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(54) **THREADED CAP PROVIDED WITH TAMPER-EVIDENT BAND**

SCHRAUBKAPPE MIT GARANTIEBAND

BOUCHON FILETE AVEC BAGUE DE GARANTIE

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Description

[0001] The invention relates to a combination of a container having a neck, which surrounds an opening in the container, and a plastic collar, which can be screwed onto the neck, in accordance with the preamble of claim 1. The invention also relates to a plastic collar which is intended for a combination of this type and to an object in which a collar of this type is integrated.

[0002] The collar may, for example, form (an integral) part of a closure member for the container.

[0003] In a preferred application of the invention, the collar is an integral part of a screw cap, for example having a closure wall running transversely with respect to the circumferential wall of the collar.

[0004] The collar could also be designed as a securing collar for fixing an object, for example a pump enabling the contents of the container to be dispensed via the pump, in the neck of the container.

[0005] All kinds of different embodiments of a combination according to the preamble of claim 1 and a collar which is intended for this combination are known.

[0006] US 5,819,965 has disclosed a screw cap with tamper-evident ring, in which breakable bodies are present between that part of the collar of the screw cap which is provided with the screw thread and the tamper-evident ring. When the cap is unscrewed for the first time, the breakable bodies break and the tamper-evident ring remains behind on the neck of the container.

[0007] One drawback of this known screw cap is that the tamper-evident ring remains behind on the container. Particularly if the container is intended for a beverage which is suitable for human consumption and it is intended or can be expected that the consumer will put the container to his mouth in order to drink the beverage, there is a risk of the tamper-evident ring becoming detached and entering the mouth.

[0008] DE 87 16625 has disclosed a screw cap with a tamper-evident ring to which flexible blocking members are secured, the document disclosing ring segments and breakable bridges between the ring segments.

[0009] A significant drawback of this known screw cap is that it is difficult to produce it by injection-moulding, since the flexible blocking members are oriented in such a manner with respect to the cap that they point towards the cap. If this device is made in a mould using the injection-moulding method, the cap will be very difficult to remove from the mould after the injection-moulding has taken place. It is impeded by the flexible blocking members. The cap or the mould will have to be deformed in order for the cap to be removed from the mould.

[0010] It is an object of the present invention to provide an improved plastic collar which avoids the abovementioned drawback.

[0011] Another object is to provide a plastic collar which allows simple production. -

[0012] The present invention provides a combination according to the preamble of claim 1, which is character-

ized in that each connecting body extends radially inwards from the top side of the ring segment, and each ring segment has an associated single connecting body which extends over a smaller circumferential angle than the associated ring segment, so that there is an opening between circumferentially successive connecting bodies, and the blocking member which is associated with a ring segment being arranged offset, as seen in the circumferential direction, with respect to the connecting body.

[0013] The present invention also provides a plastic collar according to claim 5.

[0014] The plastic collar according to the invention which can be screwed onto the neck of a container, and advantageous embodiments thereof, will be explained in more detail below with reference to the drawing, in which:

Fig. 1 shows a perspective view of an exemplary embodiment of a screw cap according to the invention and a spout which can be sealed in a film/foil pouch and has a neck onto which the cap can be screwed,

Fig. 2 shows a side view of the screw cap and spout shown in Figure 1, with the cap having been screwed onto the neck of the spout,

Fig. 3 shows a plan view, on a larger scale, of the screw cap and spout from Figures 1 and 2, and

Fig. 4 shows a vertical section, on a larger scale, through the screw cap and spout shown in Figures 1 and 2, on line IV-IV in Figure 3.

[0015] The figures show a combination of a spout 1 and a screw cap 20.

[0016] The spout 1 is made from plastic and is intended to be sealed in a film/foil pouch, so that the spout 1 forms part of a container, for example for a beverage which is suitable for human consumption.

[0017] The spout 1 has a body with a substantially cylindrical neck 2, which surrounds an opening 3, in the present example of a passage for supplying a medium to the container and/or discharging a medium from the container.

[0018] The bottom part 5 of the spout 1 is designed to be sealed between two opposite walls of the film/foil pouch.

[0019] The neck 2 is provided, in its top part, with a first screw thread 6. Furthermore, beneath the first screw thread 6 the neck 2 is provided with a blocking rib 7 which projects radially outwards.

[0020] In this example, the spout body 1 is provided with a number of further circumferential ribs 8 which are used to enable the spout body to be handled.

[0021] The screw cap 20 is likewise produced by injection-moulding in a suitable injection mould.

[0022] The screw cap 20 has a collar 21, which can be

screwed onto the neck 2 and has a transverse wall 22, which extends transversely over the top side of the collar 21, and has an underside 23 and an outer circumference, which in this case is provided with ribs for improving grip on the screw cap 20.

[0023] The collar 21 is provided, on the inner side, with a second screw thread 24, which is complementary to the first screw thread 6 in order for the cap 20 to be screwed onto the neck 2.

[0024] On the underside, the screw cap 20 is provided with a tamper-evident ring 25, which will be explained in more detail below with reference to Figures 1-4.

[0025] The tamper-evident ring 25 has a plurality of ring segments 26, in the present example three, which lie adjacent to one another as seen in the circumferential direction of the ring 25.

[0026] Each ring segment 26 is provided, on the inner side, with an inwardly projecting flexible blocking member 27. In this example, each blocking member 27 is designed as a flexible lip which projects obliquely upwards from the inner side of the ring segment 26 and is integral with the ring segment 26 only at its bottom end.

[0027] On its top side, each ring segment 26 is integrally connected to the collar 21 via a single, unbreakable and flexible connecting body 28.

[0028] In this case, the connecting body 28 extends radially inwards from the top edge of the ring segment 26 and adjoins the bottom edge 23 of the circumferential wall 21 of the screw cap 20.

[0029] The connecting body 28 extends over a smaller circumferential angle than the associated ring segment 26, so that there is an opening 29 between circumferentially successive connecting bodies 28. Moreover, the blocking member 27 associated with a ring segment 26 is arranged offset, as seen in the circumferential direction, with respect to the connecting body 28.

[0030] In particular, in the embodiment shown the connecting body 28 is located in the vicinity of the front end, as seen in the unscrewing direction, of a ring segment 26 and the blocking member 28 behind it, in this example close to the rear end of the associated ring segment 26. This arrangement of these components with respect to one another is advantageous with a view to unscrewing the cap 20, but other arrangements are also conceivable within the context of the invention.

[0031] A significant advantage of the measures described above is that it is possible to make do with a relatively simple injection mould for production of the screw cap 20.

[0032] Each ring segment 26 is connected to the adjacent ring segments 26 via thin, breakable bridges 30. These bridges 30 are in this case located close to the bottom edge of the ring segments 26.

[0033] The design of the cap 20, and in particular of the tamper-evident ring 25 thereof, means that when the cap 20 is being screwed onto the neck 2, the flexible lips 27 pass over the blocking rib 7 without the breakable bridges 30 being damaged. In this way, the lips 27 then

engage behind the underside of the blocking rib 7.

[0034] When the cap 20 is being unscrewed for the first time, the lips 27 come into contact with the underside of the blocking rib 7. When the cap 20 is unscrewed further, the forces generated in the tamper-evident ring 25 are such that one or more breakable bridges 30 of the tamper-evident ring 25 break. As a result, the ring segments 26 with the lips 27 can move outwards and the lips 27 can move past the blocking rib 7.

[0035] It is important that the ring segments 26 remain integral with the screw cap 20 and therefore do not remain behind on the neck 2. The fact that the bridges 30 have broken is clearly visible, so the consumer can see whether the cap has previously been opened.

[0036] It will be clear that the neck may also form an integral part of a container, for example a (plastic) bottle.

Claims

1. A combination of a container having a neck (2), which surrounds an opening (3) in the container, and a plastic collar (21), which can be screwed onto the neck and has a top side and an underside and an outer circumference, the neck (2) being provided with a first screw thread (6) and the collar (21) being provided with a second screw thread (24), which is complementary to the first screw thread in order for the collar to be screwed onto the neck, and the neck of the container being provided, beneath the first screw thread, with a blocking rib (7) which projects radially outwards, and the collar being provided on the underside with a tamper-evident ring (25), which ring is provided on the inner circumference with inwardly projecting flexible blocking members (27), which are distributed around the circumference, in such a manner that when the collar is screwed onto the neck the flexible blocking members (27) pass over the blocking rib, and when the collar (21) is being unscrewed the blocking rib forms a stop for the blocking members (27), resulting in one or more parts of the collar breaking, the tamper-evident ring (25) comprising a plurality of ring segments (26) which lie next to one another in the circumferential direction, each ring segment (26) being provided, on the inner side, with a blocking member (27), and each ring segment (26), via at least one unbreakable and flexible connecting body (28), being integral with the collar, and each ring segment (26) being connected, via breakable bridges (30), to the adjacent ring segments, in such a manner that when the collar (21) is unscrewed for the first time, the blocking members (27) come into contact with the blocking rib (7) and break one or more breakable bridges (30) of the tamper-evident ring (25), so that the ring segment (26) with the blocking members (27) can move outwards and the blocking members can move past the blocking rib, **characterized in that** each connecting body (28)

extends radially inwards from the top side of the ring segment (26), and each ring segment (26) has an associated single connecting body (28) which extends over a smaller circumferential angle than the associated ring segment, so that there is an opening (29) between circumferentially successive connecting bodies (28), and the blocking member (27) which is associated with a ring segment (26) being arranged offset, as seen in the circumferential direction, with respect to the connecting body (28).

2. The combination according to claim 1, in which a blocking member (27) is a lip which projects obliquely upwards and inwards from the inner side of the ring segment (26).
3. The combination according to one or more of the preceding claims, in which the breakable bridges (30) are located in the vicinity of the underside of the ring segments (26).
4. The combination according to one or more of the preceding claims, in which the collar (21) forms part of a closure member for closing the opening in the neck of the container, in particular of a screw cap (20).
5. Plastic collar according to one or more of the preceding claims which can be screwed onto a neck (2) of a container.

Patentansprüche

1. Kombination aus einem Behälter mit einem Hals (2), der eine Öffnung (3) in dem Behälter umgibt, und einem Kunststoffbund (21), der auf den Hals geschraubt werden kann und eine Oberseite sowie eine Unterseite und einen Außenumfang hat, wobei der Hals (2) mit einem ersten Schraubengewinde (6) versehen ist und der Bund (21) mit einem zweiten Schraubengewinde (24) versehen ist, das komplementär zu dem ersten Schraubengewinde ist, so dass der Bund auf den Hals aufgeschraubt wird, der Hals des Behälters unter dem ersten Schraubengewinde mit einer Sperrrippe (7) versehen ist, die radial nach außen vorsteht, und der Bund an der Unterseite mit einem manipulationssicheren Ring (25) versehen ist, wobei der Ring am Innenumfang mit nach innen vorstehenden flexiblen Sperrelementen (27) versehen ist, die so um den Umfang herum verteilt sind, dass, wenn der Bund auf den Hals aufgeschraubt wird, die flexiblen Sperrelemente (27) über die Sperrrippe treten, und, wenn der Bund (21) abgeschraubt wird, die Sperrrippe einen Anschlag für die Sperrelemente (27) bildet, so dass ein oder mehr Teile des Bundes brechen, wobei der manipulations-sichere Ring (25) eine Vielzahl von Ringsegmenten

(26) umfasst, die in der Umfangsrichtung nebeneinander liegen, jedes Ringsegment (26) an der Innenseite mit einem Sperrelement (27) versehen ist, jedes Ringsegment (26) über wenigstens einen unzerbrechlichen und flexiblen Verbindungskörper (28) fest mit dem Bund verbunden ist und jedes Ringsegment (26) über zerbrechbare Brücken (30) so mit den angrenzenden Ringsegmenten verbunden ist, dass, wenn der Bund (21) zum ersten Mal abgeschraubt wird, die Sperrelemente (27) mit der Sperrrippe (7) in Kontakt kommen und eine oder mehrere zerbrechbare Brücken (30) des manipulationssicheren Rings (25) zerbrechen, so dass sich das Ringsegment (26) mit den Sperrelementen (27) nach außen bewegen kann und sich die Sperrelemente an der Sperrrippe vorbei bewegen können, **dadurch gekennzeichnet, dass** jeder Verbindungskörper (28) sich von der Oberseite des Ringsegments (26) radial nach innen erstreckt und jedes Ringsegment (26) einen dazugehörigen einzelnen Verbindungskörper (28) hat, der sich über einen kleineren Umfangswinkel erstreckt als das dazugehörige Ringsegment, so dass eine Öffnung (29) zwischen in Umfangsrichtung aufeinander folgenden Verbindungskörpern (28) vorhanden ist, und das Sperrelement (27), das mit dem Ringsegment (26) verbunden ist, in der Umfangsrichtung gesehen, in Bezug auf den Verbindungskörper (28) versetzt angeordnet ist.

2. Kombination nach Anspruch 1, wobei ein Sperrelement (27) eine Lippe ist, die von der Innenseite des Ringsegments (26) schräg nach oben und nach innen vorsteht.
3. Kombination nach einem oder mehreren der vorangehenden Ansprüche, wobei sich die zerbrechbaren Brücken (30) in der Nähe der Unterseite der Ringsegmente (26) befinden.
4. Kombination nach einem oder mehreren der vorhandenen Ansprüche, wobei der Bund (21) Teil eines Verschlusselementes zum Verschließen der Öffnung in dem Hals des Behälters, insbesondere einer Schraubkappe (20), ist.
5. Kunststoffbund nach einem oder mehreren der vorangehenden Ansprüche, der auf einen Hals (2) eines Behälters aufgeschraubt werden kann.

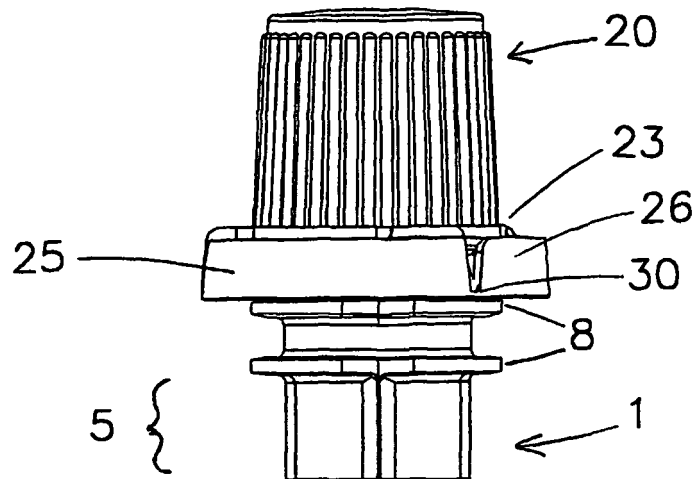
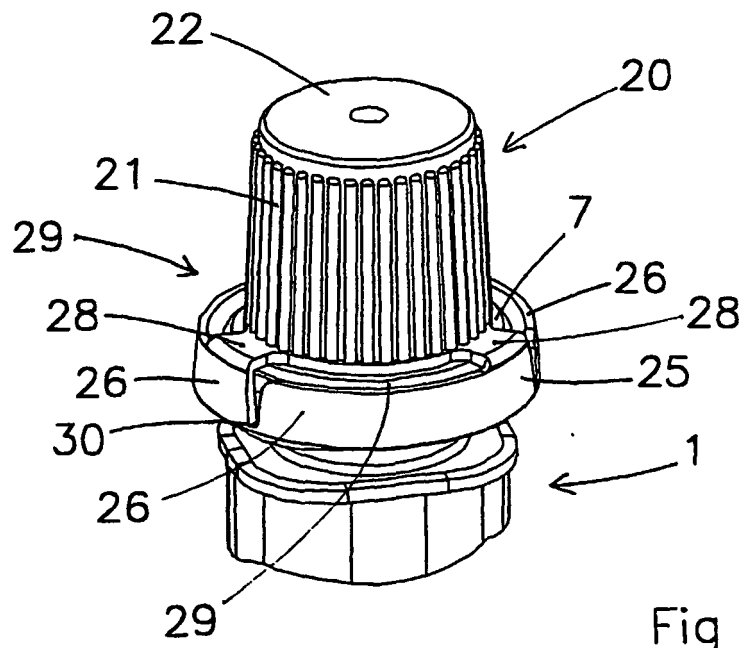
Revendications

1. Combinaison d'un récipient ayant un goulot (2), qui entoure une ouverture (3) dans le récipient, et d'un collier plastique (21), qui peut être vissé sur le goulot et a un côté supérieur et un côté inférieur et une circonférence extérieure, le goulot (2) étant pourvu

d'un premier filetage (6) et le collier (21) étant pourvu d'un deuxième filetage (24), qui est complémentaire du premier filetage afin que le collier soit vissé sur le goulot, et le goulot du récipient étant pourvu, sous le premier filetage, d'une nervure de blocage (7) qui fait saillie radialement vers l'extérieur, le collier étant pourvu sur le côté inférieur d'une bague d'inviolabilité (25), laquelle bague est disposée sur la circonférence intérieure avec des éléments de blocage flexibles faisant saillie vers l'intérieur (27), qui sont distribués autour de la circonférence, de sorte que, lorsque le collier est vissé sur le goulot, les éléments de blocage flexibles (27) passent au-dessus de la nervure de blocage, et quand le collier (21) est dévissé la nervure de blocage forme un obstacle pour les éléments de blocage (27), avec pour conséquence qu'une ou plusieurs parties du collier se rompent, la bague d'inviolabilité (25) comprenant une pluralité de segments de bague (26) qui se trouvent les uns à côté des autres dans la direction circonférentielle, chaque segment de bague (26) étant pourvu, sur le côté intérieur, d'un élément de blocage (27), et chaque segment de bague (26), via au moins un corps de connexion flexible et incassable (28), étant solidaire du collier, et chaque segment de bague (26) étant connecté, via des ponts rupturables (30), aux segments d'anneau adjacents, de sorte que, lorsque le collier (21) est dévissé pour la première fois, les éléments de blocage (27) viennent en contact avec la nervure de blocage (7) et cassent un ou plusieurs ponts rupturables (30) de la bague d'inviolabilité (25), de manière que le segment de bague (26) avec les éléments de blocage (27) puisse se déplacer vers l'extérieur et que les éléments de blocage puissent se déplacer au-delà de la nervure de blocage, **caractérisée en ce que** chaque corps de connexion (28) s'étend radialement vers l'intérieur depuis le côté supérieur du segment de bague (26), et chaque segment de bague (26) a un corps de connexion unique associé (28) qui s'étend sur un angle circonférentiel inférieur au segment de bague associé, si bien qu'il y a une ouverture (29) entre des corps de connexion se succédant sur la circonférence (28), et l'élément de blocage (27) qui est associé avec un segment de bague (26) étant disposé décalé, tel que vu dans la direction circonférentielle, par rapport au corps de connexion (28).

2. Combinaison selon la revendication 1, dans laquelle un élément de blocage (27) est une lèvre qui fait saillie en oblique vers le haut et vers l'intérieur par rapport au côté intérieur du segment de bague (26).
3. Combinaison selon une ou plusieurs des revendications précédentes, dans laquelle les ponts rupturables (30) sont localisés au voisinage du côté inférieur des segments de bague (26).

4. Combinaison selon une ou plusieurs des revendications précédentes, dans laquelle le collier (21) forme une partie d'un élément de fermeture pour fermer l'ouverture dans le goulot du récipient, en particulier d'un bouchon à vis (20).
5. Collier plastique selon une ou plusieurs des revendications précédentes, qui peut être vissé sur un goulot (2) d'un récipient.



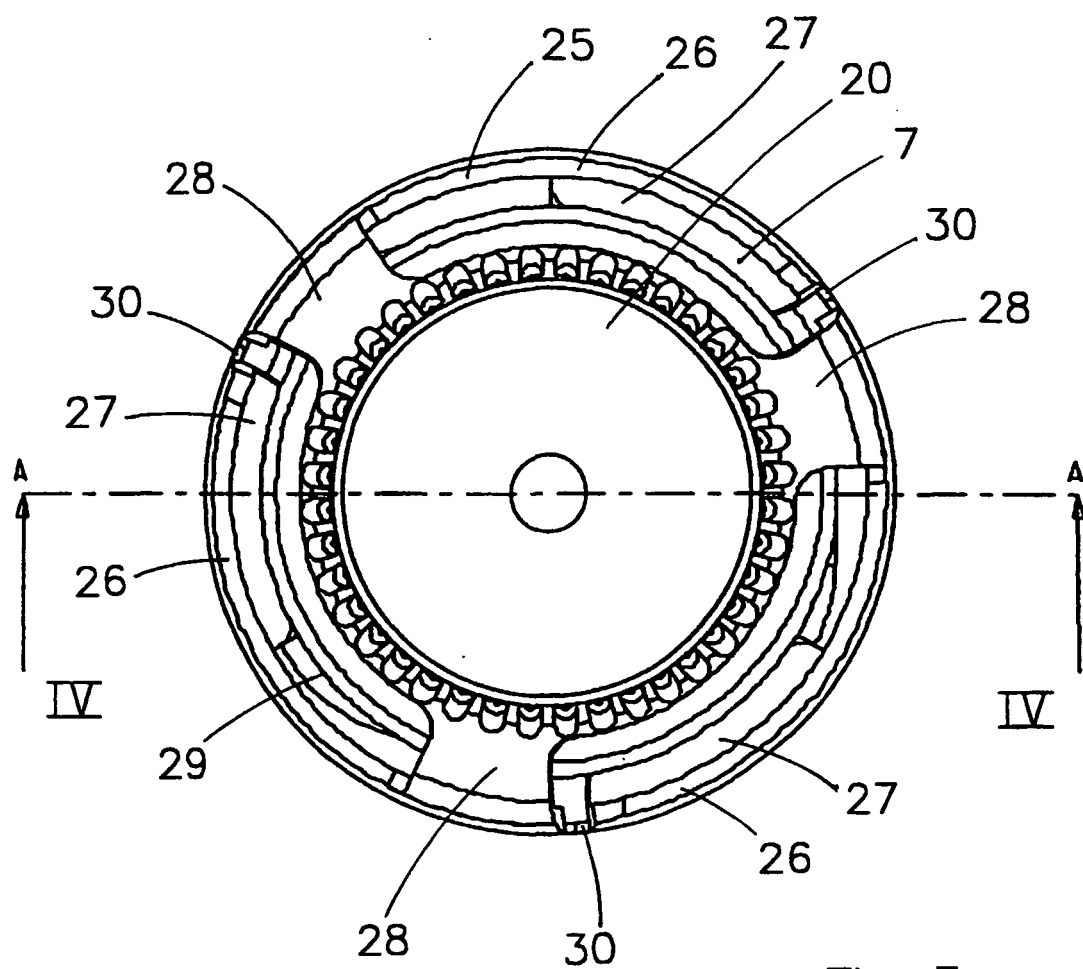


Fig 3

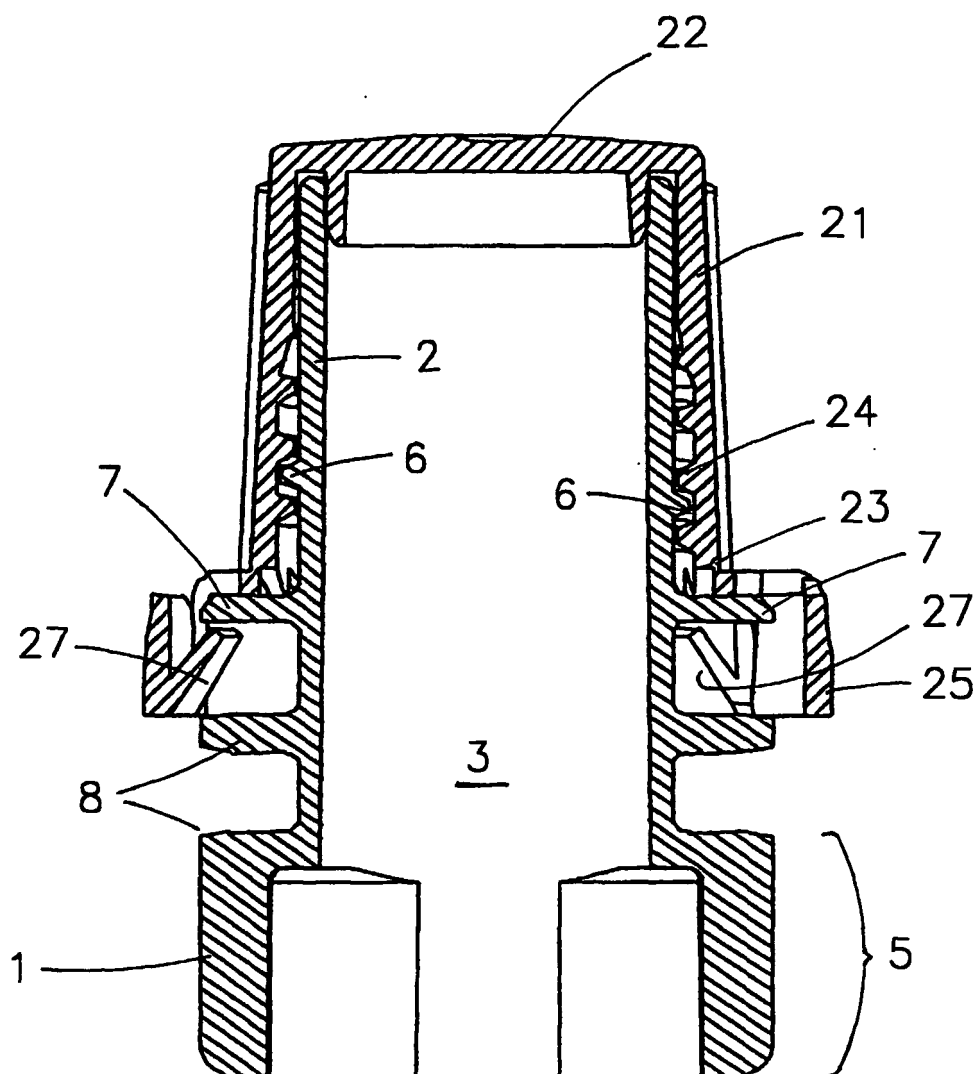


Fig 4