded from the neck finish, and (2) pushing the closure over the neck finish against the spring until the cam surface on the external lug engages the internal angled cam surface on the skirt to ovalize the skirt until the internal lug on the skirt moves radially outwardly from the external lug on the neck finish whereupon the closure can be unthreaded from the neck finish.

**[0009]** Child-resistant packaging can be a problem for some aged individuals or people with disabilities. The regulations for child-resistant packaging require a test protocol of performance tests of packages with actual children to determine if the packages can be opened. Often the child-resistant requirements are met by package closures which require two dissimilar motions for opening. Samples of the test packages are given to a prescribed population of children. With specified 50-child panels, a high percentage must be unable to open a test package within 5 minutes. Adults are also tested for their ability to open a child-resistant package. More recently, additional package testing is used to determine if aged individuals or people with disabilities have the ability to open the same package.

**[0010]** It is the primary object of the present invention to provide an alternative container closure which fulfills the requirements for child resistant packaging while it is still convenient to manipulate for an adult, an aged individual or person with a disability, intending to gain access to the contents of the container.

## SUMMARY OF THE INVENTION

**[0011]** The present invention is directed to a child-resistant package intended to contain dangerous or harmful contents such as prescription drugs, over-the-counter medications, pesticides, household chemicals or the like within the container.

**[0012]** The package comprises a hollow container for holding the harmful contents. The container has a bottom, and a neck finish with an open mouth opposite the bottom. The neck finish has an axial direction A and radial directions perpendicular to the axial direction. The container may have any shape such as a round, oval, square, or rectangular shape, and may be made from any suitable material such as glass, metal or plastics.

**[0013]** The neck finish is surrounded by a flange arranged proximate the open mouth. Said flange has an inclined guiding surface that acts as a cam surface which is angled outwardly from the open mouth, towards the lower end of the container.

**[0014]** The child resistant package further includes a closure intended to cover the open mouth of the container, said closure containing an end wall connected to, and bounded by a peripheral and circular skirt. The closure, and in particular the peripheral skirt is preferably made of a flexible material implying that it is capable of being elastically flexed, expanded or compressed under the influence of external forces and that it will substantially return to its original state once the external forces are removed. A "flexible material" is intended to mean a material that can easily be folded or twisted or bent by hand, or a material that may be flexed and/or bent repeatedly without rupture or the development of visible defects. Suitable materials include polymeric materials such as different types of plastics that may be shaped by molding techniques such as injection molding, although certain metals could be used.

**[0015]** The closure further contains a plurality of inwardly projecting nibs or lugs circumferentially spaced along the inner perimeter of said circular skirt. The number of lugs depends on the radius of the closure as will be discussed below. The inwardly projecting lugs are intended to engage with said flange on the neck finish when the closure is applied on the neck finish.

**[0016]** The flange comprises at least two projecting guiding elements extending in a radial direction from the neck finish and into an overlapping arrangement with said inwardly projecting lugs of the closure. Each projecting guiding element has a distal end, which is the part of each projecting guiding element located furthest away from the open mouth of the container. The distal end of each projecting guiding element extends axially along the inner perimeter of said circular skirt on the closure, and cooperates with said inwardly projecting lugs in an overlapping and locking arrangement when the closure is seated on the neck finish.

**[0017]** The projecting guiding elements may have different shapes such as e.g. rectangular, oval or round. Preferably it is lobe shaped and the very most distal end of the lobe engages in an overlapping arrangement with at least one inwardly projecting lug on the peripheral skirt

of the closure.

**[0018]** Said flange, i.e. the two or more projecting guiding elements with its distal ends are each provided with an inclined guiding surface arranged to cooperate with said inwardly projecting lugs located at the inner perimeter surface of said circular skirt. Said inclined guiding surface is angled at 100° - 160°, more preferably at 115° - 150° and most preferably at 130° - 140° from the axial direction A away from said neck finish.

**[0019]** The inclined guiding surface guides the inwardly projecting lugs from a locking position, wherein two or more of the plurality of inwardly projecting lugs is located below the projecting guiding elements, to a release position, wherein all of said inwardly projecting lugs are located above projecting guiding elements.

**[0020]** Said flange may comprise one, two, three, four or more projecting guiding elements. If the flange comprises one projecting guiding element the distal end extends along a distance D1 covering from about 50% to 80%, more preferably from about 60% to 70%, most preferably around 65% of the inner perimeter of said circular skirt. The embodiment wherein the flange only comprises one projecting guiding element does not form part of the invention, but represents background art that is useful for understanding the invention.

**[0021]** The flange may comprise two projecting guiding elements located opposite each other, and each having distal ends extending along a distance D2 covering from about 20% to 40%, more preferably from about 25% to 35%, most preferably around 30% of the inner perimeter of said circular skirt.

**[0022]** The flange may comprise three projecting guiding elements equally spaced around said open mouth, and each having distal ends extending along a distance D3 covering from about 8.33 % to 25 %, more preferably from about 12.48% to 20.84%, most preferably around 16.67% of the inner perimeter of said circular skirt.

**[0023]** The flange may comprise four projecting guiding elements equally spaced around said open mouth, and each having distal ends extending along a distance D4 covering from about 6.25% to 18.75%, more preferably from about 9.38 % to 15.63%, most preferably around 12.5% of the inner perimeter of said circular skirt.

**[0024]** The child resistant closure becomes engaged with the container by positioning said closure over the open mouth and applying a downwardly directed force pressing the closure against the one or more projecting guiding elements. When force is applied, the inclined guiding surfaces on the one or more projecting guiding elements urge the plurality of inwardly projecting lugs outwardly in the radial direction until the lugs clear the flange, whereupon the lugs snap back and become trapped below the one or more projecting guiding elements. It is not necessary that lugs are located below each projecting guiding element. However it is necessary that in the locked position at least two of the plurality of lugs is always located below the projecting guiding elements. These at least two lugs will retain the closure onto the neck finish no matter which direction the closure is rotated, or if it is pulled upwardly.

**[0025]** Theoretically a great number of lugs may fit around the inner perimeter of the peripheral skirt. However, the lugs have to be flexible enough to be urged radially outwards when a downwardly pressing force is applied during the positioning of the closure on the container neck finish. Consequently, the lugs may not be too wide so as to not make the skirt too stiff. However, the lugs may not either be too narrow as they have to resist any unintentional upwardly pulling force applied from a child not permitted to gain access to the container. The plurality of inwardly projecting lugs may have different shapes wherein the lower surface, i.e. the downwardly directed surface of the lugs is slightly chamfered to facilitate the sliding of the lugs onto the inclined guiding surface of the distal ends on the projecting guiding elements.

**[0026]** The closure may be removed from the neck finish of the container by squeezing said flexible resilient peripheral skirt while turning the closure in either direction such that the inwardly projecting lugs slide up onto the inclined guiding surface of one or more projecting guiding element and clear all of the inwardly projecting lugs trapped below the one or more projecting guiding elements, thereby releasing the closure from the neck finish. Squeezing while turning the closure will make the inwardly projecting lugs that are not trapped below the one or more projecting guiding elements slide up onto the inclined guiding surface of the projecting guiding elements. During the continuous turning of the closure all the inwardly projecting lugs trapped below the projecting guiding elements will eventually slide up onto the inclined guiding surface and clear said projecting guiding elements, thereby releasing the closure from the neck finish. An advantage with the closure of the present invention is that it is not necessary that the closure is squeezed in specific zones on the peripheral skirt. The user may grip and squeeze the closure anywhere on the peripheral skirt, as long as it coincides with a simultaneous turning of said closure.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0027]**

Figure 1 shows a perspective view of a child-resistant package according to the invention.

Figure 2 shows a side view of a child-resistant package according to the invention.

Figure 3 shows a cut-away section of the child-resistant package as viewed from the top (A-A in figure 2).

Figure 4 shows a cross-section of the child-resistant package according to the invention before removing the closure.

Figure 5 shows a cross-section of the child-resistant package according to the invention after the closure has been removed.

Figures 6 a-d show different embodiments of the projecting guiding element according to the invention. Figure 6b represents an embodiment of Prior Art.

Figures 7 a-b show different embodiments of the inwardly projecting lugs according to the invention.

DETAILED DESCRIPTION

**[0028]** In the following the invention will be described in a non-limiting way and in more detail with reference to exemplary embodiments illustrated in the enclosed drawings, in which:

Figures 1-4 show a general overview of the upper part of a child-resistant package according to the invention. The solution to the drawbacks mentioned above is a child-resistant package which comprises a closure and a container with a non-threaded, snap fit coupling there-between to enclose dangerous substances such as prescription drugs, over-the-counter medications, pesticides, and household chemicals or the like within the container.

**[0029]** Referring to the figures the numeral 10 generally designates a child-resistant package such as a container or bottle 11 and a closure 12. The container has a main body 13 and a neck finish 14 ending as an open mouth 15. The neck finish has an axial direction A and radial directions perpendicular to the axial direction and said neck finish 14 is provided with an outturned inclined radially extending tapered flange 16 proximate said open mouth 15 (see Figs. 1 and 3). The radially extending flange 16 comprises at least one projecting guiding element 17 extending outwardly in a radial direction away from the neck finish 14. The one or more projecting guiding elements 17 each has a distal end 18, said distal end being the part of the projecting guiding element 17 located furthest away from the neck finish 14 of the container 13.

**[0030]** The upper side of the tapered flange 16, including the at least one projecting guiding element 17, is provided with an inclined guiding surface 19 that faces away from the open mouth 15 of the neck finish 14. The inclined guiding surface 19 is angled at 100° to 160°, more preferably at 115° to 150° and most preferably at 130° to 140° from the axial direction and away from said neck finish 14.

**[0031]** The closure 12 includes an end wall 20 that serves to cover the open mouth of the container and which is bounded by, and connected to, a peripheral circular skirt 21. The peripheral skirt 21 has an outer surface 22 and an inner surface 23. Said outer surface 22 is preferably provided with textured ribs to facilitate gripping of the closure 12 by the user. A plurality of inwardly projecting nibs or lugs 24 are evenly distributed along the inner perimeter 23 on the lower portion of the peripheral skirt 21, as best seen in figure 1. Advantageously the closure 12 may also include a gasket, preferably formed from paper, plastic or other material normally used in similar applications.

**[0032]** It should further be noted that the invention is by no means limited to containers having the shape of a bottle. It should be apparent to the person skilled in the art that the principles of the invention would equally well apply to a container having a uniform diameter throughout its length except for the flange 16 with the one or more projecting guiding elements 17.

**[0033]** When the closure 12 is applied to the neck-finish 14, the at least one projecting guiding element 17 with its distal end 18 extends in a radial direction from the neck finish 14 towards the circular skirt 21, and said distal end 18 is engaged into an overlapping and cooperating arrangement with the plurality of inwardly projecting lugs 24 located along the inner perimeter of the circular skirt 21 (see figure 4).

**[0034]** During the engagement or disengagement of the closure 12 with the neck finish 14, the inclined guiding surfaces 19 provided on each projecting guiding element 17 and on its distal ends 18 cooperate with said inwardly projecting lugs 24 by guiding said inwardly projecting lugs 24 from a locking position, wherein two or more of the plurality of inwardly projecting lugs 24 are located below the projecting guiding elements 17, to a release position, wherein all of said inwardly projecting lugs 24 are located above the projecting guiding elements 17. The plurality of inwardly projecting lugs 24 may have different shapes wherein the lower surface, i.e. the downwardly directed surface of the lugs is slightly chamfered to facilitate the sliding of the lugs 24 onto the inclined guiding surface 19 of the distal ends 18 on the projecting guiding elements (see figures 7 a and b).

**[0035]** The flange 16 may contain more than one projecting guiding element 17, such as two, three, four or more projecting guiding elements 17 (see figures 6 a-d).

**[0036]** When the flange 16 comprises two projecting guiding elements 17, said projecting guiding elements are advantageously located opposite each other, and each have distal ends 18 that extend along a distance D2 covering from about 20% to 40%, more preferably from about 25% to 35%, most preferably around 30% of the inner perimeter of said circular skirt 21 (see figure 6a).

**[0037]** When the flange 16 comprises one projecting guiding element 17, the distal end 18 extends along a distance D1 covering from about 50% to 80%, more preferably from about 60% to 70%, most preferably around 65% of the inner perimeter of said circular skirt 21 (see figure 6b). The embodiment wherein the flange only comprises one projecting guiding element does not form part of the invention, but represents background art that is useful for understanding the invention.

**[0038]** If the flange 16 comprises three projecting guid-

ing elements 17, said projecting guiding elements 17 are advantageously equally spaced around said open mouth 15 resembling a three-leaf clover, and each "leaf" having distal ends 18 extending a along a distance D3 covering from about 8.33 % to 25 %, more preferably from about 12.48% to 20.84%, most preferably around 16.67% of the inner perimeter of said circular skirt 21 (see figure 6c).

**[0039]** The flange 16 may in a further embodiment comprise four projecting guiding elements 17 equally spaced around said open mouth 15 in a four-leaf clover design, wherein each "leaf" have distal ends 18 extending along a distance D4 covering from about 6.25% to 18.75%, more preferably from about 9.38% to 15.63%, most preferably around 12.5% of the inner perimeter of said circular skirt 21 (see figure 6d).

**[0040]** Advantageously the flange 16 comprises two projecting guiding elements 17 located opposite each other, said distal ends 18 extending in the axial direction the distance D2 covering about 20% to 40%, more preferably from about 25% to 35%, most preferably around 30% of the inner perimeter of said circular skirt 21 as seen in figure 6a).

**[0041]** The child-resistant closure 12 becomes engaged with the container 11, by positioning the closure 12 over the open mouth 15 on the neck finish 14 and pressing said closure 12 downwardly. When a downwardly directed force is applied on the closure 12 the inwardly projecting nibs or lugs 24 will press against the inclined guiding surface 19 on the one or more projecting guiding elements 17 and be urged radially outwardly until the lugs 24 clear the one or more projecting guiding elements 17 and snap back due the resiliency of the material of the lugs 24. A number of the plurality of inwardly directed lugs are now trapped below said one or more projecting guiding elements 17, locking the closure to the container 11, thereby preventing the contents of the container 11 to be readily accessed. In the locked position at least two of the plurality of lugs 24 are always located below projecting guiding elements 17 no matter which direction the closure 12 is rotated, or if it is pulled upwardly.

**[0042]** The child-resistant closure 12 is removed from the container 11, by gripping said peripheral skirt 21 and applying opposite forces by squeezing with e.g. a thumb and forefinger at opposite sides of the outer surface 22 of the peripheral skirt 21, while turning said closure 12 in either direction. Squeezing while turning the closure 12 will make the inwardly projecting lugs 24 that are not trapped below the at least one projecting guiding element 17, slide up onto the inclined guiding surface 19 of the at least one projecting guiding element 17.

**[0043]** The above mentioned and described embodiments are only given as examples and should not be limiting to the present invention. Other solutions, uses, objectives, and functions within the scope of the invention as claimed in the below described patent claims should be apparent for the person skilled in the art.

## Claims

1. A child-resistant package (10) comprising:

   - a container (11) having a neck finish (14) with an open mouth (15) and flange (16) proximate said open mouth (15), said flange (16) having an inclined guiding surface (19); and
   - a closure (12) having a flexible resilient and circular skirt (21) with a plurality of inwardly projecting lugs (24) located at an inner perimeter of said circular skirt (21), for engagement with said flange (16) on said neck finish (14),

   **characterized in that**

   - said flange (16) comprises at least two projecting guiding elements (17) extending in a radial direction towards the inner perimeter of said circular skirt (21); said projecting guiding elements having distal ends (18) extending in an axial direction and engaging in an overlapping and cooperating arrangement with said inwardly projecting lugs (24), in a locking position, wherein two or more of the plurality of inwardly projecting lugs (24) are located below the at least two projecting guiding elements (17), and in a release position, wherein all of said inwardly projecting lugs (24) are located above the two or more projecting guiding elements (17).

2. The child-resistant package according to claim 1, wherein the inclined guiding surface (19) is angled at 100° to 160°, more preferably at 115° to 150° and most preferably at 130° to 140° from the axial direction and away from said neck finish (14).

3. The child-resistant package according to claim 1, wherein the flange (16) comprises two projecting guiding elements (17) located opposite each other, and each having distal ends (18) extending along a distance D2 covering from 20% to 40%, more preferably from 25% to 35%, most preferably around 30% of the inner perimeter of said circular skirt (21).

4. The child-resistant package according to claim 1, wherein the flange (16) comprises three projecting guiding elements (17) equally spaced around said open mouth (15), and each having distal ends (18) extending along a distance D3 covering from 8.33 % to 25 %, more preferably from 12.48% to 20.84%, most preferably around 16,67% of the inner perimeter of said circular skirt (21).

5. The child-resistant package according to claim 1, wherein the flange (16) comprises four projecting guiding elements (17) equally spaced around said open mouth (15), and each having distal ends (18) extending along a distance D4 covering from 6.25% to 18.75%, more preferably from 9.38 % to 15.63%,

most preferably around 12.5% of the inner perimeter of said circular skirt (21).

**6.** A method for closing and opening the child-resistant package according to claims 1-5, **characterized in that** said closure is engaged with said container by positioning said closure over the open mouth (15) and applying a downwardly directed force pressing the closure (12) with the plurality of inwardly projecting lugs (24) against the two or more projecting guiding elements (17), thereby urging the lugs (24) outwards in the radial direction until said lugs (24) clear the two or more projecting guiding elements (17), snap back and become trapped below said two or more projecting guiding elements, and **in that** said closure is un-engaged from the neck finish (14) of the container (11) by applying a squeezing force onto said flexible resilient peripheral skirt (21) while turning said closure (12) in either direction such that the inwardly projecting lugs (24) slide up onto the inclined guiding surface (19) of the projecting guiding elements (17,18) and eventually clear all inwardly projecting lugs (24) trapped below the projecting guiding elements (17), thereby releasing the closure (12) from the neck finish (14).

**Patentansprüche**

**1.** Kindersichere Verpackung (10), aufweisend:

- einen Behälter (11) mit einer Halsausformung (14) mit einer offenen Mündung (15) und einem Flansch (16) nahe der offenen Mündung (15), wobei der Flansch (16) eine geneigte Führungsfläche (19) aufweist; und
- einen Verschluss (12) mit einer flexiblen, elastischen und kreisförmigen Einfassung (21) mit einer Vielzahl von nach innen vorstehenden Nasen (24), welche zum Eingriff mit dem Flansch (16) auf der Halsausformung (14) an einem inneren Umfang der kreisförmigen Einfassung (21) angeordnet sind,

**dadurch gekennzeichnet, dass**

- der Flansch (16) zumindest zwei vorstehende, sich in einer radialen Richtung zum inneren Umfang der kreisförmigen Einfassung (21) erstreckende Führungselemente (17) aufweist; wobei die vorstehenden Führungselemente sich in axiale Richtung erstreckende und in einer überlappenden und zusammenwirkenden Anordnung mit den nach innen vorstehenden Nasen (24) engreifende distale Enden (18) aufweisen, wobei, in einer Verriegelungsstellung, zwei oder mehrere der Vielzahl von nach innen vorstehenden Nasen (24) unterhalb der zumindest zwei vorstehenden Führungselemente (17) angeordnet sind, und wobei, in einer Freigabestellung, alle der nach innen vorstehenden Nasen (24) oberhalb der zwei oder mehreren vorstehenden Führungselemente (17) angeordnet sind.

**2.** Kindersichere Verpackung nach Anspruch 1, wobei die geneigte Führungsfläche (19) um 100° bis 160°, bevorzugt um 115° bis 150° und am meisten bevorzugt um 130° bis 140° von der axialen Richtung und weg von der Halsausformung (14) abgewinkelt ist.

**3.** Kindersichere Verpackung nach Anspruch 1, wobei der Flansch (16) zwei vorstehende, einander gegenüberliegende Führungselemente (17) jeweils mit distalen Enden (18) aufweist, die sich entlang einer Strecke D2 erstrecken, die von 20% bis 40%, mehr bevorzugt von 25% bis 35%, am meisten bevorzugt etwa 30% des Innenumfangs der kreisförmigen Einfassung (21) umfasst.

**4.** Kindersichere Verpackung nach Anspruch 1, wobei der Flansch (16) drei vorstehende, um die offene Mündung (15) gleichmäßig beabstandete Führungselemente (17) jeweils mit distalen Enden (18) aufweist, die sich entlang einer Strecke D3 erstrecken, die von 8,33 % bis 25%, mehr bevorzugt von 12,48% bis 20,84%, am meisten bevorzugt etwa 16,67% des Innenumfangs der kreisförmigen Einfassung (21) umfasst.

**5.** Kindersichere Verpackung nach Anspruch 1, wobei der Flansch (16) vier vorstehende, um die offene Mündung (15) gleichmäßig beabstandete Führungselemente (17) jeweils mit distalen Enden (18) aufweist, die sich entlang einer Strecke D4 erstrecken, die von 6,25 % bis 18,75%, mehr bevorzugt von 9,38% bis 15,63%, am meisten bevorzugt etwa 12,5% des Innenumfangs der kreisförmigen Einfassung (21) umfasst.

**6.** Verfahren zum Schließen und Öffnen der kindersicheren Verpackung nach einem der Ansprüche 1-5, **dadurch gekennzeichnet, dass** der Verschluss durch Positionieren des Verschlusses über der offenen Mündung (15) und Aufbringen einer nach unten gerichteten Kraft, die den Verschluss (12) mit der Vielzahl von nach innen vorstehenden Nasen (24) gegen die zwei oder mehreren vorstehenden Führungselemente (17) drückt, mit dem Behälter in Eingriff gebracht wird, wodurch die Nasen (24) in der radialen Richtung nach außen gedrückt werden bis die Nasen (24) die zwei oder mehreren vorstehenden Führungselemente (17) freigeben, zurückschnappen und unterhalb der zwei oder mehreren vorstehenden Führungselemente (17) eingeschlossen werden, und dadurch, dass der Verschluss von der Halsausformung (14) des Behälters (11) durch Aufbringen einer Druckkraft auf die flexible, elastische Umfangseinfassung (21) freigegeben wird,

während der Verschluss (12) in eine der beiden Richtungen gedreht wird, so dass die nach innen vorstehenden Nasen (24) auf die geneigte Führungsfläche (19) der vorstehenden Führungselemente (17, 18) hinauf gleiten, und schließlich alle, unter den vorstehenden Führungselementen (17) eingeschlossenen, nach innen vorstehenden Nasen (24) freigeben werden, wodurch der Verschluss (12) von der Halsausformung (14) gelöst wird.

**Revendications**

**1.** Conditionnement à l'épreuve des enfants (10) comprenant :

un récipient (11) ayant une finition de goulot (14) avec une bouche ouverte (15) et un rebord (16) à proximité de ladite bouche ouverte (15), ledit rebord (16) ayant une surface de guidage inclinée (19) ; et
un bouchon (12) ayant une jupe élastique et circulaire souple (21) avec une pluralité de pattes faisant saillie vers l'intérieur (24) positionnées au niveau d'un périmètre interne de ladite jupe circulaire (21), pour la mise en prise avec ledit rebord (16) sur ladite finition de goulot (14),
**caractérisé en ce que** :

ledit rebord (16) comprend au moins deux éléments de guidage en saillie (17) s'étendant dans une direction radiale vers le périmètre interne de ladite jupe circulaire (21) ; lesdits éléments de guidage en saillie ayant des extrémités distales (18) s'étendant dans une direction axiale et se mettant en prise dans un agencement chevauchant et coopérant avec lesdites pattes en saillie vers l'intérieur (24), dans une position de verrouillage, dans lequel deux ou plusieurs de la pluralité de pattes en saillie vers l'intérieur (24) sont positionnées au-dessous des au moins deux éléments de guidage en saillie (17), et dans une position de déblocage, dans laquelle la totalité desdites pattes en saillie vers l'intérieur (24) sont positionnées au-dessus des deux ou plusieurs éléments de guidage en saillie (17).

**2.** Conditionnement à l'épreuve des enfants selon la revendication 1, dans lequel la surface de guidage inclinée (19) est coudée de 100° à 160°, de préférence de 115° à 150°, et de manière préférée entre toutes de 130° à 140° par rapport à la direction axiale et à distance de ladite finition de goulot (14).

**3.** Conditionnement à l'épreuve des enfants selon la revendication 1, dans lequel le rebord (16) comprend deux éléments de guidage en saillie (17) positionnés l'un à l'opposé de l'autre, et ayant chacun des extrémités distales (18) s'étendant le long d'une distance D2 couvrant de 20% à 40%, encore de préférence de 25% à 35%, de manière préférée entre toutes aux environs de 30% du périmètre interne de ladite jupe circulaire (21).

**4.** Conditionnement à l'épreuve des enfants selon la revendication 1, dans lequel le rebord (16) comprend trois éléments de guidage en saillie (17) espacés à égale distance autour de ladite bouche ouverte (15), et ayant chacun des extrémités distales (18) s'étendant le long d'une distance D3 couvrant de 8,33% à 25%, encore de préférence de 12,48% à 20,84%, de manière préférée entre toutes aux environs de 16,67% du périmètre interne de ladite jupe circulaire (21).

**5.** Conditionnement à l'épreuve des enfants selon la revendication 1, dans lequel le rebord (16) comprend quatre éléments de guidage en saillie (17) espacés à égale distance autour de ladite bouche ouverte (15), et ayant chacun des extrémités distales (18) s'étendant le long d'une distance D4 couvrant de 6,25% à 18,75%, encore de préférence de 9,38% à 15,63%, de manière préférée entre toutes aux environs de 12,5% du périmètre interne de ladite jupe circulaire (21).

**6.** Procédé pour fermer et ouvrir le conditionnement à l'épreuve des enfants selon les revendications 1 à 5, **caractérisé en ce que** ledit bouchon est mis en prise avec ledit récipient en positionnant ledit bouchon sur la bouche ouverte (15) et en appliquant une force dirigée vers le bas comprimant le bouchon (12) avec la pluralité de pattes en saillie vers l'intérieur (24) contre les deux ou plusieurs éléments de guidage en saillie (17), poussant ainsi les pattes (24) vers l'extérieur dans la direction radiale jusqu'à ce que lesdites pattes (24) dégagent les deux ou plusieurs éléments de guidage en saillie (17), s'encliquettent et soient piégées au-dessous desdits deux ou plusieurs éléments de guidage en saillie et **en ce que** ledit bouchon est dégagé de la finition de goulot (14) du récipient (11) en appliquant une force de compression sur ladite jupe périphérique élastique souple (21) tout en faisant tourner ledit bouchon (12) dans chaque direction de sorte que les pattes en saillie vers l'intérieur (24) glissent vers le haut sur la surface de guidage inclinée (19) des éléments de guidage en saillie (17, 18) et finalement dégagent toutes les pattes en saillie vers l'intérieur (24) piégées sous les éléments de guidage en saillie (17), libérant ainsi le bouchon (12) de la finition de goulot (14).

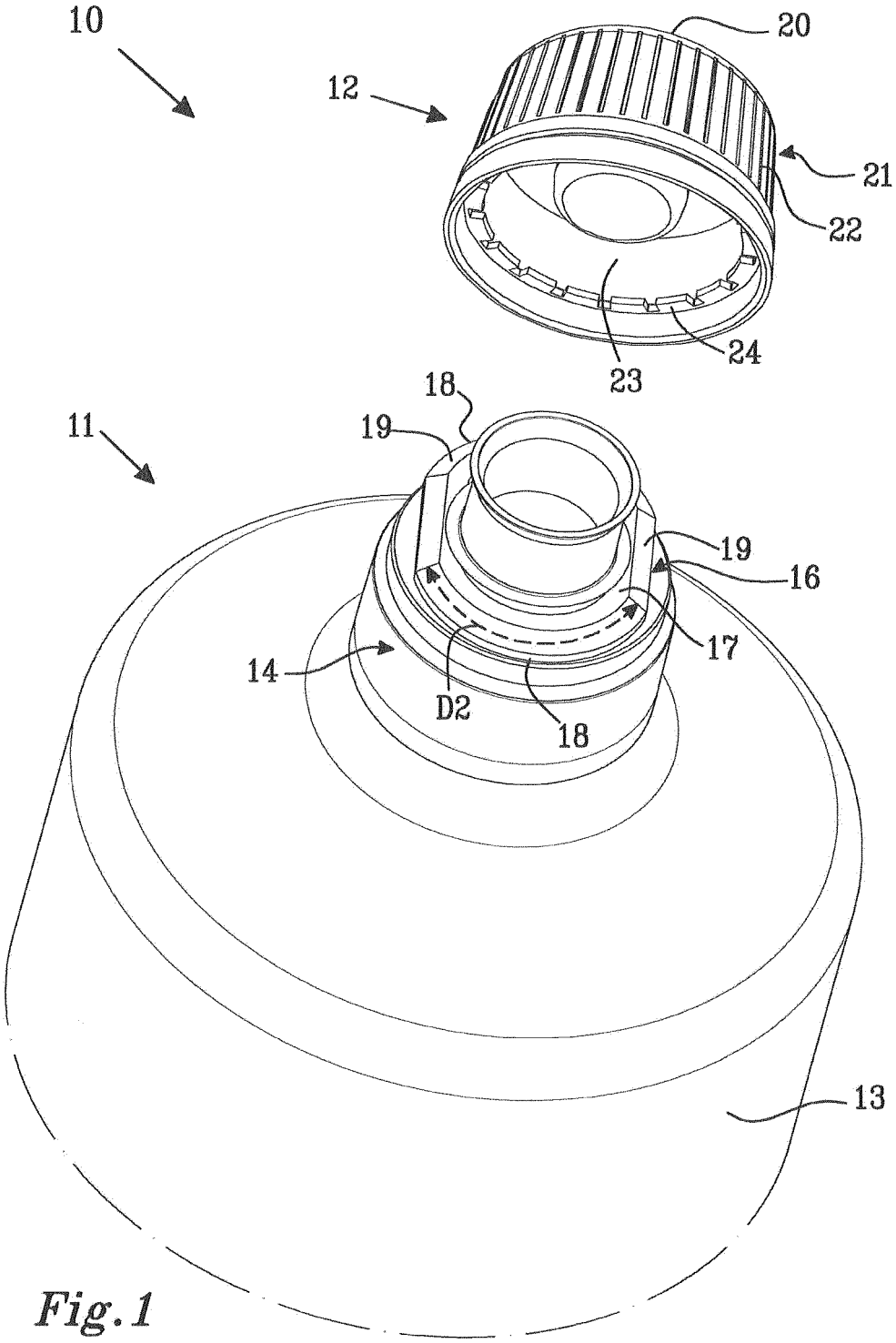



*Fig. 1*

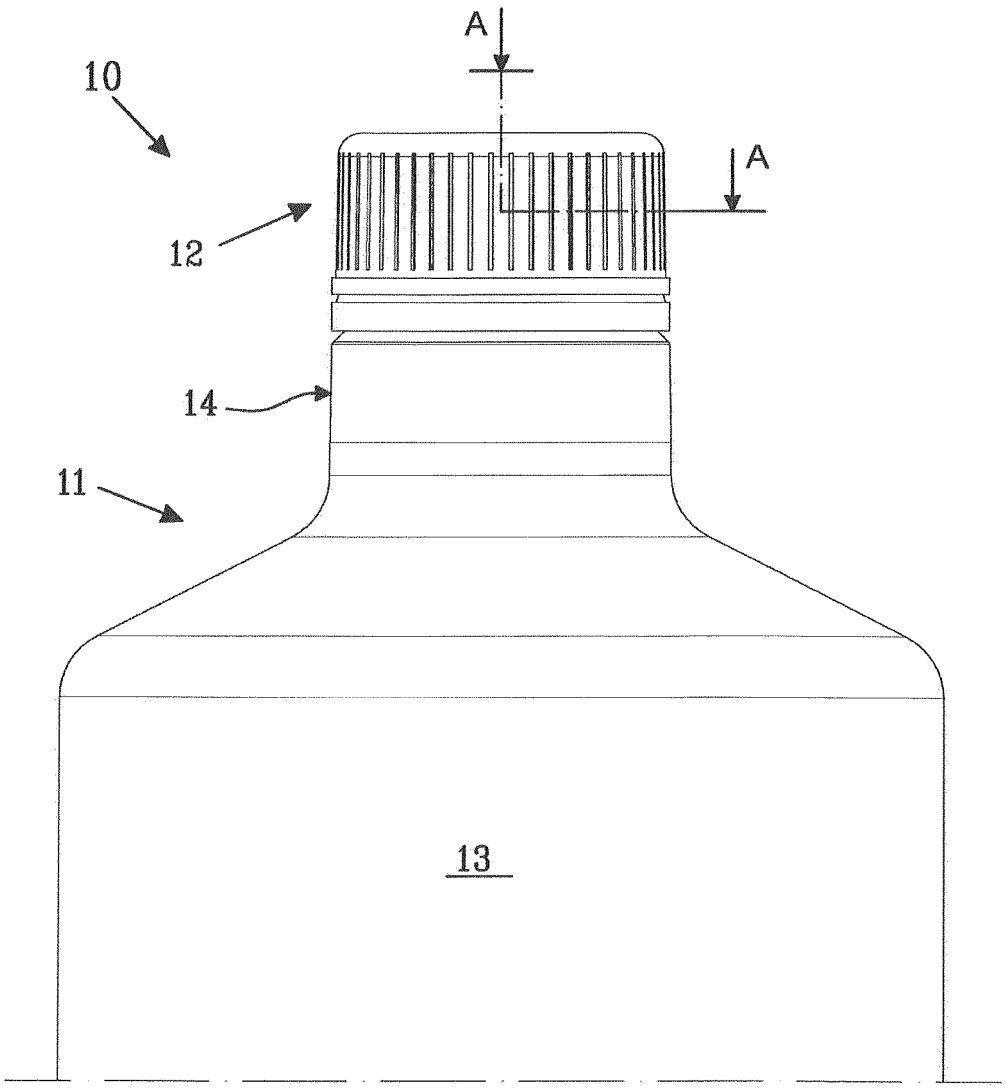



*Fig.2*

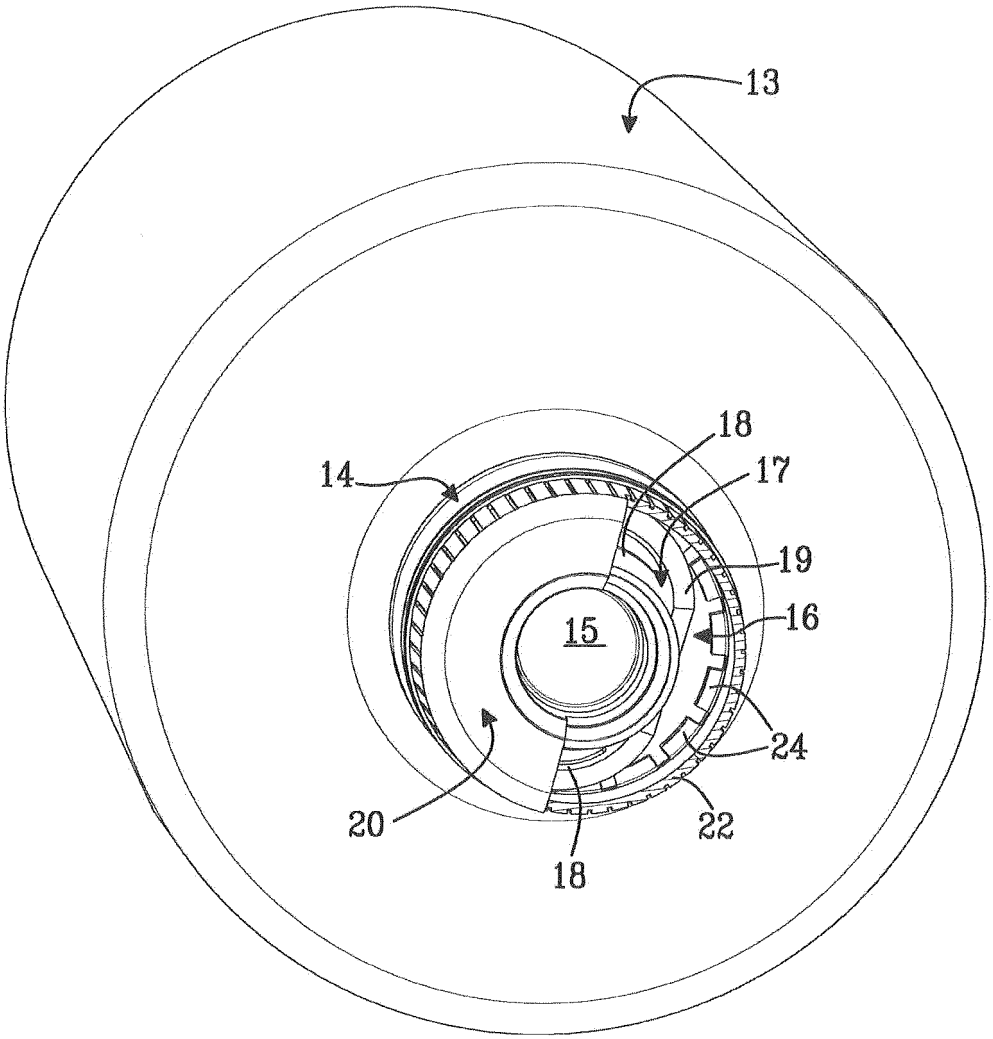



*Fig. 3*

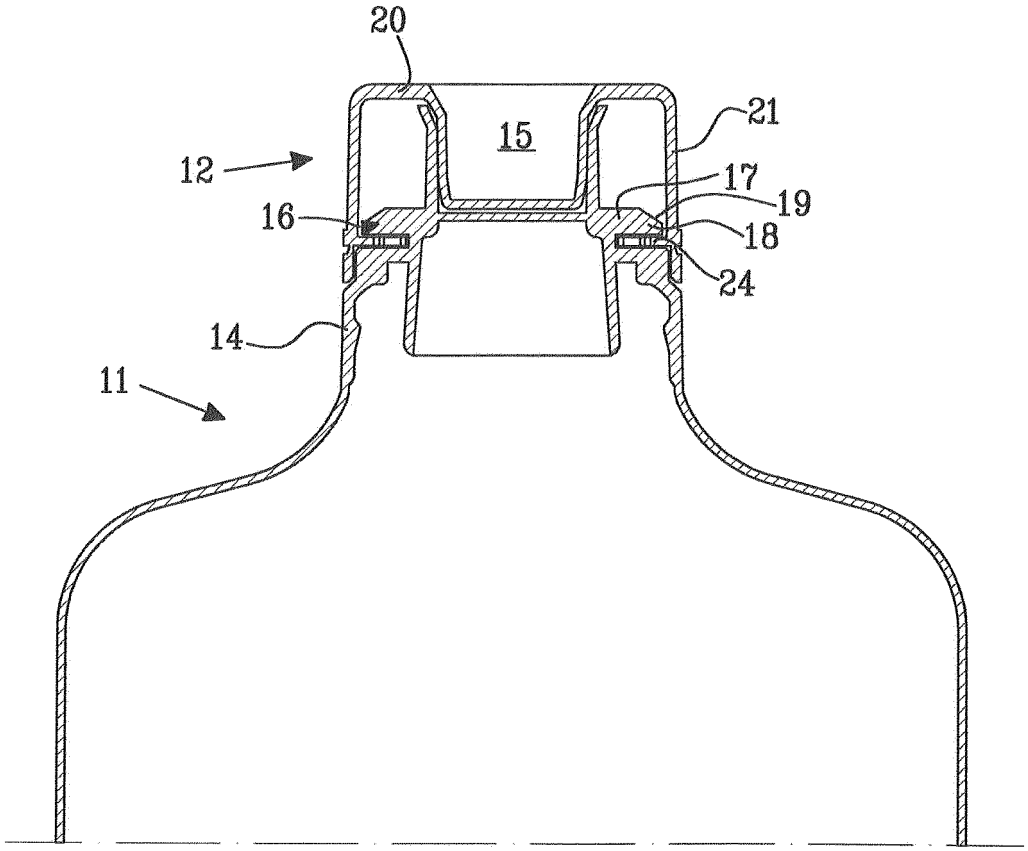



*Fig. 4*

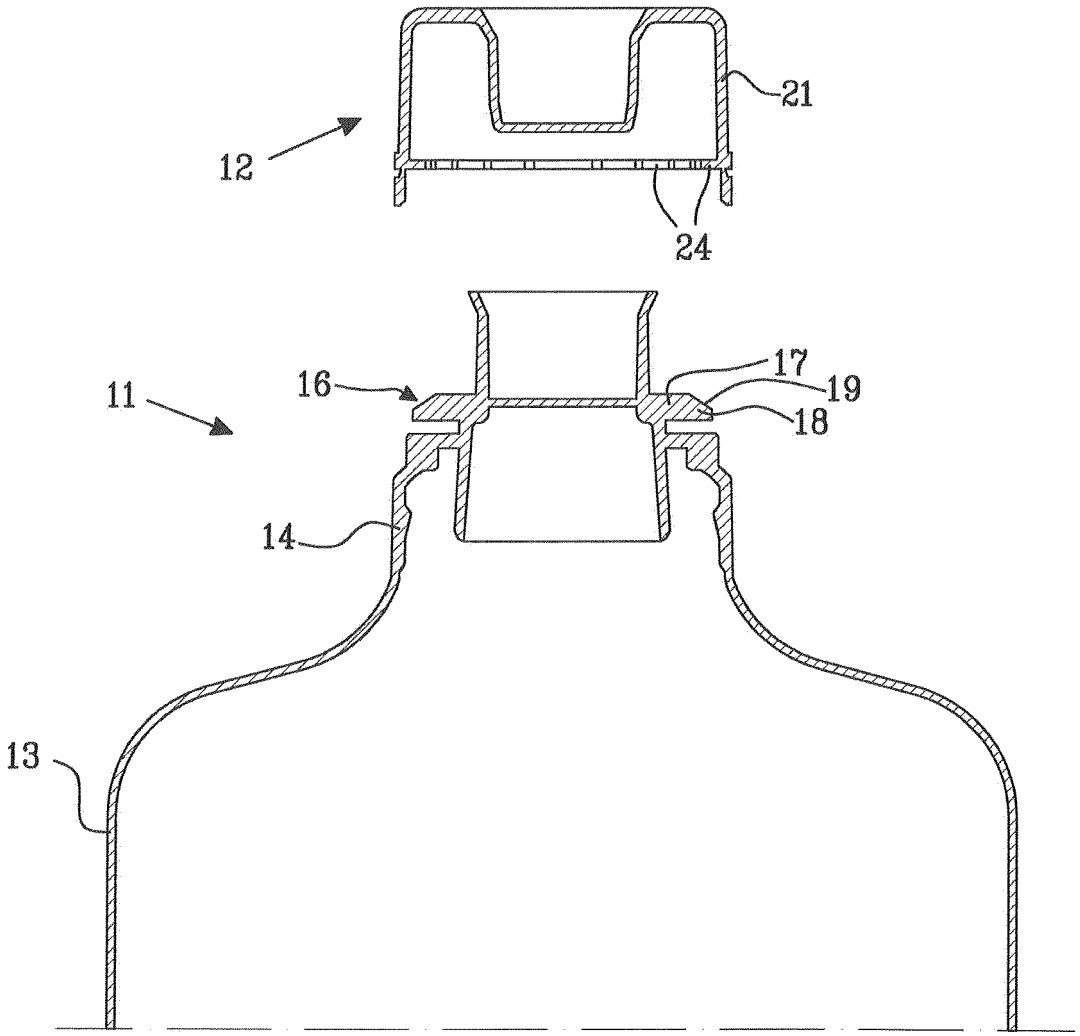



*Fig.5*

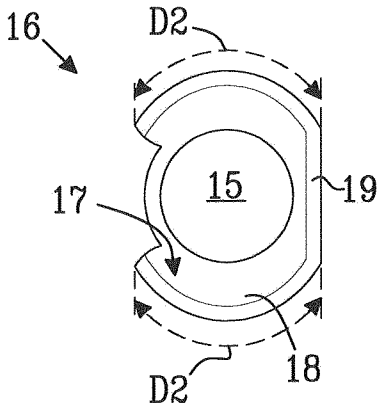



Fig.6a

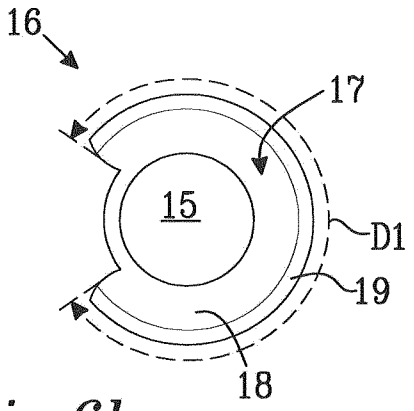



Fig.6b (Prior Art)

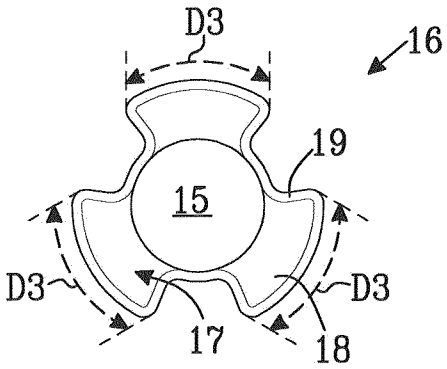



Fig.6c

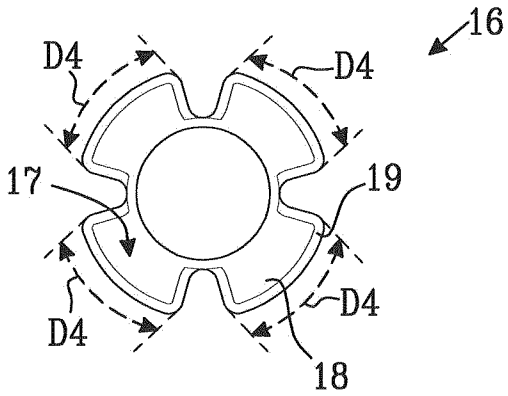



Fig.6d

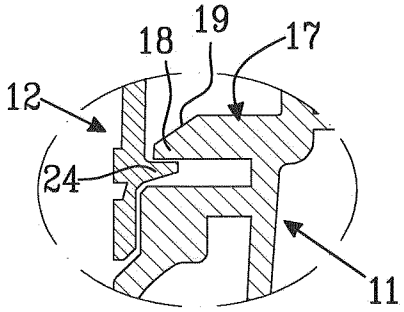



Fig.7a

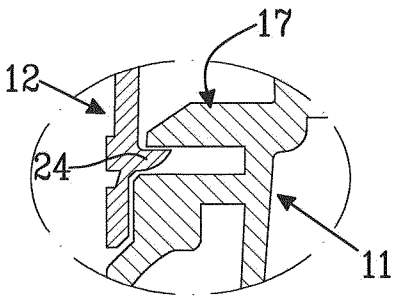



Fig.7b

## REFERENCES CITED IN THE DESCRIPTION

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