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(71) Applicant: **Tomasella, Alessandro**
31029 Vittorio Veneto (Prov. of Treviso) (IT)

(72) Inventor: **Tomasella, Alessandro**
31029 Vittorio Veneto (Prov. of Treviso) (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

(54) Closure device particularly for bottles and/or containers

(57) A closure device (1) particularly usable for temporarily closing a container for liquids, comprising a first cap (4), which is provided with first elastically deformable elements (6) for connection to the outer neck of the container; a second coaxial and external cap (5) being slidingly and selectively associated with the first cap and comprising second elements for the temporary activation of the first elements and third elements suitable to remove the closure device from the neck of the container.

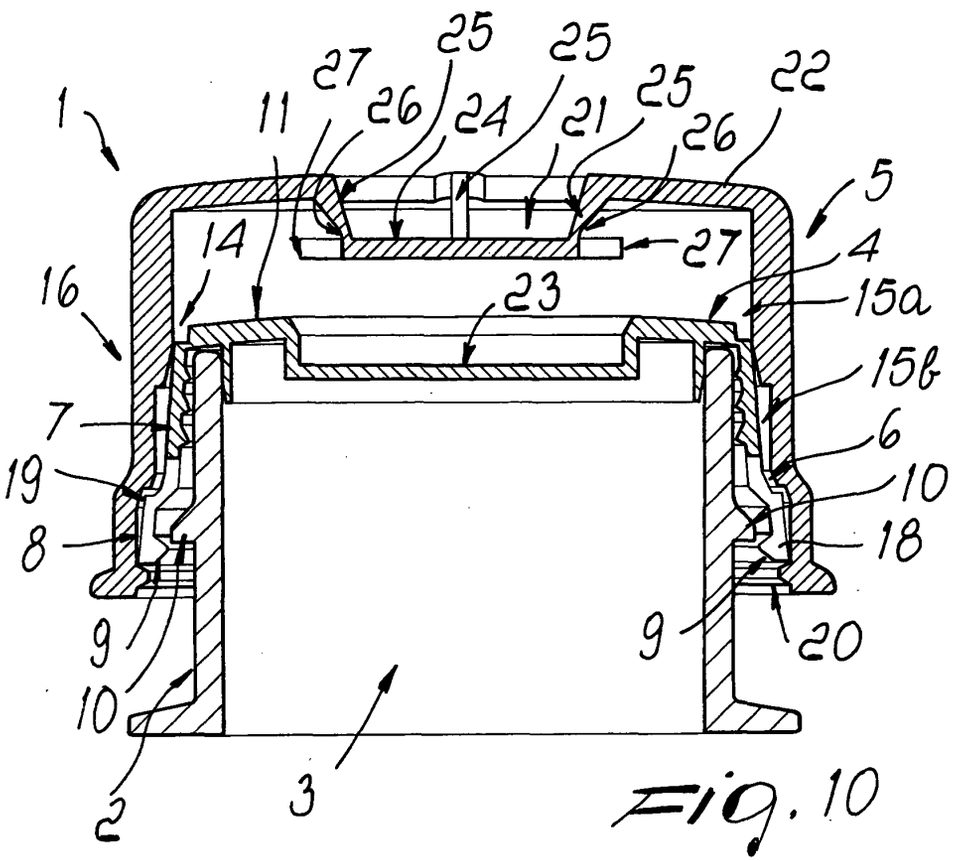

Fig. 10

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Description

[0001] The present invention relates to a closure device that is particularly suitable for temporarily closing a bottle or more generally a container that can be used for example for liquids such as water or beverages, for creams and hygiene products, for medicines or fluids of other kinds, including gasolines, oils and other derivatives of the refinement of petroleum.

[0002] Bottles provided with single-use closures, such as for example known types of closure commonly known as crown caps, are currently commonly used for example in the food sector.

[0003] Such crown caps, used for example in the bottling of wines and beers in glass bottles, are usually removed from the bottles by applying to the caps a rigid deformation that prevents their re-use in order to obtain a new effective closure of the bottle.

[0004] Another drawback of the known types of crown cap is that the bottling step requires the presence of specific machines that allow to close the lateral edges of the crown caps around the outer rim of the neck of each bottle.

[0005] This makes it particularly onerous to use the crown caps in the domestic and handicraft sector.

[0006] In the field of re-usable caps, bottles that can be reclosed by means of circular screw caps of a known type are currently commercially available; such caps can be screwed on and off with respect to a complementary thread formed along the outer rim of the circular opening provided at the upper end of the bottles.

[0007] The main drawback of those known types of screw cap is that providing the thread along the inner lateral surfaces increases considerably the complexity of the manufacture of the caps, requiring the use of expensive and complicated machines and molds.

[0008] The disengagement of the caps from the mold in which they have been produced in fact requires the execution of complicated unscrewing movements, which cause the manufacturing process to be slow and expensive and at the same time require constant maintenance of the complex machinery.

[0009] Likewise, the production process required to obtain the preforms for plastic bottles, for example used commonly in the field of food beverages, is complicated and expensive.

[0010] The preforms, obtained by injecting plastic material into a first mold, are then moved into a second larger mold, in which they are subjected to blow-molding.

[0011] As in the case described above of the manufacture of screw caps, the production process of preforms also has the considerable drawback of having to provide a thread at the outer neck of the bottles.

[0012] This leads to the problem of having to provide manufacturing and bottling lines that require a screw-on motion.

[0013] Another important drawback of known types of screw cap is that opening and closing a bottle, or more generally a container, is slow and complicated, since it requires extended rotary screwing and unscrewing motions.

[0014] As in most food products, moreover, in the case of beverage bottles and more generally for many other commercially available products, a first opening seal must be present.

[0015] Such seal is suitable to ensure, by means of its integrity, that no tampering has occurred to the bottle if it uses closures of the reusable type, such as for example in the case of screw caps.

[0016] The seal for known types of screw cap is usually constituted by a ring, which is made of the same material as the screw cap and is arranged outside the neck of the bottle, below the threaded region of said neck.

[0017] At the output of the bottling facilities, the ring is associated with the lower rim of the screw cap, usually at a series of retention points.

[0018] In this manner, unscrewing the cap necessarily breaks the connection in the retention points and therefore causes the visible and permanent mutual separation of the ring and the cap.

[0019] The known type of annular seal described above has the important drawback of requiring the user to generate a considerable unscrewing force; breaking the retention points and performing the first opening are therefore tiring and often difficult, especially if the user is an elderly person, a young person or in any case a person with limited hand strength.

[0020] The aim of the present invention is to solve the above-mentioned problems, eliminating the drawbacks of the cited known art, by providing a closure device for containers that allows a considerable simplification of manufacturing processes both for the containers and for the closure devices, with a consequent containment of design and manufacturing costs of the machines intended for said manufacturing processes.

[0021] Within this aim, an object of the invention is to provide a closure device that allows to achieve easy closure and opening of the containers, which can be performed easily and simply by any user.

[0022] Another object is to provide a closure device whose manufacture requires the use of machines that are simple because they substantially have no screw-off movements, with a reduction in production and maintenance costs.

[0023] Another object is to provide a closure device that allows to simplify and speed up also the process of bottling said containers.

[0024] Another object is to provide a closure device that has a first opening seal that is effective and at the same time easy to break, so as to ensure easy and simple opening even on the part of particularly weak users.

[0025] Another object is to provide a closure device that is structurally simple and has low manufacturing costs.

[0026] This aim and these and other objects that will

become better apparent hereinafter are achieved by a closure device particularly for a container with an outer neck for liquids, characterized in that it comprises a first body which is provided with first elastically deformable means for connection to the outer neck of said container, a second body being slidingly and selectively associated with said first body and being arranged coaxially and externally, said second body comprising second means for temporary activation of said first means and third means for removing said closure device from said neck.

[0027] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a particular embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figures 1 and 2 are respectively a top perspective view and a bottom perspective view of the first body;
Figure 3 is a bottom view of the first body;
Figures 4 and 5 are respectively a top perspective view and a bottom perspective view of the second body;
Figure 6 is a bottom view of the second body;
Figures 7 and 8 are respectively side sectional views of the second and first bodies;
Figure 9 is a side view of the neck of a bottle with which the invention is associable;
Figures 10 and 11 are side sectional views of the closure device respectively before and after performing the first connection between the cap and the neck of the bottle;
Figure 12 is a side sectional view of the invention after breaking the seal in a partially open position;
Figure 13 is a side sectional view of a different embodiment of the closure device, used for example in the field of glass bottles;
Figures 14 and 15 are two different side sectional views of a different embodiment of the invention.

[0028] With reference to the figures, the reference numeral 1 designates a closure device that is particularly suitable to be used to temporarily close containers such as for example bottles or flasks.

[0029] Those bottles are usually provided with an upper neck 2, which is advantageously cylindrical and forms an opening 3 that allows the passage of substances, particularly liquids, from the inside of the bottle toward the outside and vice versa.

[0030] To allow the closure of the opening 3, which is usually circular, it is possible to use the device 1, which is constituted by a first body 4 and a second body 5, which are mutually coaxially associated so as to allow selective sliding along an axial direction.

[0031] The first body 4 is conveniently constituted by a first cap, shown in detail in Figures 1 to 3, whose shape is similar to that of the opening 3 and therefore, in the particular embodiment illustrated here, substantially circular.

[0032] The first body or cap 4 is provided with first connection means that are elastically deformable and are constituted for example by a plurality of wings 6, which protrude approximately axially from the first perimetric rim, designated by the reference numeral 7, of the first cap 4, and are arranged mutually side by side so as to constitute a first crown, designated by the reference numeral 8.

[0033] The wings 6 are slightly spaced apart and are elastically deformable at least along a radial direction with respect to the shape of the first cap 4, so as to allow the first crown 8 thus formed to undergo slight variations in its diameter.

[0034] The wings 6 have, at their free ends, grip teeth, generally designated by the reference numeral 9, which protrude inward so as to allow temporary and selective connection to an annular lip 10, which protrudes outside the neck 2 of the bottle.

[0035] The annular lip 10 protrudes from the neck 2 at a preset distance from the opening 3 which is approximately equal to the height of the first crown 8 plus the height of the first perimetric rim 7: in this manner, the teeth 9 grip the lip 10 at the same time when the first upper surface, designated by the reference numeral 11, of the first cap 4 closes the neck 2 of the bottle (see Figure 11).

[0036] To allow effective temporary locking of the teeth 9 of the wings 6 on the annular lip 10, the profile of the lip 10 is approximately trapezoidal, so as to comprise an oblique upper side 10a, which is suitable to facilitate the insertion of the first cap 4 over the neck 2 of the bottle, and a lower side 10b, which is orientated approximately at right angles to the first lateral surface of the neck 2, designated by the reference numeral 2a in Figure 9, so as to ensure effective engagement of the grip teeth 9.

[0037] The first cap 4 preferably also comprises first and/or second sealing means, designated by the reference numerals 12 and 13, which are suitable to prevent, after achieving the connection between the closure device 1 and the neck 2, any escape of liquid from the bottle and at the same time ensure tightness against any pressure applied by the contained liquid.

[0038] The first sealing means 12 are constituted for example by one or more circular profiles that protrude inward and in an annular fashion with respect to the first perimetric edge 7: in the illustrated embodiment, three mutually superimposed circular profiles have been obtained which are suitable to abut, when the device 1 closes, against the lateral surface 2a of the neck 2, thus acting as gaskets.

[0039] The second sealing means 13 can instead be constituted for example by a second crown, which protrudes inside the first upper surface 11 of the first cap 4 and is shaped complementarily to the opening 3.

[0040] The temporary connection between the grip teeth 9 of the wings 6 and the annular lip 10 is conveniently achieved by way of second means, designated by

the reference numeral 14, for temporarily activating said first means constituted by the wings 6.

[0041] As shown in Figures 10 and 11, the second means 14 are advantageously constituted by the internal surfaces of the second body 5, which can be constituted for example by the second cap or cover, shown in detail in Figures 4 to 6, or also by a circular ring, not shown, that surrounds externally the first cap 4 and is provided with stroke limiting means for mutual axial sliding.

[0042] In particular, the second activation means 14 are constituted by a second lateral surface 15a and optionally also by a third lateral surface 15b, both of which are obtained inside the second perimetric rim, designated by the reference numeral 16, of the second body or cap 5.

[0043] The second lateral surface 15a is obtained above the third lateral surface 15b and is connected to it by means of a recess 17 that is suitable to provide a difference in diameter between said lateral surfaces.

[0044] In particular, the second lateral surface 15a is shaped approximately complementarily to the first perimetric rim 7 of the first cap, while the third lateral surface 15b has a slightly larger diameter.

[0045] In this way, once the first upper surface 11 of the first cap 4 has been rested on the opening 3 (Figure 10), a lowering of the second cap 5 on the part of the user forces an axial sliding thereof with respect to the first cap 4, with interaction between the wings 6 and the second and third lateral surfaces 15a and 15b.

[0046] This interaction forces an elastic deformation of the wings 6, which are pre-loaded and placed in abutment against the first lateral surface 2a of the neck 2 of the bottle, thus ensuring the interconnection between the grip teeth 9 and the annular lip 10 (as shown in Figure 11).

[0047] In order to facilitate the activation of the first connection means, constituted by the wings 6, the tips 18 of the wings 6 are provided so as to protrude slightly outward, so as to obtain a shape of the crown 8 that is approximately complementary to the second perimetric rim 16.

[0048] When the second cap 5 is raised with respect to the first cap 4 (Figure 12), the previously pre-loaded wings 6 can move away from the first lateral surface 2a, disengaging from the annular lip 10 and allowing therefore to remove the closure device 1 from the neck 2 of the bottle.

[0049] To ensure effective disengagement of the wings 6 from the lip 10, the second cap 5 advantageously has an annular recess, designated by the reference numeral 19, that is suitable to act as a seat for temporarily containing the protruding tips 18 of the wings 6.

[0050] The second cap 5 also comprises third means for removing the closure device 1 from the neck 2, which are advantageously constituted by the annular rim, designated by the reference numeral 20, of the recess 19.

[0051] The annular rim 20, by protruding internally so as to delimit in a lower region the annular recess 19, when the second cap 5 rises with respect to the first cap, interacts with the tips 18 of the wings 6, therefore acting as a stroke limiting means and at the same time ensuring the connection between said first and second caps 4 and 5.

[0052] Moreover, the closure device 1 can comprise fourth means for visually indicating that the first opening of the bottle has occurred.

[0053] The fourth means are constituted for example by a seal 21, which is obtained advantageously at the second upper surface, designated by the reference numeral 22, of the second cap 5, and protrudes downward so as to interact with an approximately complementarily shaped seat 23 formed in the first upper surface 11 of the first cap 4.

[0054] In the illustrated embodiment, the seal 21 is constituted by a plate 24, which lies on a plane that is approximately parallel and lower with respect to the plane of the second surface 22 and is associated or monolithically coupled thereto by way of a plurality of tabs, generally designated by the reference numeral 25.

[0055] In particular, the tabs 25 are preferably equidistant and have at least one weaker region 26, such as for example a region that has a considerably reduced cross-section with respect to the dimensions of the plate 24.

[0056] In this manner, once the first closure of the device 1 has occurred and once the second cap 5 has been lowered from the position of Figure 10 to the position of Figure 11, the interconnection by interference between third perimetric edge 27 of the plate 24 and the lateral edges of the seat 23 is achieved.

[0057] The plate 24 can be for example substantially circular or oval or cross-shaped, such as the one shown in the figures, or rectangular or square or any other advantageously flat shape, so long as it has third perimetric edges 27 that interact by interference in the seat 23 so as to ensure effective clamping of the plate 24.

[0058] The interconnection of the plate 24 and the seat 23 must ensure the generation of a force that is greater than the force required to break the tabs 25 at their weaker region 26.

[0059] This is ensured thanks to an appropriate choice of dimensions for the plate 24 with respect to the seat 23, so that the elastic deformation that has occurred in the interconnection and the friction between the contact surfaces are such as to cause, when the second body 5 is lifted, the breakage of the tabs 25 and therefore break the seal 21, as shown in Figure 12.

[0060] The closure device 1 can be used with bottles or flasks made of plastics or other kinds of container, provided that they have, along the first lateral surface 2a of the neck 2, grip means for the teeth 9 of the wings 6, such as for example the annular lip 10 shown in the figures.

[0061] Figure 13, for example, illustrates the upper part of a known type of glass bottle, commonly used to

contain beverages such as wine or beer: like the plastic bottle, in this case also it is possible to associate with the neck 2 of the glass bottle a closure device 1 of appropriate dimensions.

[0062] Operation is therefore as follows: with reference to Figures 10, 11 and 12, the first connection of the closure device to the neck of the bottle consists in resting the device on the opening of the bottle so that the first perimetric rim of the first cap lies outside the first lateral surface of the neck.

[0063] Then the second outer cap is lowered with respect to the first cap, so as to make the wings of the first cap abut against the neck of the bottle, achieving an interconnection between the grip teeth of the wings and the annular lip that protrudes on the outside of said neck.

[0064] At the same time, interconnection occurs between the plate of the seal and the respective seat formed on the upper surface of the first cap.

[0065] The bottle can be opened by removing the closure device and therefore by lifting the second cap.

[0066] In the first upward motion of the second cap, the seal is broken by breaking the tabs that connect the plate to the second cap.

[0067] Then, as the second cap continues to rise with respect to the first one, the third removal means are activated by means of the contact between the annular rim that protrudes downward from the second cap and the tips of the wings of the first cap, which are pre-loaded beforehand and have moved apart so as to occupy at least partially the annular recess formed inside the second perimetric rim of the second cap.

[0068] Further lifting of the second cap entails removing the device and therefore opening the bottle.

[0069] Actually, the opening sequence described above consists of a single movement performed by the user: such movement is very difficult to obtain accidentally, since the lower rim of the device rests adjacent to, or against, the base of the neck of the bottle, as shown in Figure 11.

[0070] Moreover, if the liquid contained in the bottle is for example sparkling wine, beer or any carbonated beverage, the presence of an internal pressure that is higher than the atmospheric pressure does not entail a danger of accidental removal of the closure device, since the pressure acts on the first inner cap, which is locked between the second cap and the neck, and in no way acts on the second cap.

[0071] It has thus been found that the invention has achieved the intended aim and objects, a closure device for containers having been provided which can be obtained by means of a considerable simplification of the manufacturing processes suitable to manufacture the containers and the closure devices, since it is no longer necessary to perform complicated molding processes to obtain the thread or to perform unscrewing movements in order to follow the thread.

[0072] This leads to a great simplification of the manufacturing process and of the step of the bottling process and to a consequent reduction of design and manufacturing costs of machines intended for these processes.

[0073] At the same time, the closure and opening obtainable with the invention are easy and straightforward and at the same time ensure maximum safety against accidental openings of the container.

[0074] The invention is extremely simple to use even for a first bottling of liquids such as wine, since instruments or machines for bottling are not required: this is particularly advantageous in the case of domestic or handicraft use.

[0075] Moreover, the invention is provided with a first opening seal that is highly effective and at the same time simple, since it can be obtained monolithically with said first or second body.

[0076] The seal can be broken by means of a translational motion or a combined rotational and translational motion, which can be obtained with a limited force since the distance of the rim of the seal from the axis of the device 1 is much smaller than the distance between the point of application of the force and the axis.

[0077] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Thus, for example, it is possible to provide a device that is suitable to close containers having non-circular openings, for example oval, rectangular or polygonal openings.

[0078] This leads to the considerable advantage of being able to provide bottle necks, and the corresponding closure devices, whose shape is square, rectangular or in any case different from circular.

[0079] In particular, it is possible to use for example an oil container provided with a closure device according to the invention that is hexagonal and therefore does not require devices commonly known as drip-stops.

[0080] Likewise, the closure device can comprise the first opening seal described above or a seal of another kind, for example associated with the first body rather than with the second body, or might not comprise any type of seal at all.

[0081] The invention can be used not only to close containers for liquids but also, for example, to close jars of jams or creams, bottles or tubes for food substances or medical substances or hygienic substances, and more generally for any fluid, substance or granular material that requires storage or transport.

[0082] In Figures 14 and 15, the reference numeral 101 designates a different embodiment of the closure device that can be used particularly for example to close containers for carbonated beverages.

[0083] The device 101 is constituted by a first body 104 and a second body 105, which are mutually coaxially associated so as to allow selective sliding along an axial direction.

[0084] The first body 104 is shaped like the first body 4 described above, and therefore has first elastically deformable connection means constituted by a plurality of wings 106, which protrude axially from the first perimet-

ric rim 107 of the first body 104.

[0085] The wings 106 have, at their free ends, engagement hooks or teeth 109, which protrude inward so as to allow temporary and selective connection to an annular lip 110, which protrudes externally and perimetrically with respect to the neck, designated by the reference numeral 102, of the bottle.

[0086] The temporary connection between the grip teeth 109 of the wings 106 and the annular lip 110 of the bottle is achieved by way of second means 114 for temporarily activating the first means or wings 106.

[0087] In particular, the second means 114 are constituted by the internal surface, designated by the reference numeral 115, of the second body 105, which is constituted for example by a cap that surrounds at least partially the first body 104.

[0088] As in the previous embodiment, when the second body 105 is moved down over the first body 104, the first means close around the neck 102 of the bottle and therefore the bottle is clamped.

[0089] In this embodiment, the lowering of the second body 105 is also accompanied by the closure, by means of a protrusion 180 that protrudes centrally and downward with respect to the second body 105, of a complementarily shaped hole, not shown in the figures, which is obtained in the first upper surface 111 of the first body 104.

[0090] In this manner, when the second body 105 is first lifted with respect to the first body 104, the protrusion 180 disengages from the respective hole, allowing the escape of the excess gases and therefore the balancing of the internal pressure and of the external pressure before the bottle is opened completely.

[0091] The materials used, as well as the dimensions that constitute the individual components of the invention, may of course be more pertinent according to specific requirements.

[0092] The various means for performing certain different functions need not certainly coexist only in the illustrated embodiment but can be present per se in many embodiments, including ones that are not illustrated.

[0093] The disclosures in Italian Patent Application No. TV2002A000025 from which this application claims priority are incorporated herein by reference.

[0094] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A closure device particularly for a container with an outer neck for liquids, **characterized in that** it comprises a first body which is provided with first elastically deformable means for connection to the outer neck of said container, a second body being slidingly and selectively associated with said first body and being arranged coaxially and externally, said second body comprising second means for temporary activation of said first means and third means for removing said closure device from said neck.

2. The closure device according to claim 2, **characterized in that** said first connection means protrude from said first body so as to allow selective and temporary connection to one or more grip elements protruding externally with respect to said neck of said container.

3. The closure device according to claim 2, **characterized in that** said first body comprises a first upper surface, perimetrically to which there protrudes approximately axially a first perimetric rim for supporting said first connection means.

4. The closure device according to claim 3, **characterized in that** said connection means, which are elastically deformable, are constituted by a plurality of wings that protrude approximately axially from said first perimetric rim of said first body and are arranged mutually side by side so as to constitute a first crown.

5. The closure device according to claim 4, **characterized in that** said wings, which are mutually equidistant, are elastically deformable at least along a radial direction with respect to the shape of said first body, so as to allow to vary the diameter of said first crown.

6. The closure device according to claim 4, **characterized in that** said wings of said first body have, at free ends thereof, at least one grip hook or tooth, which protrudes inward for temporary and selective connection to said one or more grip elements of said neck.

7. The closure device according to claim 4, **characterized in that** said one or more grip elements of said neck are constituted by an annular lip, which protrudes outward from said neck of said container.

8. The closure device according to claim 7, **characterized in that** said lip protrudes from said neck at a preset distance from the opening of said container, said distance being approximately equal to the height of said first crown plus the height of said first perimetric edge, so as to ensure that the grip of said teeth on said lip occurs approximately simultaneously with the resting on said neck of said first upper surface of said first body.

9. The closure device according to claim 8, **characterized in that** said annular lip has a profile that is approximately trapezoidal and is formed by an oblique upper side, so as to ensure the insertion of said first body along said neck, and by a lower side, which is orientated approximately at right angles to the first lateral surface of said neck, so as to ensure effective grip of said grip teeth.

10. The closure device according to claim 1, **characterized in that** said second body is constituted by a second cap, which is provided with a lateral surface that at least partially surrounds said first body which is constituted by a first cap, and with means for limiting the stroke of mutual axial sliding of said first and second caps.

11. The closure device according to claim 10, **characterized in that** said second body is constituted by a circular ring that is provided with a lateral surface that at least partially wraps around said first body and with means for limiting the stroke of the mutual axial sliding of said first and second caps.

12. The closure device according to claim 2, **characterized in that** said second body comprises a second upper surface, perimetrically to which a second perimetric rim protrudes approximately axially, said second rim comprising said second means for activating said first means.

13. The closure device according to claim 12, **characterized in that** said second means for temporary activation of said first means are constituted by inner surfaces of said second perimetric rim of said second body.

14. The closure device according to claim 13, **characterized in that** said inner surfaces of said second body, which constitute said second activation means, comprise a second lateral surface that is shaped approximately complementarily to said first perimetric edge of said first body.

15. The closure device according to claim 14, **characterized in that** said inner surfaces of said second body, which constitute said second activation means, comprise a third lateral surface which has a slightly larger diameter than said first perimetric rim of said first body.

16. The closure device according to claim 15, **characterized in that** said second lateral surface of said second cap is provided above said third lateral surface and is connected thereto by means of a recess.

17. The closure device according to claim 4, **characterized in that** after resting said first upper surface of said first body on the opening of said neck, a downward movement of said second cap forces an axial sliding thereof with respect to said first body, consequently activating said first connection means.

18. The closure device according to claim 17, **characterized in that** the downward movement of said second cap with respect to the first body forces an elastic deformation of said wings, preloading them and placing them in abutment against said first lateral surface of said neck, so as to achieve temporary connection between said grip teeth and said annular lip.

19. The closure device according to claim 16, **characterized in that** said second lateral surface of said second cap has a diameter that is approximately equal to the diameter of said first perimetric rim of said first body.

20. The closure device according to claim 4, **characterized in that** the tips of said wings are provided so as to protrude slightly outward.

21. The closure device according to claim 20, **characterized in that** said third lateral surface of said second cap has a diameter that is approximately equal to the minimum diameter of said first crown of said first body, measured at said free ends of said wings.

22. The closure device according to claim 15, **characterized in that** an annular recess is obtained below said third lateral surface of said second cap and is suitable to allow to temporarily contain said protruding tips of said wings.

23. The closure device according to claim 22, **characterized in that** the lifting of said second cap with respect to the first cap allows to move said previously preloaded wings away from said first lateral surface of said neck and to accommodate said wings in said recess of said second cap, consequently disengaging said first crown from said annular lip of said neck.

24. The closure device according to claim 14, **characterized in that** said third means for removing said closure device from said neck are constituted by an annular rim that protrudes inward from said second body so as to delimit said recess in a lower region.

25. The closure device according to claim 24, **characterized in that** said annular rim has a minimum diameter that is comprised between the diameter of said annular lip and the diameter of said first crown, measured with said wings in the inactive position.

26. The closure device according to claim 25, **characterized in that** said annular rim constitutes a stroke limiting means during the lifting of said second cap with respect to the first one, by interacting with said tips of said wings.

27. The closure device according to claim 3, **characterized in that** it comprises fourth means for indicating visually that a first opening of said container has occurred, said means being constituted by a seal that is associated with, or monolithically coupled to, said second upper surface of said second body.

28. The closure device according to claim 27, **characterized in that** said seal is constituted by a plate that protrudes downward from said upper second surface, so as to interact with a seat that is shaped approximately complementarily and is formed in said first upper surface of said first body.

29. The closure device according to claim 28, **characterized in that** said plate, which lies on a plane that is approximately parallel to, and lower than, the plane of said second upper surface, is associated with it or monolithically coupled to it by means of two or more tabs.

30. The closure device according to claim 29, **characterized in that** each one of said tabs, which are equidistant, has at least one weaker region, such as a region having a reduced cross-section.

31. The closure device according to claim 28, **characterized in that** the distance between said plate and said second upper surface is approximately equal to the depth of said seat formed in said first upper surface of said first body.

32. The closure device according to claim 28, **characterized in that** said plate is suitable to interact with said seat following the first closure of said device, so as to produce, when said second cap rises, the breakage of said tabs.

33. The closure device according to claim 28, **characterized in that** said plate has third perimetric rims that interact by interference in said seat so as to provide a locking force that is greater than the force required to break said tabs at said weaker regions.

34. The closure device according to claim 12, **characterized in that** it comprises separate means for balancing the internal pressure of said bottle to a value proximate to the external pressure, said means being activatable automatically during the opening of said bottle.

35. The closure device according to claim 34, **characterized in that** said separate pressure balancing means comprise a through hole, which is provided approximately centrally in said first upper surface of said first body and can be closed temporarily, when said second body is lowered, by means of a complementarily shaped protrusion that protrudes downward from said second upper surface of said second body.

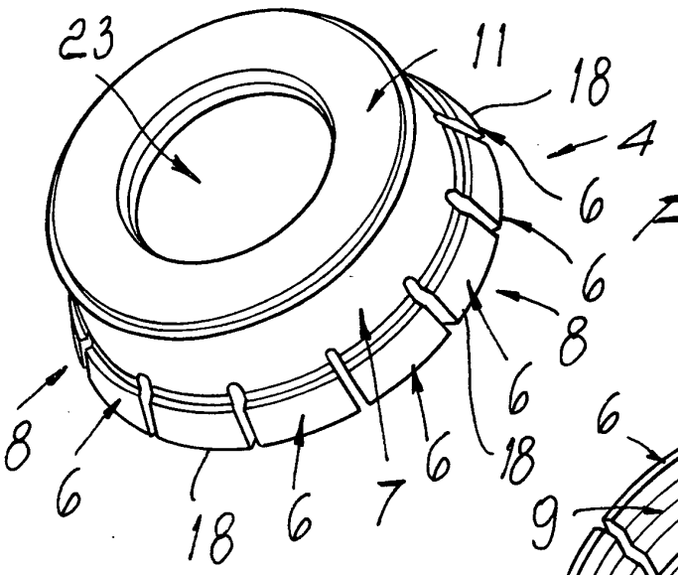


Fig. 1

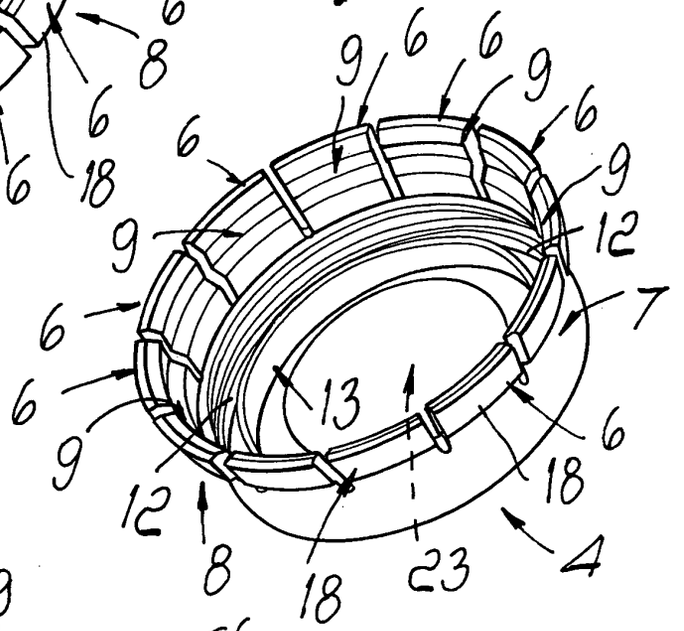


Fig. 2

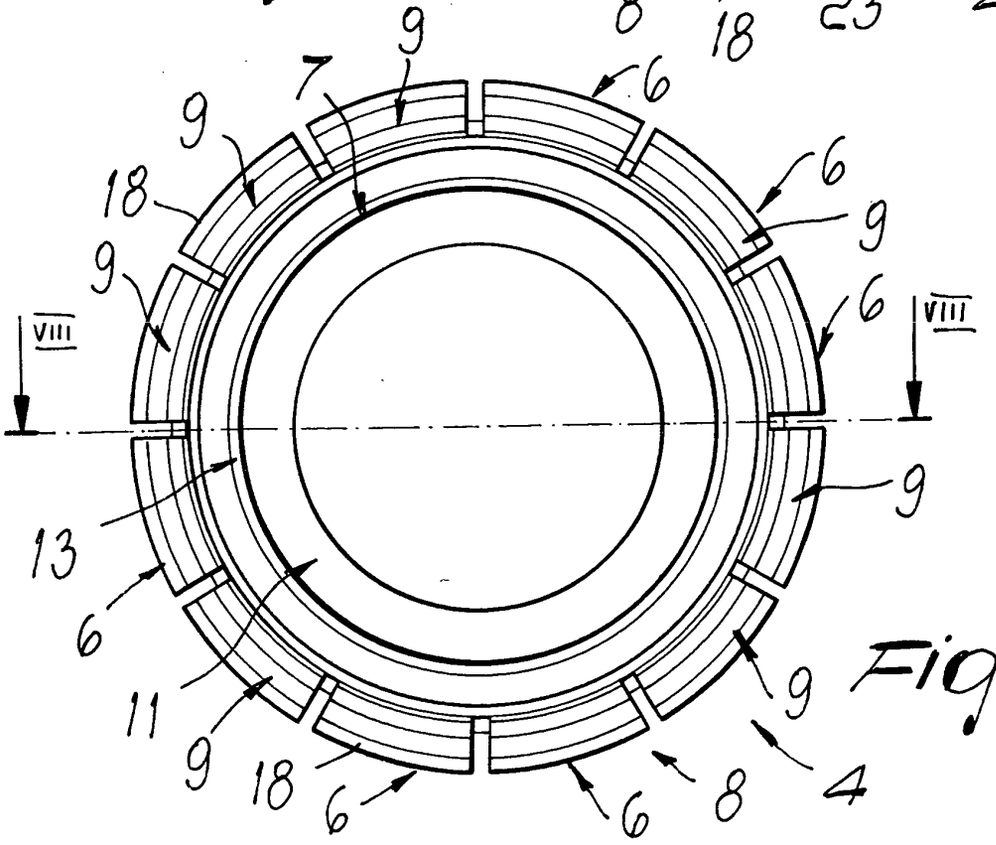


Fig. 3

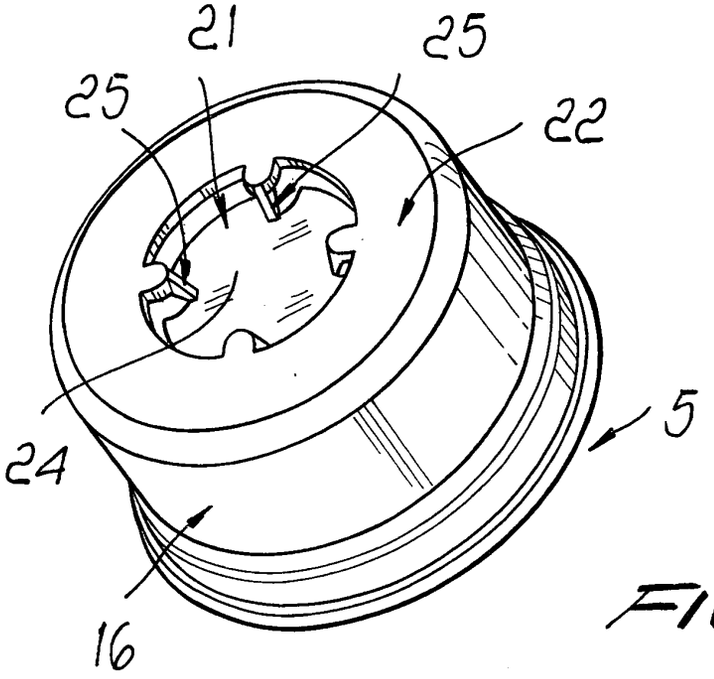
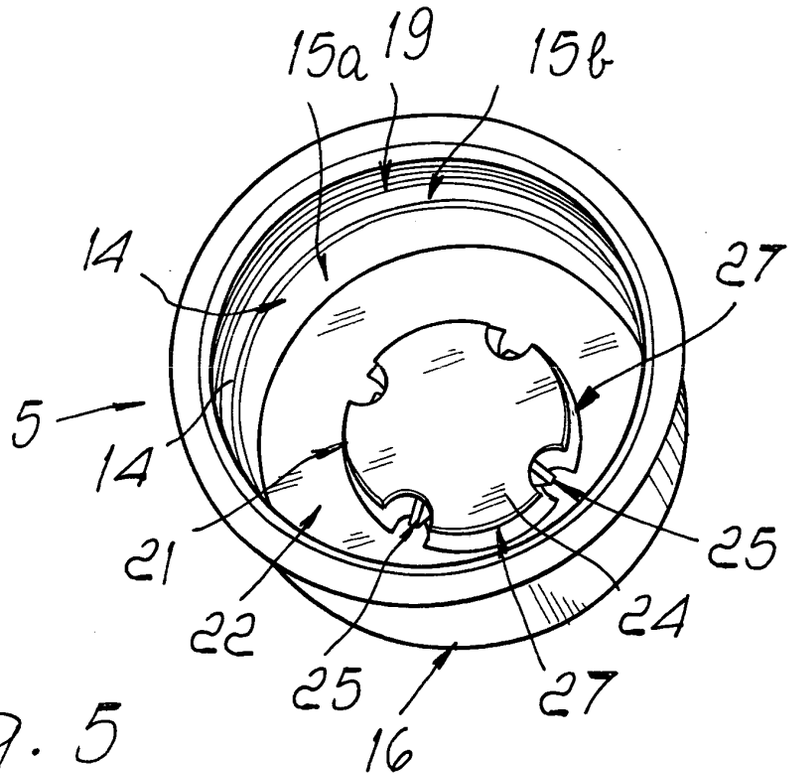


Fig. 4



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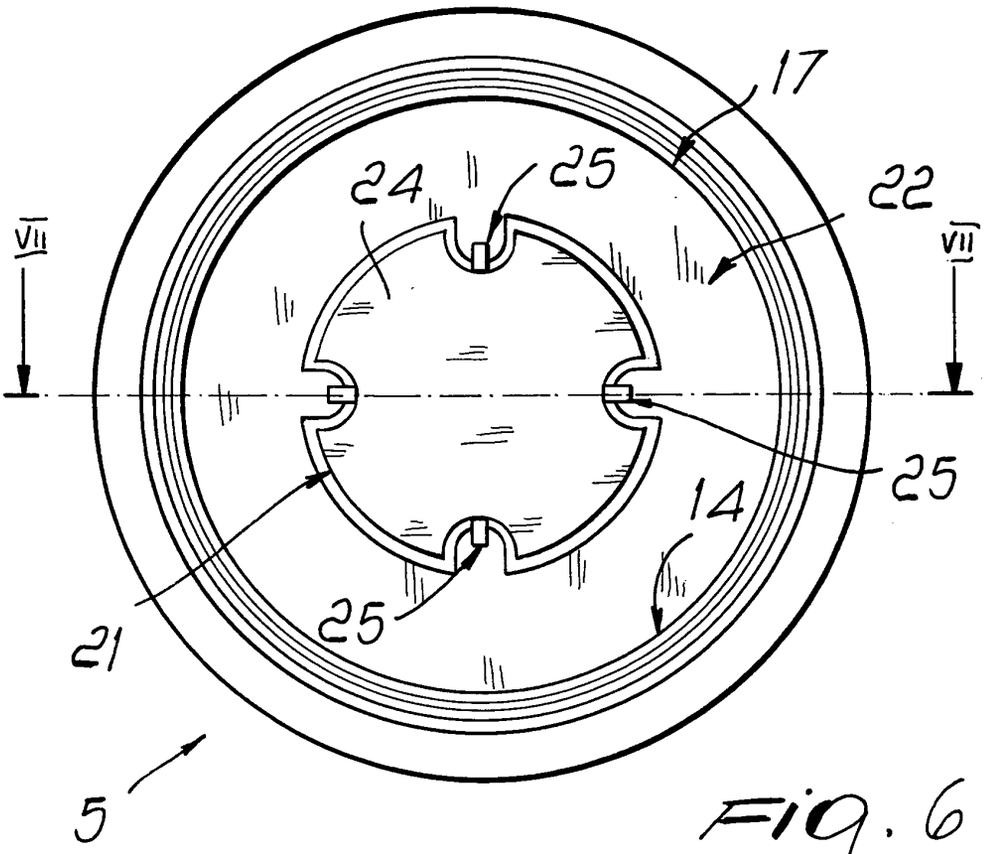
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Fig. 6

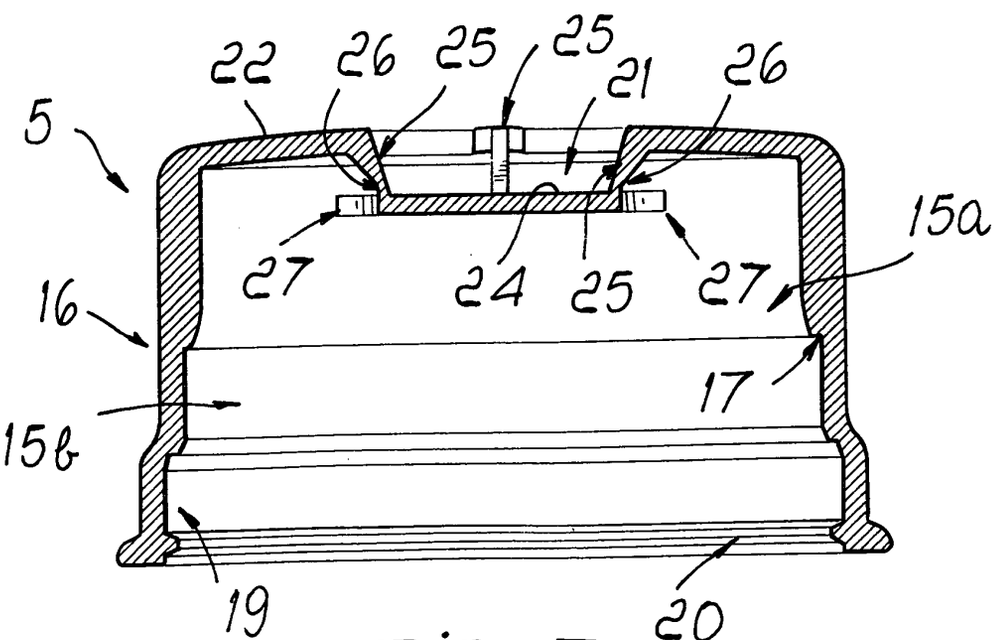
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Fig. 7

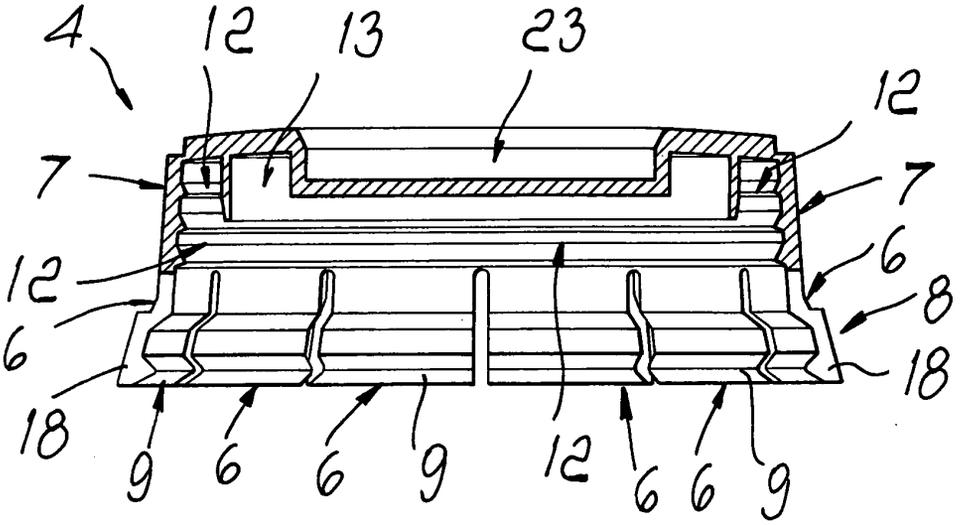
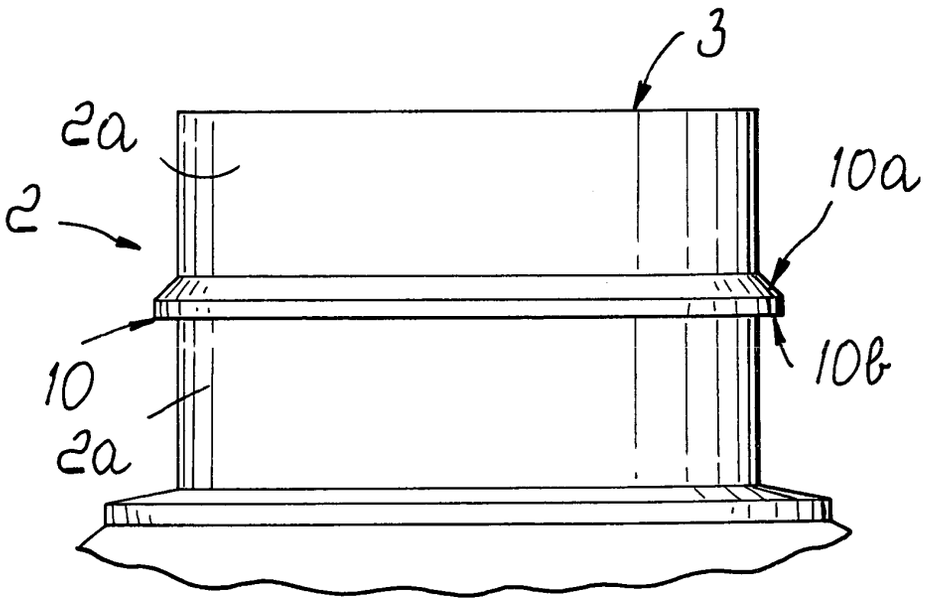


Fig. 8



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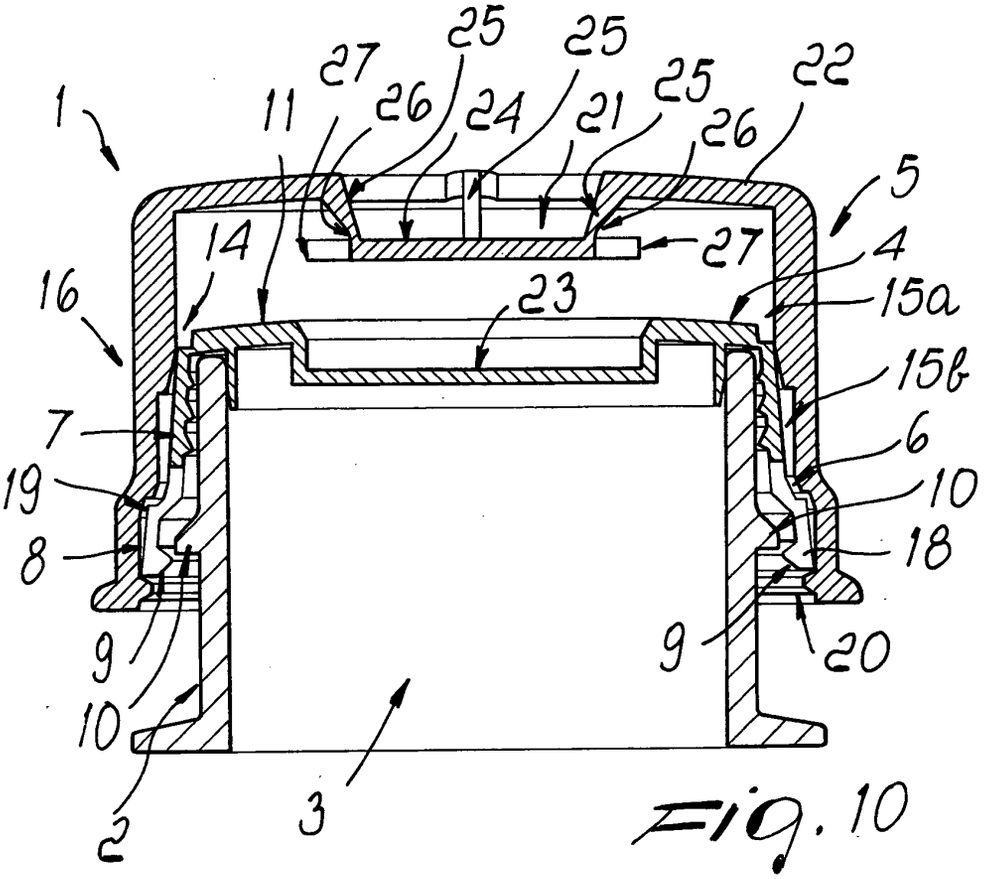
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Fig. 10

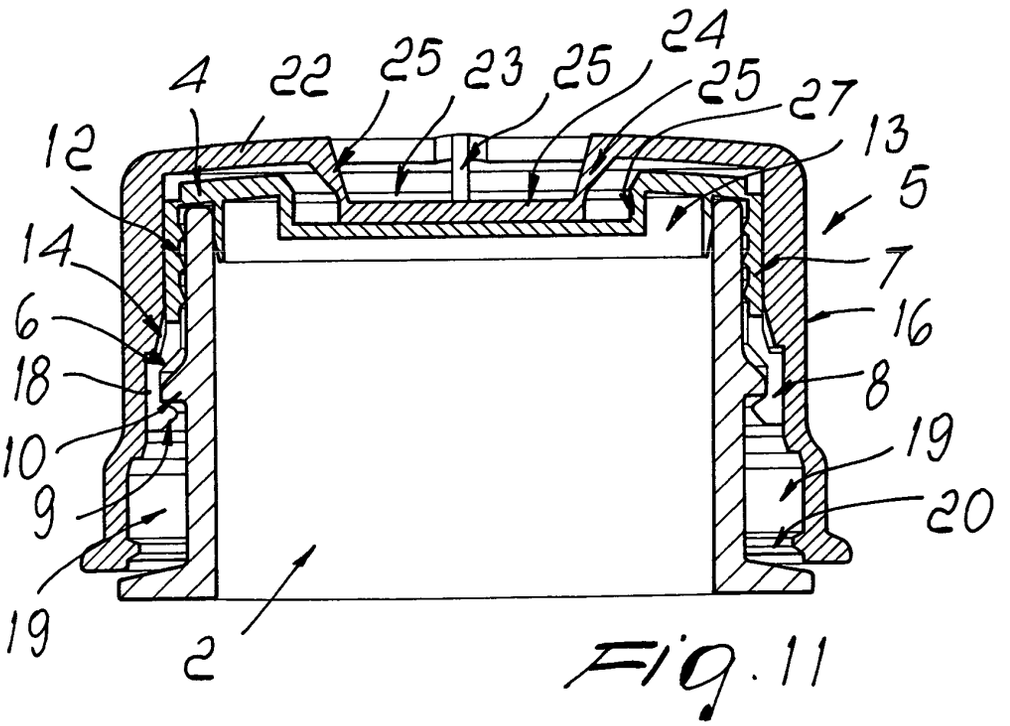
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Fig. 11

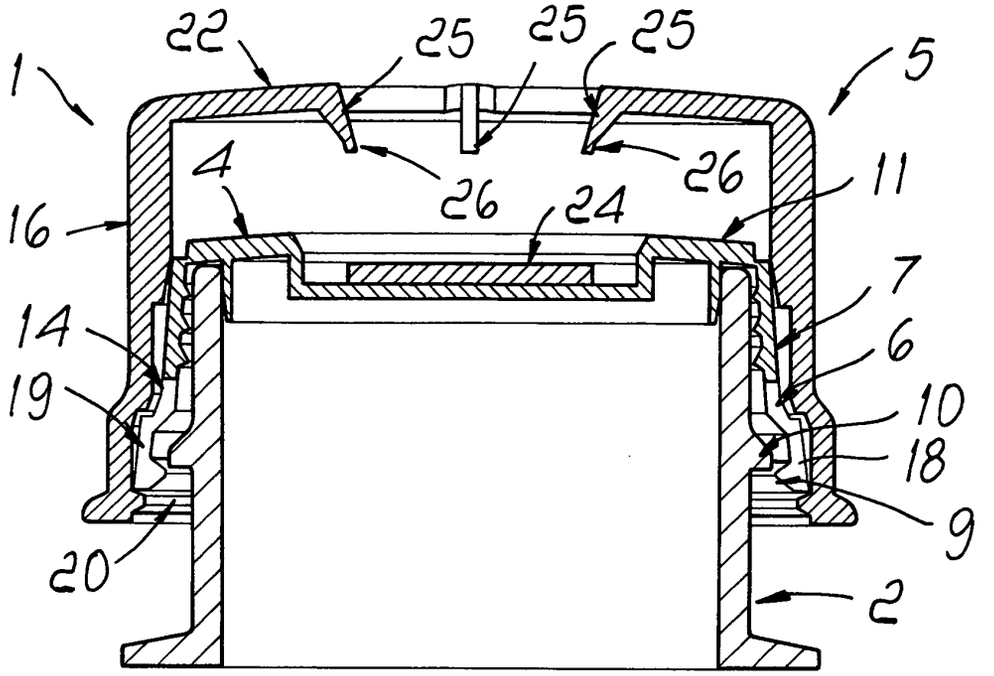
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Fig. 12

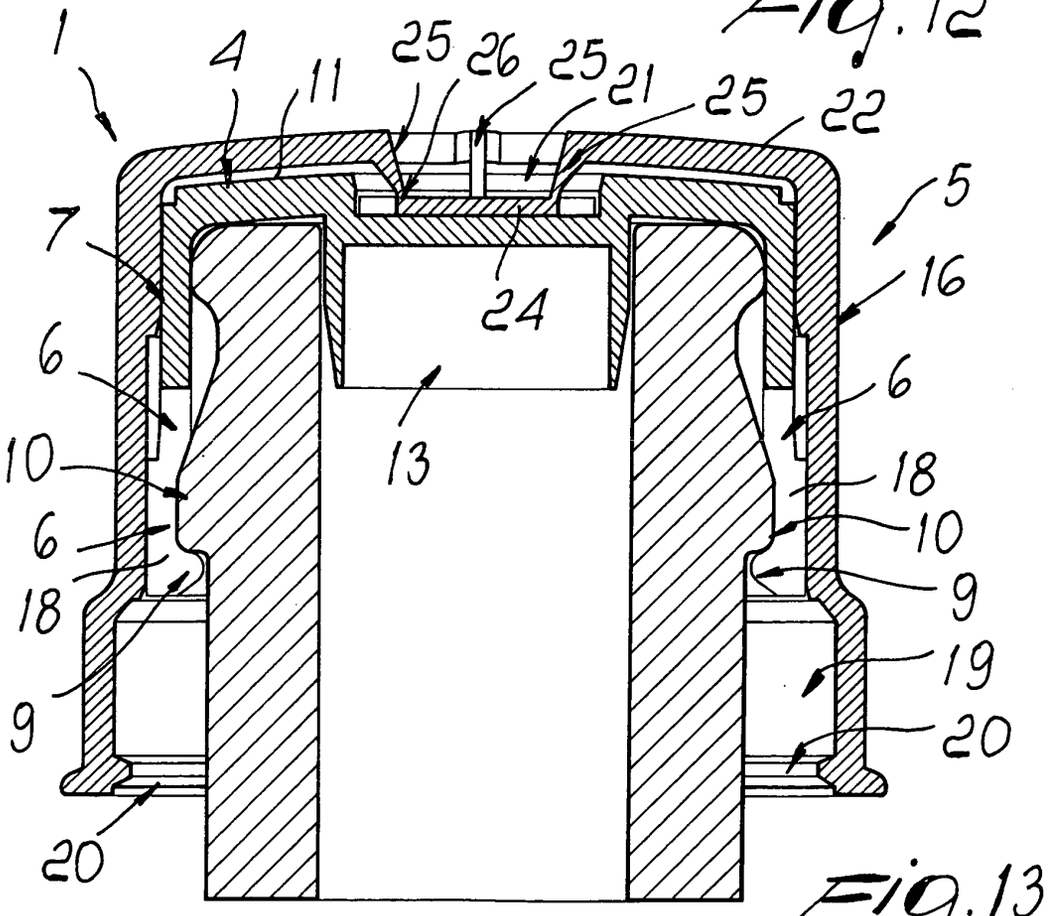
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Fig. 13

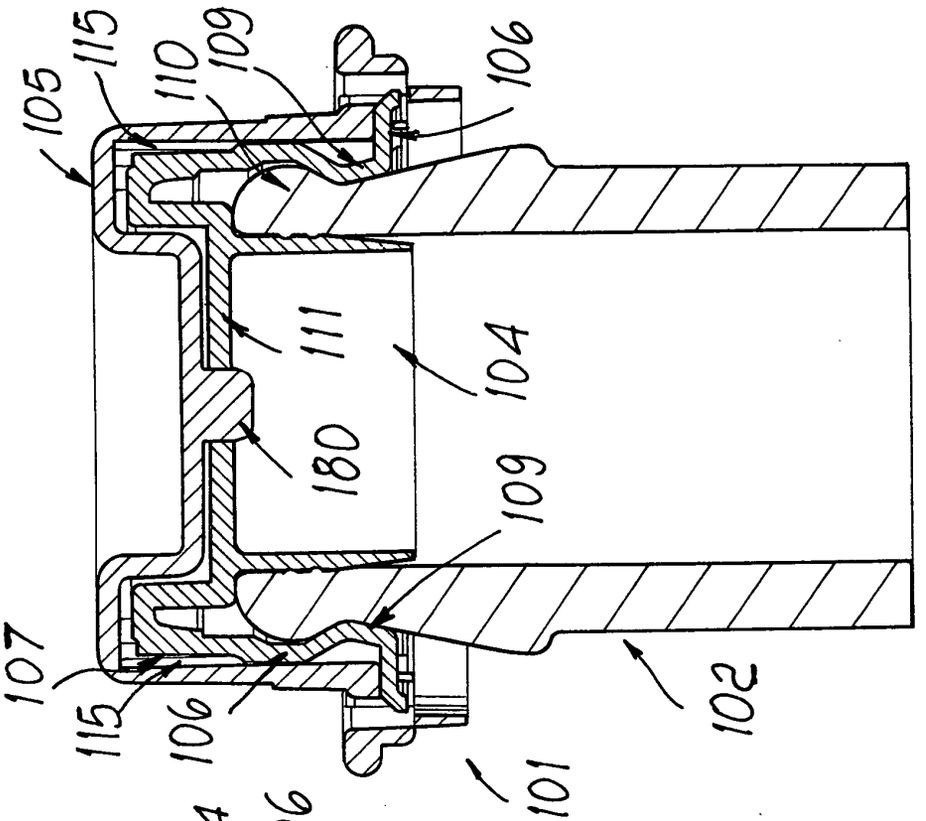
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Fig. 15

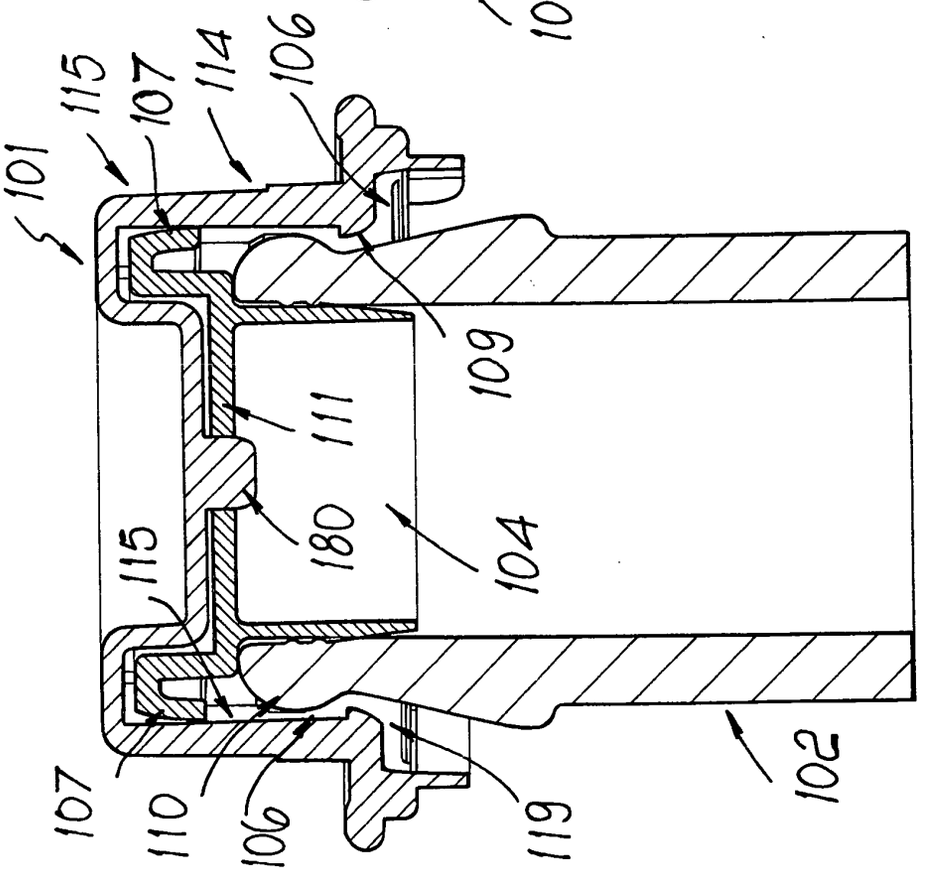
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Fig. 14