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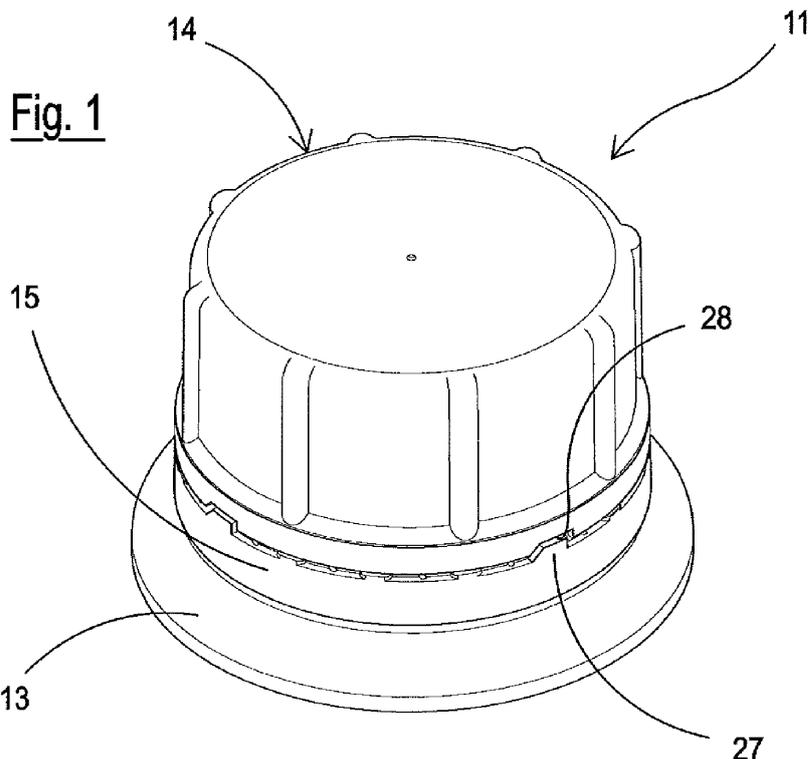
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**(54) Closure for containers with improved sealing**

(57) A closure for containers with improved sealing comprising a covering capsule (14) in the form of an overturned cup, provided with an inner threading (17) and guarantee ring (15) connected to the covering capsule (14) by means of a series of frangible bridges (16), and a mouth (12) of a container (13) provided with an outer threading (24), wherein said covering capsule (14), close

to its flat top, is provided with an annular rib protruding inwardly (18), having a diameter close to or slightly smaller than the outer diameter of an upper end of the mouth (12) on which it is engaged, and said guarantee ring (15) comprises a series of flaps (19) protruding inwardly which, upon rotation, are engaged in flaps protruding outwardly (20) positioned at the base of the mouth (12) of the container (13).



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## Description

**[0001]** The present invention relates to a closure for containers with improved sealing.

**[0002]** This invention falls within the field of closures for containers, in particular containers having an opening provided with an outer threading on which a capsule is positioned. In this type of closure, in particular for containers of special liquids, such as oils or similar products, the necessity is particularly felt for having an optimum closure with maximum sealing, in order to avoid any drawbacks due to unexpected leakages.

**[0003]** These closures are in fact generally obtained by capsules equipped with respective washers which are positioned on the mouth of the container, provided with a relative guarantee ring.

**[0004]** The breakage of the guarantee ring is caused by rotation of the capsule, with breakage of the frangible bridges, normally positioned between the ring and lower edge of the capsule.

**[0005]** Due to the specific nature of the capsule generally made of plastic material, the guarantee bridges tend to stretch with the rotation of the capsule and do not break immediately. There is therefore a partial rotation of the capsule on the threading of the mouth of the container, and the inner part of the capsule and washer, if present, moves away from the upper edge of the mouth of the container.

**[0006]** Consequently, if the container is overturned, at least partially, the liquid contained therein leaks from the space created and exits.

**[0007]** Furthermore, in this type of closure, when the first opening is effected, with the removal of the capsule to be able to pour the liquid, it may happen that the washer situated inside the capsule falls out and is lost, if the user is not aware of this. Consequently, with the subsequent closure, when the capsule is fully screwed onto the mouth, the closure may have a defective sealing. Or, if the screwing of the capsule onto the mouth is not complete, there is definitely no sealing and a possible leakage is certain at this point.

**[0008]** Many attempts have been made to solve this problem and many solutions have been proposed, which, however, as of today have not provided a correct solution to the problem.

**[0009]** The general objective of the present invention is therefore to solve the above-mentioned drawbacks of closures of this type of the known art, in a simple, economical, functional and reliable manner.

**[0010]** Another objective of the present invention is to provide a sealed closure also in the presence of a not-completely screwed position of the capsule on the mouth of the container.

**[0011]** Yet another objective is to provide a sealed closure which is maintained after its first opening.

**[0012]** A further objective of the present invention is to provide a sealed closure in which the possible washer is firmly positioned below the capsule.

**[0013]** In view of the above objectives, according to the present invention, a closure for containers with an improved sealing has been conceived, having the characteristics specified in the enclosed claims.

**[0014]** The structural and functional characteristics of the present invention and its advantages with respect to the known art will appear even more evident from the following description, referring to the enclosed drawings, which, inter alia, show schemes of embodiments of a closure for containers with an improved sealing, according to the invention. In the drawings:

- figure 1 shows a schematic perspective view from above of a closure for containers with improved sealing according to the present invention;
- figure 2 shows a raised sectional view of the outer capsule alone of a closure with a guarantee ring according to the invention;
- figure 3 is a perspective view from below of the outer capsule alone of a closure according to the invention;
- figure 4 shows a perspective view from above of the mouth of a container forming part of the closure according to the present invention;
- figure 5 shows a raised, half-sectional view, of a first embodiment of a closure according to the invention;
- figure 6 shows a section following the line VI-VI of figure 5;
- figure 7 shows a raised sectional view of a second embodiment of a closure according to the invention;
- figure 8 shows a raised sectional view of a third embodiment of a closure according to the invention.

**[0015]** A closure for containers with an improved sealing according to the present invention is illustrated hereunder, indicated as a whole with 11 in figure 1.

**[0016]** The closure for containers essentially comprises a mouth 12 of a container 13, only partially shown, having an outer threading 24, and a covering and closing capsule 14, equipped with a guarantee ring 15, connected to the covering capsule 14 by means of a series of frangible bridges 16. Figures 1 and 5 also show teeth 27 inserted in relative seats 28 which allow the correct assembly and centering of the capsule 14 with the guarantee ring 15 on the mouth 12 of the container without any breakage of the bridges 16.

**[0017]** The covering capsule 14, in the form of an overturned cup, internally comprises a threaded area 17 which terminates near the flat top with an annular rib protruding inwardly (18), having a smaller diameter than that of the threading 17, which forms a housing.

**[0018]** The guarantee ring 15 comprises a series of flaps (19) protruding inwardly which are engaged in flaps protruding outwardly 20 produced in a hollow annular portion 21 at the base of the mouth 12 of the container 13. As better illustrated in figure 6, these flaps protruding outwardly 20 in the example shown, are produced in two short opposite sections of the hollow annular portion 21 of the mouth 12.

**[0019]** The flaps 19 protruding towards the inside of the guarantee ring 15, are flexible only in one rotation direction so that they become blocked in the other direction if engaged with the flaps protruding outwardly 20, at the base of the mouth 12. This torsion ensures a definite breakage of the bridges 16.

**[0020]** Figure 5 shows a raised half-sectional view of a first embodiment of the closure according to the invention. This example, in addition to what has been described before with respect to the covering capsule 14, also shows a flat circular washer 22. This washer 22 is positioned between the flat top of the covering capsule 14 and the annular rib protruding inwardly 18 in the housing situated therein. Thanks to the presence of the annular rib protruding inwardly 18, as the washer 22 has a larger diameter than the inner diameter of the rib 18, it is firmly positioned therein. Furthermore, according to the present invention, the annular rib protruding towards the inside 18 of the capsule 14, advantageously has a diameter equal to or slightly smaller than the outer diameter of the upper end of the mouth 12, so that it is engaged on the latter and guarantees a good seal between the parts.

**[0021]** With the rotation of the covering capsule 14 with respect to the mouth 12 of the container 13, when the capsule is lifted upwards due to the reciprocal engagement of the threads, this seal is maintained for a short section even without possible breakage of the frangible bridges 16 between the guarantee ring 15 and the covering capsule 14.

**[0022]** According to the invention, moreover, the breakage of the frangible bridges 16 between the guarantee ring 15 and covering capsule 14 is effected after a minimum rotation of the parts, as there is a double positioning of flaps 19 and 20 previously described. The flaps 19, in fact, protruding towards the inside of the guarantee ring 15, with a first unscrewing rotation, become blocked in engagement with the flaps protruding outwardly 20 at the base of the mouth 12, causing an immediate breakage of the frangible bridges 16.

**[0023]** Consequently, with the new and original positioning of the closure according to the present invention, double security is obtained: a secure sealing against possible leakages, a secure immediate breakage of the bridges.

**[0024]** Figure 7 shows a raised sectional view of a second embodiment of a closure according to the invention, which comprises a so-called "under-cap" 25 instead of the washer 22 shown in the first example.

**[0025]** The "under-cap" 25 is partially inserted inside the mouth 12 in order to close the container. An annular cylindrical portion 26 extending towards the bottom of the "under-cap" 25 is positioned inside the mouth 12 of the container 13. In addition, a folded peripheral end 29 of the "under-cap" 25 is positioned between the flat top of the covering capsule 14 and the annular rib protruding inwards 18 in the housing thus defined, remaining firmly constrained to the capsule 14.

**[0026]** Also in this example, the presence of the protruding annular rib protruding inwardly 18 inside the capsule 14 creates a seal with the end of the outer wall of the mouth 12 in a large section of the unscrewing phase of the capsule 14 from the mouth 12 of the container 13.

**[0027]** In this example, the flaps 19 protruding towards the inside of the guarantee ring 15 are also present and, with the unscrewing rotation of the capsule 14, they become engaged with the flaps protruding outwardly 20 situated at the base of the mouth 12, causing an immediate breakage of the frangible bridges 16.

**[0028]** In this example of the invention, there is also a new and original arrangement of the closure having a double security: a secure sealing against possible leakages and a secure immediate breakage of the bridges with the first unscrewing.

**[0029]** Figure 8 shows a third embodiment of a closure according to the invention, in which the capsule has in its interior, a downward cylindrical extension 30 suitable for being inserted and engaged inside the end of the mouth 12. Furthermore, as previously in the capsule of the invention, there is the presence of the annular rib protruding inwardly 18 inside the capsule 14.

**[0030]** In this example, moreover, a small washer 31 is envisaged, which is "bun-shaped" or having a square or circular section, positioned between the downward cylindrical extension 30, annular rib protruding inwardly 18 and end of the mouth 12, when screwed, to obtain an even better sealing once the capsule 14 has been screwed onto the container 13.

**[0031]** There is no need to repeat that, also in this example, there are flaps 19 protruding towards the inside of the guarantee ring 15 which, with the unscrewing of the capsule 14, become engaged with the flaps protruding outwardly 20 situated at the base of the mouth 12, causing an immediate breakage of the frangible bridges 16.

**[0032]** In this embodiment example there are also primary characteristics of the invention, i.e.:

- annular rib protruding towards the inside 18 of the capsule to obtain a secure sealing against possible leakages and
- combination of flaps 19, 20 cooperating with each other on the guarantee ring 15 and on the mouth 12 of the container 13 to ensure an immediate breakage of the bridges with the first unscrewing.

**[0033]** All the important features forming part of the present invention can be found in these non-limiting examples.

**[0034]** The objectives indicated in the premises of the description have thus been achieved.

**[0035]** The forms of the structure for producing a closure according to the invention, as also the materials and assembly modes, can obviously differ from those shown for purely illustrative and non-limiting purposes in the drawings.

**[0036]** The protection scope of the present invention is therefore defined by the enclosed claims.

(31) is "ring"-shaped or has a squared or circular section.

## Claims

1. An improved sealed closure for containers comprising a covering capsule (14) in the form of an overturned cup, provided with an inner threading (17) and security ring (15) connected to the covering capsule (14) by means of a series of frangible bridges (16), and a mouth (12) of a container (13) provided with an outer threading (24), **characterized in that** said covering capsule (14), close to its flat top, is provided with an annular rib protruding inwardly (18), having a diameter close to or slightly smaller than the outer diameter of an upper end of the mouth (12) on which it is engaged, and said security ring (15) comprises a series of flaps (19) protruding inwardly which, upon rotation, are engaged in flaps protruding outwardly (20) positioned at the base of the mouth (12) of the container (13).
 

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2. The closure for containers according to claim 1, **characterized in that** it also comprises a flat circular washer (22) situated between the flat top of the covering capsule (14) and the annular rib protruding inwardly (18).
 

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3. The closure for containers according to claim 1, **characterized in that** it also comprises an "under-cap" (25) positioned between the flat top of the covering capsule (14) and the annular rib protruding inwardly (18), called "under-cap" (25), being partially inserted inside said mouth (12) with its annular cylindrical portion (26) extending downwards and having a folded peripheral end (29).
 

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4. The closure for containers according to claim 3, **characterized in that** said folded peripheral end (29) is positioned between the flat top of the covering cap (14) and the annular rib protruding towards inwardly (18). (12) of the container (13).
 

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5. The closure for containers according to claim 1, **characterized in that** said covering cap (14) also comprises in its interior a cylindrical downward extension (30) suitable for being inserted and engaged inside the end of the mouth (12).
 

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6. The closure for containers according to claim 5, **characterized in that** between said cylindrical downward extension (30), said annular rib protruding inwardly (18) and an upper end of the mouth (12), when screwed, there is a small annular washer (31).
 

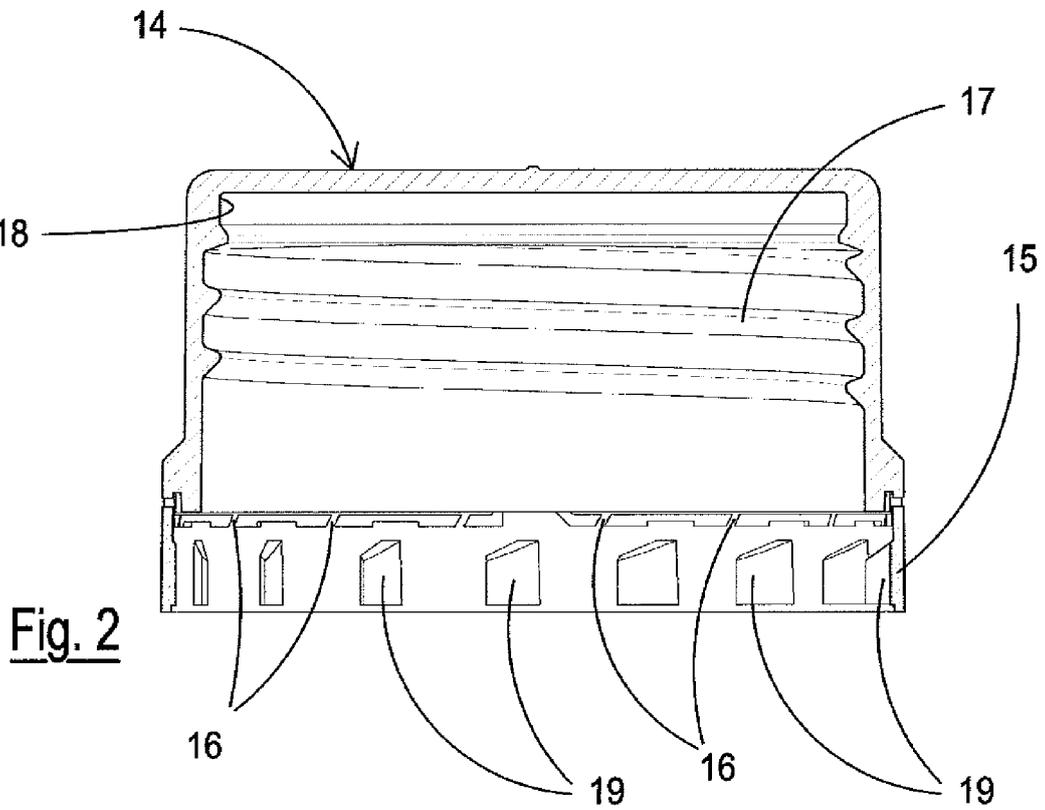
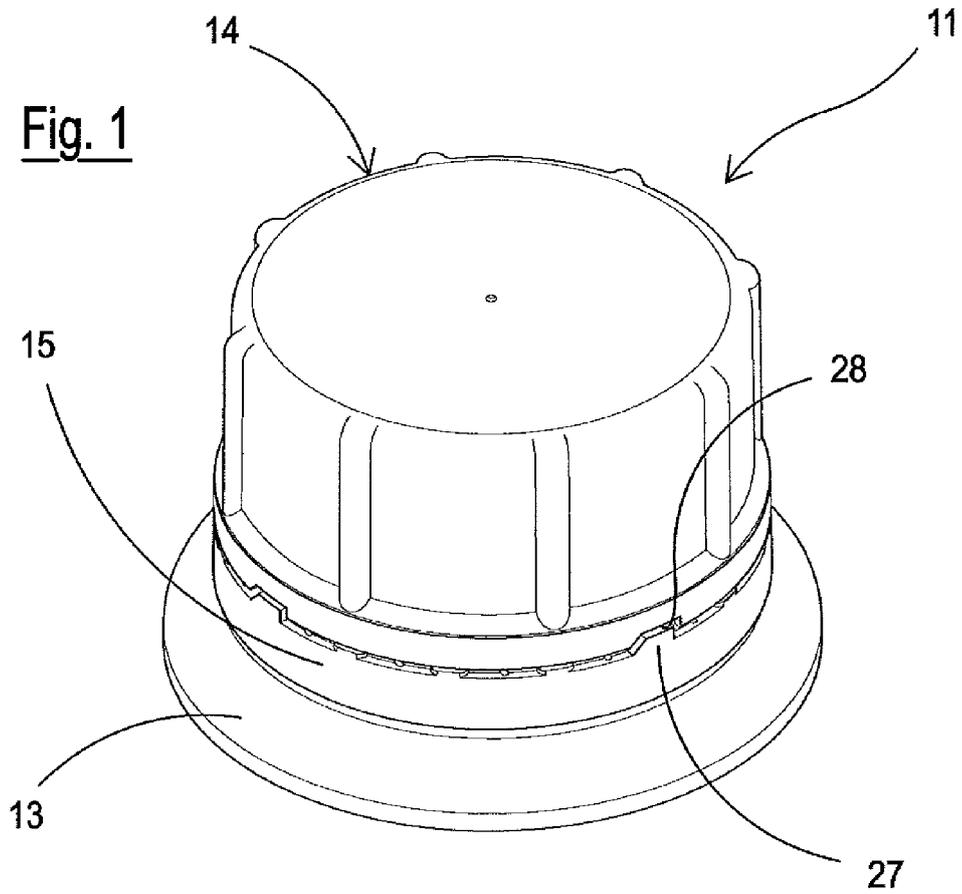
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7. The closure for containers according to claim 6, **characterized in that** said small annular washer
 

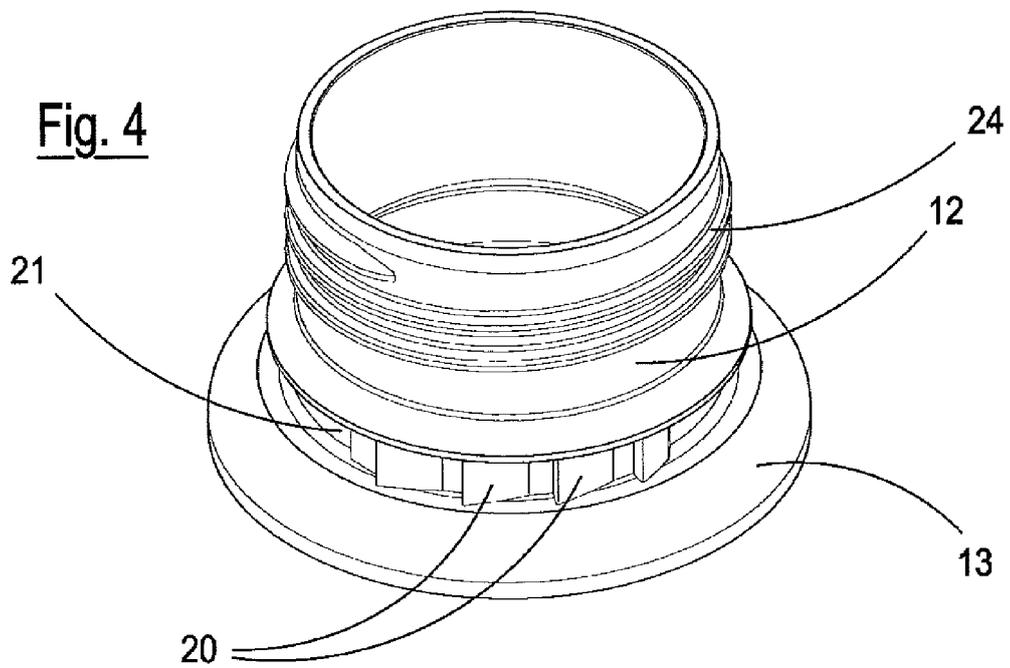
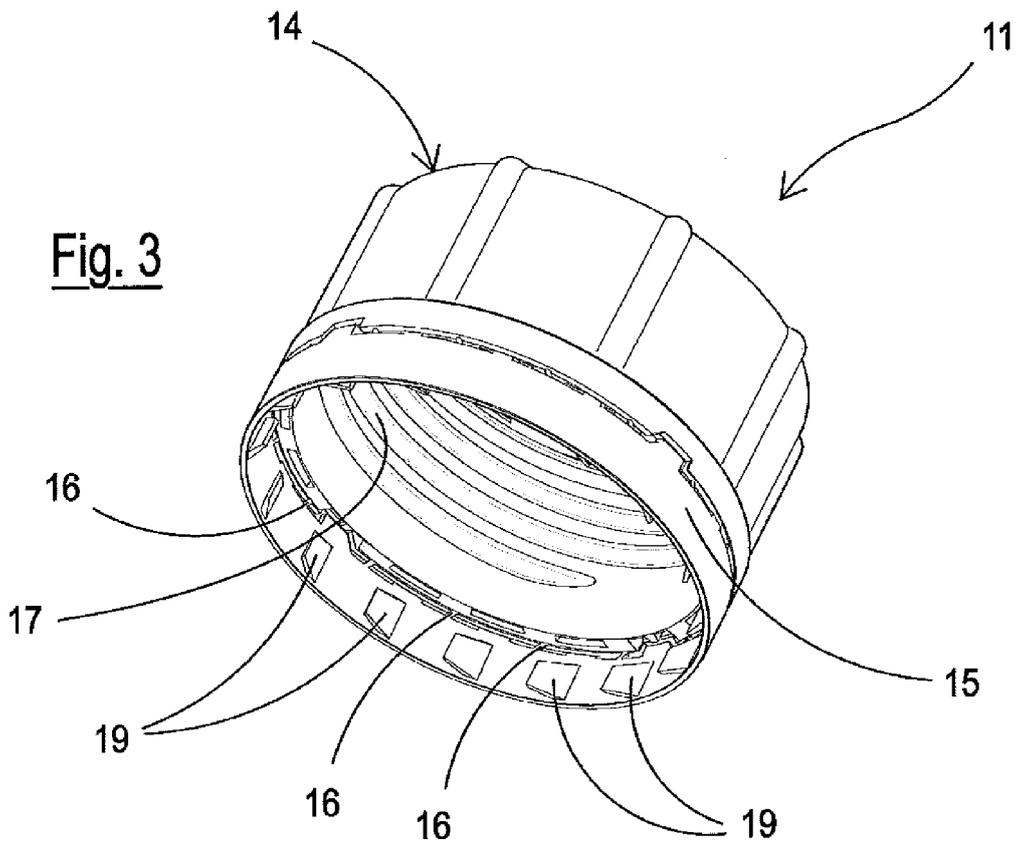
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8. The closure for containers according to one or more of the previous claims, **characterized in that** said flaps (19) of said security ring (15) are flexible in only one rotation direction.
 

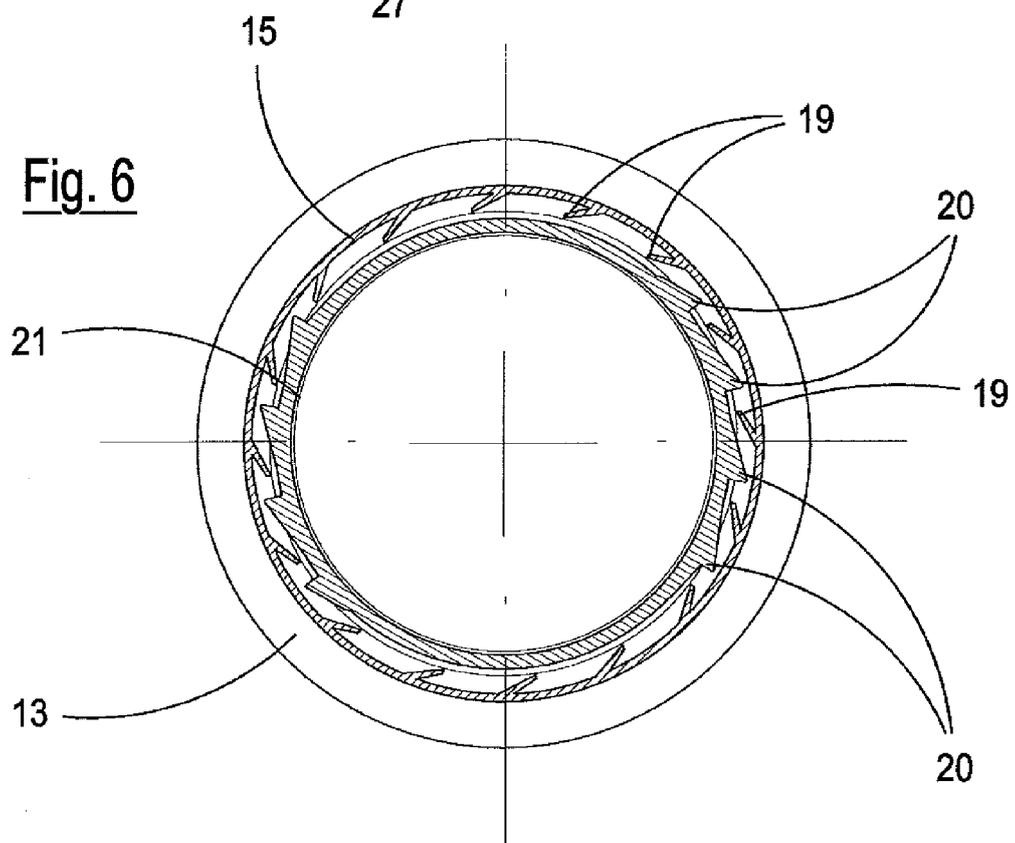
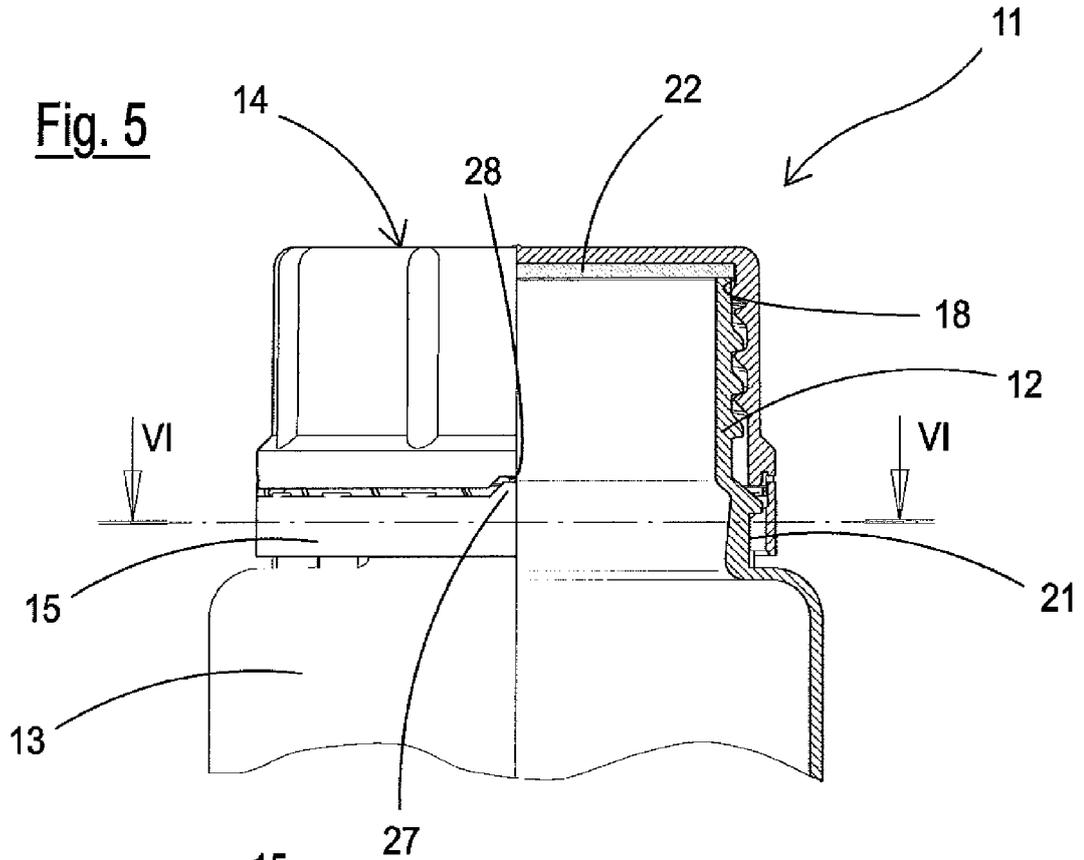
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9. The closure for containers according to one or more of the previous claims, **characterized in that** said flaps protruding towards the outside (20) of the mouth (12) of the container (13) are situated in an annular hollow portion (21).
 

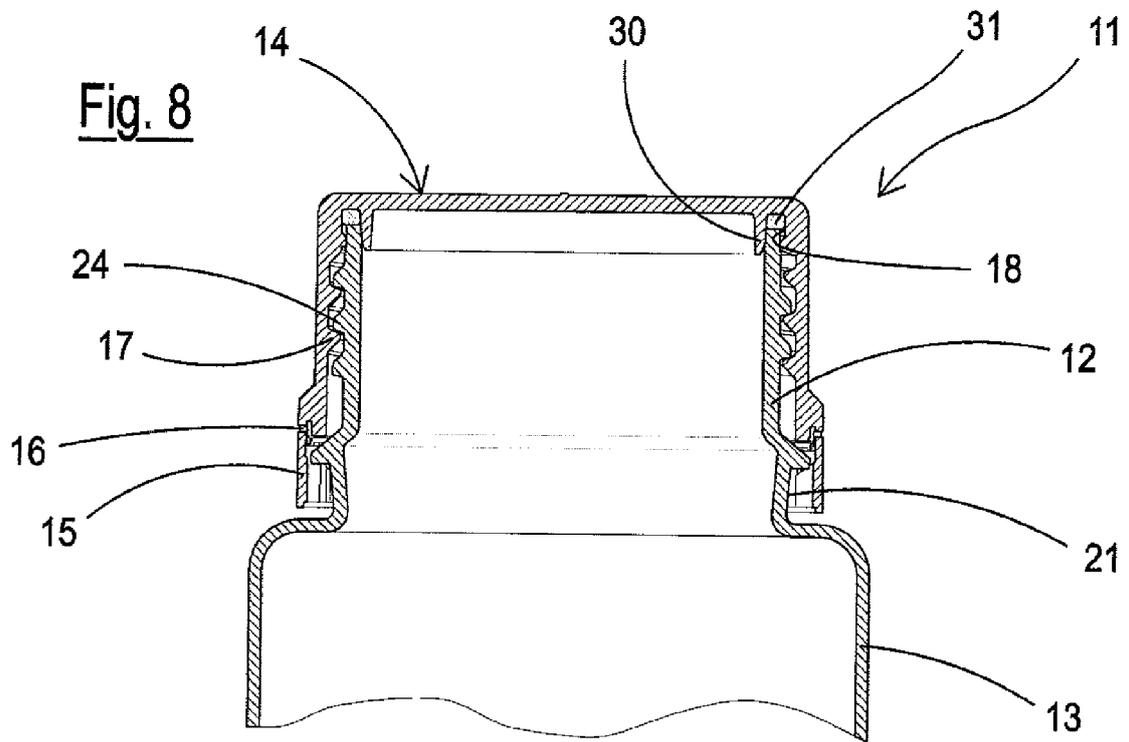
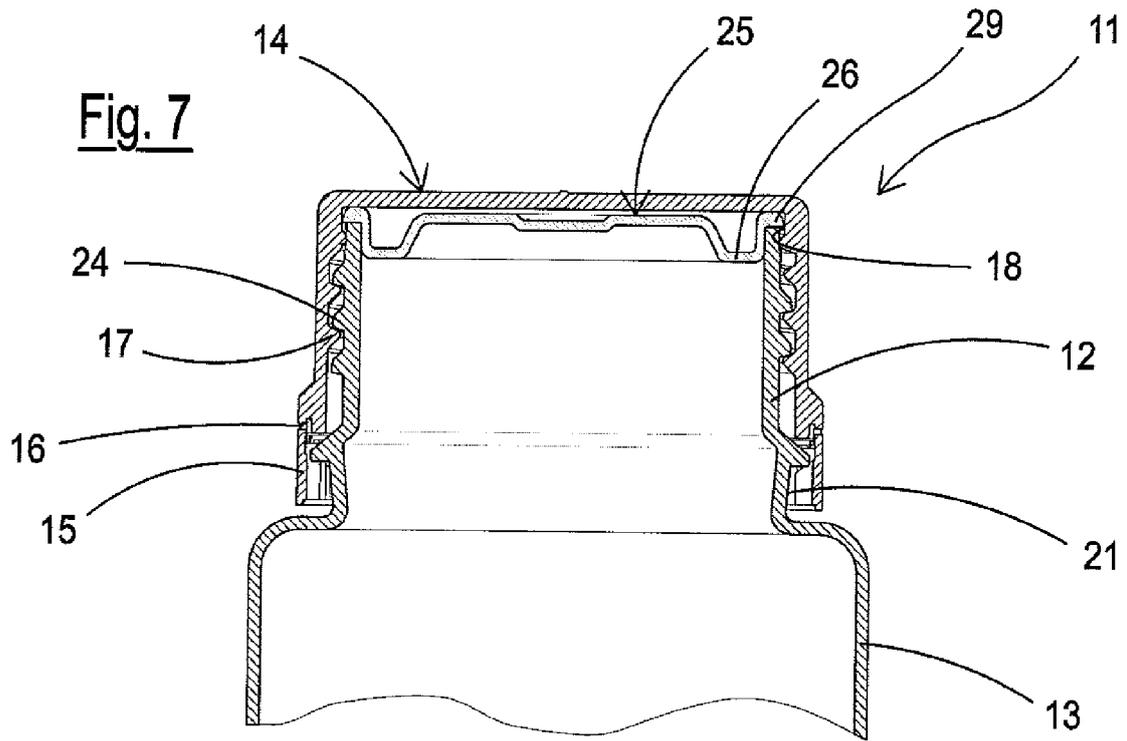
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Fig. 1











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