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(54) **A security closure for bottles**

Sicherungsverschluss für Flaschen

Fermeture de sécurité pour bouteilles

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Description

[0001] The present invention relates to a security closure for bottles of liquor and the like, of the type specified in the introductory part of Claim 1.

[0002] A closure of the above specified type is known from international patent application W097/33805.

[0003] After it has been fitted to the bottle, the closure known from this application has a vertical distance between the end of the neck of the bottle and the top of the outer annular part of the plug which is very much greater than the thickness of the disc seal utilised in metal capsule closures having no pourer, which are also utilised in the same industries as those which utilise closures with pourers.

[0004] Consequently, the closure heads which are utilised for the application of such closures to bottles must be modified whenever, although utilising the same type of metal capsule, they current from using a closure with a pourer to using a closure without a pourer and vice versa.

[0005] From published European application EP-A-0 670 271 there is known a closure including a pourer contained within a metal capsule with the interposition of a plug having a low flat peripheral annular part. However, in this closure the peripheral annular part of the plug does not rest on the neck of the bottle so that a satisfactory seal is not formed.

[0006] Moreover, the intermediate flange of the pourer which extends under the peripheral annular part of the plug, rests on the end of the neck of the bottle so that even the vertical distance between the end of the neck of the bottle and the top of the outer annular part of the plug is very much greater than the thickness of the above mentioned disc seal in this case as well.

[0007] Therefore, the closure described in this document has the same disadvantage as the closure known from W097/33805.

[0008] In order to overcome the above-mentioned disadvantage the object of the present invention is a security closure for bottles having the characteristics which form the subject of the characterising part of Claim 1.

[0009] Further advantageous characteristics of the invention form the subject of Claims 2 to 5.

[0010] The invention will now be described with reference to the attached drawings, provided purely by way of non-limitative example, in which:

Figure 1 is a longitudinal section of a closure according to the invention, fitted to the neck of a bottle;
Figure 2 is an enlarged detail of Figure 1;
Figure 3 is a longitudinal section of the plug on an enlarged scale; and
Figure 4 is a longitudinal section of the pourer on an enlarged scale.

[0011] Reference numeral 1 indicates the neck of a bottle intended to contain for example a liquor, compris-

ing a threaded part 2 and a collar 3 situated beneath the said threaded part 2.

[0012] Reference numeral 4 indicates a metal capsule having a flat base surface 5 and a cylindrical skirt 6, having an upper threaded portion formed by rolling, which engages the threaded part 2 of the neck of the bottle, and a lower part 7 which constitutes a guarantee band. The lower part 7 is connected to the upper part of the skirt 6 by means of a weakened region 8 and is turned in by rolling, as indicated by reference numeral 9, under the lower face of the collar 3 of the neck 1 of the bottle.

[0013] Reference numeral 10 indicates a plug of soft plastics material such as polyethylene, which is located and contained in the capsule 4 in contact with the base surface 5. The plug 10 has a central recessed part 11 in the form of a disc downwardly from which extends a tubular projection 12 the free end of which has an outer annular rib 13.

[0014] The plug 10 further has, between its periphery and the tubular projection 12, a low flat annular portion 14 having, before the closure is fitted to a bottle, the height of which is indicated A in Figure 3.

[0015] If the diameter of the metal capsule 4 is equal to 30mm or 31.5mm the height A (Figure 3) of the annular portion 14 before fitting of the closure to a bottle is preferably equal to 1.4mm.

[0016] An annular groove 15 is formed on the upper face of the annular portion 14, adjacent its peripheral edge which rests on the end of the neck 1 of the bottle.

[0017] On the lower face of the annular portion 14 there is formed an annular groove 16 which has a width greater than that of the groove 15 and extends between the peripheral groove 15 and the tubular projection 12.

[0018] In Figure 4 the reference numeral 17 indicates a pourer of rigid transparent plastics material, such as crystalline polystyrene, comprising an outer annular part 18 and an inner part 19 in the form of an inverted cup, which is supported on the outer annular part 18 by means of a plurality of spaced ribs 20.

[0019] The outer annular part 18 of the pourer 17 comprises an upper tubular portion 21, which defines an exit duct for the liquid from the bottle, a lower tubular portion 22, which is provided on its outer surface with two annular grooves 23, and an intermediate annular flange 24.

[0020] The upper tubular portion 21 engages in the radially inner part of the annular groove 16 of the plug 10 and is in contact with the outer surface of the tubular projection 12 of the plug the annular rib 13 of which engages the lower end of the tubular portion 21 of the pourer.

[0021] The lower tubular portion 22 is located outwardly with respect to the upper tubular portion 21 and its inner cylindrical surface joins the outer annular surface of the upper tubular portion 21 via an annular groove 25.

[0022] The groove 25 is situated at the same height

as the upper outer annular groove 23 so that between the grooves 23 and 25 there is formed a weakened annular region of the pourer at the base of the intermediate flange 24. This weakened region has the function of causing breakage of the pourer 17 in the case of an attempt to remove the pourer from the bottle.

[0023] The intermediate flange 24 of the pourer 17 has a flat annular upper surface 26 which, when the closure is fitted to the neck 1 of a bottle, is located at the same level as the end of the neck 1, and a lower surface 27 which is inclined upwardly and outwardly. Therefore, the area of the transverse section of the flange 24 reduces progressively towards its periphery.

[0024] An annular groove 26a is located between the flat annular upper surface 26 of the intermediate flange 24 and the outer surface of the upper portion 21 of the inner tubular part 18 of the pourer 17.

[0025] The intermediate flange 24 has a cylindrical end surface 28 which has a low height and rests on the curved annular surface 29 (see Figure 2) which connects the flat annular end surface 30 of the neck 1 of the bottle to the cylindrical inner surface 31 of the neck 1 of the bottle.

[0026] The engagement between the outer end of the flange 24 and the curved annular surface 29 of the mouth of the neck of the bottle ensures that the pourer 17 is positioned at the correct height within the neck of the bottle when the closure is applied to a bottle and that this correct position is maintained during subsequent use of the closure.

[0027] The ratio between the diameter B of the cylindrical end surface 28 of the intermediate flange 24 and the outer diameter C of the top of the tubular part 21, which constitutes the outlet mouth for the liquid from the pourer, is equal to about 1.5.

[0028] The inner surface of the outlet mouth 21 of the pourer is therefore substantially spaced from the inner surface of the mouth of the neck 1 of the bottle so that, when the bottle is inclined to tip a liquid contained in it into a glass, the possibility that the liquid can drip on the outer surface of the neck of the bottle is avoided.

[0029] A tubular sealing and locking element constituted by a soft plastics material such as polyethylene is indicated 32. The tubular element 32 is provided on its inner surface with two annular ribs 33 which engage into annular grooves 33a formed in the lower tubular portion 22 of the outer annular part 18 of the pourer 17.

[0030] The tubular element 32 is provided on its outer surface with annular fins 34 intended forcibly to engage the inner surface of the neck 1 of the bottle when the closure is fitted thereto.

[0031] The tubular element 32 further has at its lower end an inwardly facing annular flange 35 which constitutes the seat for a ball shutter S, which acts in a known way as a valve to prevent the fraudulent introduction of a liquid into the bottle.

[0032] The above-described closure has, with respect to closures with pourers known from the prior art, the

advantage of being usable with the same capsule as is utilised in closures without pourers (in which the metal capsule contains only a soft disc serving as a seal) without having to make any modifications to the closure heads.

[0033] In fact, in prior art closures with pourers the vertical distance between the end of the neck of the bottle and the top of the outer annular part of the plug was, after application of the closure, very much greater than the thickness of the said disc seal utilised in capsules without pourers, such that the utilisation of the same metal capsule as that used in closures without pourers would have required a modification of the closure heads, in particular a displacement of the height both of the roller which rolls the thread into the capsule and the roller which causes deformation of the guarantee band of the capsule to engage it under the lower face of the collar of the neck of the bottle.

[0034] Such modification of the closure head is, on the other hand, not required in the case of the closure according to the present invention in which the vertical distance A_1 (Figures 1 and 2) between the edge of the neck 1 of the bottle and the top of the plug 10 after the closure has been fitted to the bottle, is the same as the thickness of the disc seal utilised in a closure without pourer after its deformation due to the pressure exerted on the closure by the closure head.

[0035] In particular, in the above stated-case of a closure according to the invention which utilises a metal capsule having a diameter of 30mm or 31.5mm, the initial height equal to 1.4mm of the annular portion 14 of the plug 10, indicated A in Figure 3, is reduced by the effect of the fitting of the closure onto a bottle to 1.2mm as indicated A_1 in Figure 1.

[0036] In the case of a closure without pourer utilising an identical metal capsule, the thickness of the expanded polystyrene disc seal housed and retained in the bottom of the capsule to form a seal against the end of the bottle is initially 1.8mm and this is reduced, after the capsule has been fitted to the bottle, to 1.2mm, that is to say a final value identical to that indicated above for the capsule according to the invention.

[0037] The possibility of using the same metal capsule for two different types of closures, without having to introduce any modifications to the closure heads when converting from one type of closure to the other, is very advantageous for the industry which makes use of such closures in that it makes possible a significant reduction in production costs.

[0038] The fact that the flat upper surface 26 of the intermediate annular flange 24 of the pourer 17 is at the same level as the flat end surface of the neck 1 of the bottle constitutes a further advantage of the present invention in that it does not allow the introduction of a blade (for example a screwdriver) between the end of the neck 1 and the flange 24 in order to attempt to extract the pourer 17 from the bottle.

Claims

1. A security closure for bottles having a neck (1) comprising a threaded upper part (2) and a collar (3) situated beneath the said threaded part (2), the said closure comprising:

- a metal capsule (4) having a flat end surface (5) and a cylindrical skirt (6) having an upper threaded part which engages the said threaded part (2) and a lower part (7) constituting a guarantee seal, which has a circumferential weakened region (8) and, beneath this region, an inner rib (9) which engages on the lower face of the said collar (3),
- a pourer (17) of plastics material having an outer annular part (18) which defines an outlet duct for the liquid from the bottle and an inner part (19) in the form of an inverted cup which is supported from the outer annular part (18) by means of a plurality of spaced ribs (20); the outer tubular part (18) of the pourer (17) comprising an upper tubular portion (21) an intermediate annular flange (24) which rests on the end of the neck (1) of the bottle and a lower tubular portion (22) which extends within the neck (1) of the bottle and has an upper weakened zone (8),
- a tubular sealing and locking element (32) which is forcibly interposed between the inner surface of the neck (1) of the bottle and the lower tubular portion (22) of the pourer (17) and has a lower seat (35) for a ball shutter (S), and
- a plug (10) of plastics material which has an annular part (14) which is located and retained within the upper part of the metal capsule (4) and rests on the end of the neck (1) of the bottle and a central part (11) downwardly from which extends a tubular projection (12) which engages sealingly in the inner surface of the upper portion (21) of the outer tubular part (18) of the pourer (17),

characterised in that

- the plug (10) has, between its periphery and the said tubular central projection (12) a low flat annular portion (14),
- in the upper face of this annular portion (14) there is formed, adjacent its peripheral edge, a first annular groove (15) the bottom wall of which rests on the end of the neck (1) of the bottle,
- in the lower face of this annular portion (14) there is formed a second annular groove (16) which extends between the said first annular groove (15) and the said central annular projection (12),

- the upper tubular portion (21) of the outer tubular portion (18) of the pourer (17) engages in the radially inner part of the said second annular groove (16) of the plug (10) in contact with the outer surface of the said tubular central projection (12) of the plug (10),
- the intermediate annular flange (24) of the outer tubular part (18) of the pourer (17) has a flat annular upper surface (26) which is situated at the same level as the end of the neck (1) of the bottle and a lower surface (27) which is inclined upwardly and outwardly so that the area of the transverse section of the said intermediate annular flange (24) reduces progressively towards its periphery; the said intermediate annular flange (24) having a cylindrical end surface (28) which has a very much reduced height and rests on the curved annular surface (29) connecting the flat annular end surface (30) of the neck (1) of the bottle with the cylindrical inner surface (31) of the neck (1) of the bottle.

2. A closure according to Claim 1, **characterised in that** there is an annular groove (26a) between the flat annular upper surface (26) of the said intermediate flange (24) and the outer surface of the upper portion (21) of the outer tubular part (18) of the pourer (17).

3. A closure according to Claims 1 and 2, **characterised in that** the lower portion (22) of the outer tubular part (18) of the pourer (17) is located outwardly of the upper portion (21) and **in that** there is an annular groove (25) between the inner surface of the said lower portion (22) and the outer surface of the said upper portion (21).

4. A closure according to Claim (1), **characterised in that** the vertical distance between the upper face and the lower face of the said flat annular portion (14) of the plug (10) is about 1.4mm before fitting of the closure to the neck (1) of a bottle and reduces to about 1.2mm after the closure has been fitted to a bottle.

5. A closure according to Claim 1, **characterised in that** the ratio between the outer diameter (B) of the said intermediate flange (24) of the pourer (17) and the outer diameter (C) of the top of the tubular part (21) which constitutes the outlet mouth for liquid from the pourer (17) is equal to about 1.5.

Patentansprüche

1. Sicherheitsverschluss für Flaschen mit einem Hals (1), umfassend einen oberen Gewindeteil (2) und einen unterhalb des Gewindeteils (2) angeordneten

Ring (3), wobei der Verschluss Folgendes umfasst:

- eine Metallkapsel (4) mit einer flachen Endfläche (5) und einem zylindrischen Rand (6) mit einem oberen, in den Gewindeteil (2) eingreifenden Gewindeteil und einem unteren, eine Sicherheitsdichtung bildenden Teil (7), welcher einen dünnen Umfangsbereich (8) und unterhalb dieses Bereichs eine Innenrippe (9) besitzt, die in die Unterseite des Rings (3) eingreift, 5 10
- einen Ausgießer (17) aus Kunststoffmaterial mit einem äußeren ringförmigen Teil (18), der ein Auslassrohr für die Flüssigkeit aus der Flasche definiert, und einem inneren Teil (19) in Form eines umgekehrten Bechers, der mittels einer Mehrzahl von mit Zwischenraum angeordneten Rippen (20) vom äußeren ringförmigen Teil (18) getragen wird; wobei der äußere röhrenförmige Teil (18) des Ausgießers (17) einen oberen röhrenförmigen Abschnitt (21), einen ringförmigen Zwischenflansch (24), der am Ende des Halses (1) der Flasche aufliegt, und einen unteren röhrenförmigen Abschnitt (22), der sich innerhalb des Halses (1) der Flasche erstreckt und einen oberen dünnen Bereich (8) aufweist, umfasst, 15 20 25
- ein röhrenförmiges Abdichtungs- und Verschlusselement (32), das zwischen die Innenseite des Halses (1) der Flasche und den unteren röhrenförmigen Abschnitt (22) des Ausgießers (17) gezwungen ist und eine untere Befestigungsfläche (35) für einen Kugerverschluss (S) aufweist, und 30
- einen Stöpsel (10) aus Kunststoffmaterial, der einen ringförmigen Teil (14) aufweist, welcher innerhalb des oberen Teils der Metallkapsel (4) angeordnet ist und festgehalten wird und am Ende des Halses (1) der Flasche aufliegt, sowie einen Mittelteil (11), von dem sich ein röhrenförmiger Fortsatz (12) nach unten erstreckt, welcher abdichtend in die Innenseite des oberen Abschnitts (21) des äußeren röhrenförmigen Teils (18) des Ausgießers (17) eingreift, 35 40

dadurch gekennzeichnet, dass

- der Stöpsel (10) zwischen seinem Umfang und dem röhrenförmigen mittleren Fortsatz (12) einen unteren flachen ringförmigen Abschnitt (14) besitzt, 50
- in der Oberseite dieses ringförmigen Abschnitts (14), angrenzend an dessen Umfangskante, eine erste ringförmige Rille (15) gebildet ist, deren untere Wandung am Ende des Halses (1) der Flasche aufliegt, 55
- in der Unterseite dieses ringförmigen Abschnitts (14) eine zweite ringförmige Rille (16)

gebildet ist, die sich zwischen der ersten ringförmigen Rille (15) und dem mittleren ringförmigen Fortsatz (12) erstreckt,

- der obere röhrenförmige Abschnitt (21) des äußeren röhrenförmigen Abschnitts (18) des Ausgießers (17) in den radial inneren Teil der zweiten ringförmigen Rille (16) des Stöpsels (10) eingreift und die Außenseite des röhrenförmigen mittleren Fortsatzes (12) des Stöpsels (10) berührt,
- der ringförmige Zwischenflansch (24) des äußeren röhrenförmigen Teils (18) des Ausgießers (17) eine flache ringförmige Oberseite (26) aufweist, welche auf derselben Höhe wie das Ende des Halses (1) der Flasche angeordnet ist, sowie eine Unterseite (27), welche nach oben und nach außen geneigt ist, so dass sich die Fläche des Querschnitts dieses ringförmigen Zwischenflansches (24) schrittweise bis zu dessen Umfang verringert; wobei der ringförmige Zwischenflansch (24) eine zylindrische Endfläche (28) aufweist, die eine sehr stark verringerte Höhe besitzt und auf der gekrümmten ringförmigen Oberfläche (29) aufliegt, welche die flache ringförmige Endfläche (30) des Halses (1) der Flasche mit der zylindrischen Innenseite (31) des Halses (1) der Flasche verbindet.

2. Verschluss gemäß Anspruch 1, **dadurch gekennzeichnet, dass** es zwischen der flachen ringförmigen Oberseite (26) des Zwischenflansches (24) und der Außenseite des oberen Abschnitts (21) des äußeren röhrenförmigen Teils (18) des Ausgießers (17) eine ringförmige Rille (26a) gibt.

3. Verschluss gemäß Anspruch 1 und 2, **dadurch gekennzeichnet, dass** der untere Abschnitt (22) des äußeren röhrenförmigen Teils (18) des Ausgießers (17) außerhalb des oberen Abschnitts (21) angeordnet ist und dass es zwischen der Innenseite des unteren Abschnitts (22) und der Außenseite des oberen Abschnitts (21) eine ringförmige Rille (25) gibt.

4. Verschluss gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der vertikale Abstand zwischen der Oberseite und der Unterseite des flachen ringförmigen Abschnitts (14) des Stöpsels (10) vor der Befestigung des Verschlusses am Hals (1) einer Flasche etwa 1,4 mm beträgt und sich nach der Befestigung des Verschlusses an einer Flasche auf etwa 1,2 mm verringert.

5. Verschluss gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das Verhältnis zwischen dem Außendurchmesser (B) des Zwischenflansches (24) des Ausgießers (17) und dem Außendurchmesser (C) der Spitze des röhrenförmigen Teils (21), wel-

cher die Auslassöffnung für Flüssigkeit aus dem Ausgießer (17) bildet, etwa 1,5 entspricht.

Revendications

1. Fermeture de sécurité pour bouteilles comportant un goulot (1) comprenant une partie supérieure filetée (2) et un col (3) situé au-dessous de ladite partie filetée (2), ladite fermeture comprenant :

- une capsule métallique (4) comportant une surface d'extrémité plate (5) et une jupe cylindrique (6) comportant une partie filetée supérieure qui est en prise avec ladite partie filetée (2) et une partie inférieure (7) constituant un joint d'étanchéité de garantie, qui comporte une région affaiblie circonférentielle (8) et, au-dessous de cette région, une nervure intérieure (9) qui est en prise avec la face inférieure dudit col (3),
- un bouchon-verseur (17) en matière plastique comportant une partie annulaire extérieure (18) qui définit un conduit de sortie pour le liquide contenu dans la bouteille et une partie intérieure (19) sous la forme d'une coupe inversée qui est supportée par rapport à la partie annulaire extérieure (18) au moyen d'une pluralité de nervures espacées (20) ; la partie tubulaire extérieure (18) du bouchon-verseur (17) comprenant une partie tubulaire supérieure (21), un rebord annulaire intermédiaire (24) qui repose sur l'extrémité du goulot (1) de la bouteille et une partie tubulaire inférieure (22) qui s'étend dans le goulot (1) de la bouteille et comporte une zone affaiblie supérieure (8),
- un élément d'étanchéité et de verrouillage tubulaire (32) qui est interposé de force entre la surface intérieure du goulot (1) de la bouteille et la partie tubulaire inférieure (22) du bouchon-verseur (17) et comporte un siège inférieur (35) pour un obturateur à bille (S), et
- un bouchon (10) en matière plastique qui comporte une partie annulaire (14) qui est située et retenue dans la partie supérieure de la capsule métallique (4) et repose sur l'extrémité du goulot (1) de la bouteille et une partie centrale (11) à partir de laquelle s'étend vers le bas une saillie tubulaire (12) qui est en prise de manière étanche avec la surface intérieure de la partie supérieure (21) de la partie tubulaire extérieure (18) du bouchon-verseur (17),

caractérisée en ce que

- le bouchon (10) comporte, entre sa périphérie et ladite saillie centrale tubulaire (12), une partie annulaire plate basse (14),

- dans la face supérieure de cette partie annulaire (14), est formée, de manière adjacente à son bord périphérique, une première gorge annulaire (15) dont la paroi inférieure repose sur l'extrémité du goulot (1) de la bouteille,
- dans la face inférieure de cette partie annulaire (14), est formée une deuxième gorge annulaire (16) qui s'étend entre ladite première gorge annulaire (15) et ladite saillie annulaire centrale (12),
- la partie tubulaire supérieure (21) de la partie tubulaire extérieure (18) du bouchon-verseur (17) est en prise avec la partie radialement intérieure de ladite deuxième gorge annulaire (16) du bouchon (10) en contact avec la surface extérieure de ladite saillie centrale tubulaire (12) du bouchon (10),
- le rebord annulaire intermédiaire (24) de la partie tubulaire extérieure (18) du bouchon-verseur (17) comporte une surface supérieure annulaire plate (26) qui est située au même niveau que l'extrémité du goulot (1) de la bouteille et une surface inférieure (27) qui est inclinée vers le haut et vers l'extérieur de sorte que l'aire de la section transversale dudit rebord annulaire intermédiaire (24) diminue progressivement vers sa périphérie ; ledit rebord annulaire intermédiaire (24) comportant une surface d'extrémité cylindrique (28) dont la hauteur est très réduite et qui repose sur la surface annulaire incurvée (29) reliant la surface d'extrémité annulaire plate (30) du goulot (1) de la bouteille à la surface intérieure cylindrique (31) du goulot (1) de la bouteille.

2. Fermeture selon la revendication 1, **caractérisée en ce qu'une** gorge annulaire (26a) se trouve entre la surface supérieure annulaire plate (26) dudit rebord intermédiaire (24) et la surface extérieure de la partie supérieure (21) de la partie tubulaire extérieure (18) du bouchon-verseur (17).

3. Fermeture selon les revendications 1 et 2, **caractérisée en ce que** la partie inférieure (22) de la partie tubulaire extérieure (18) du bouchon-verseur (17) est située à l'extérieur de la partie supérieure (21) et **en ce qu'une** gorge annulaire (25) est située entre la surface intérieure de ladite partie inférieure (22) et la surface extérieure de ladite partie supérieure (21).

4. Fermeture selon la revendication 1, **caractérisée en ce que** la distance verticale entre la face supérieure et la face inférieure de ladite partie annulaire plate (14) du bouchon (10) est d'environ 1,4 mm avant le montage de la fermeture sur le goulot (1) d'une bouteille et diminue à environ 1,2 mm après le montage de la fermeture sur une bouteille.

5. Fermeture selon la revendication 1, **caractérisée en ce que** le rapport entre le diamètre extérieur (B) dudit rebord intermédiaire (24) du bouchon-verseur (17) et le diamètre extérieur (C) du sommet de la partie tubulaire (21) qui constitue l'ouverture de sortie pour le liquide contenu dans le bouchon-verseur (17) est égal à environ 1,5.

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Fig.1

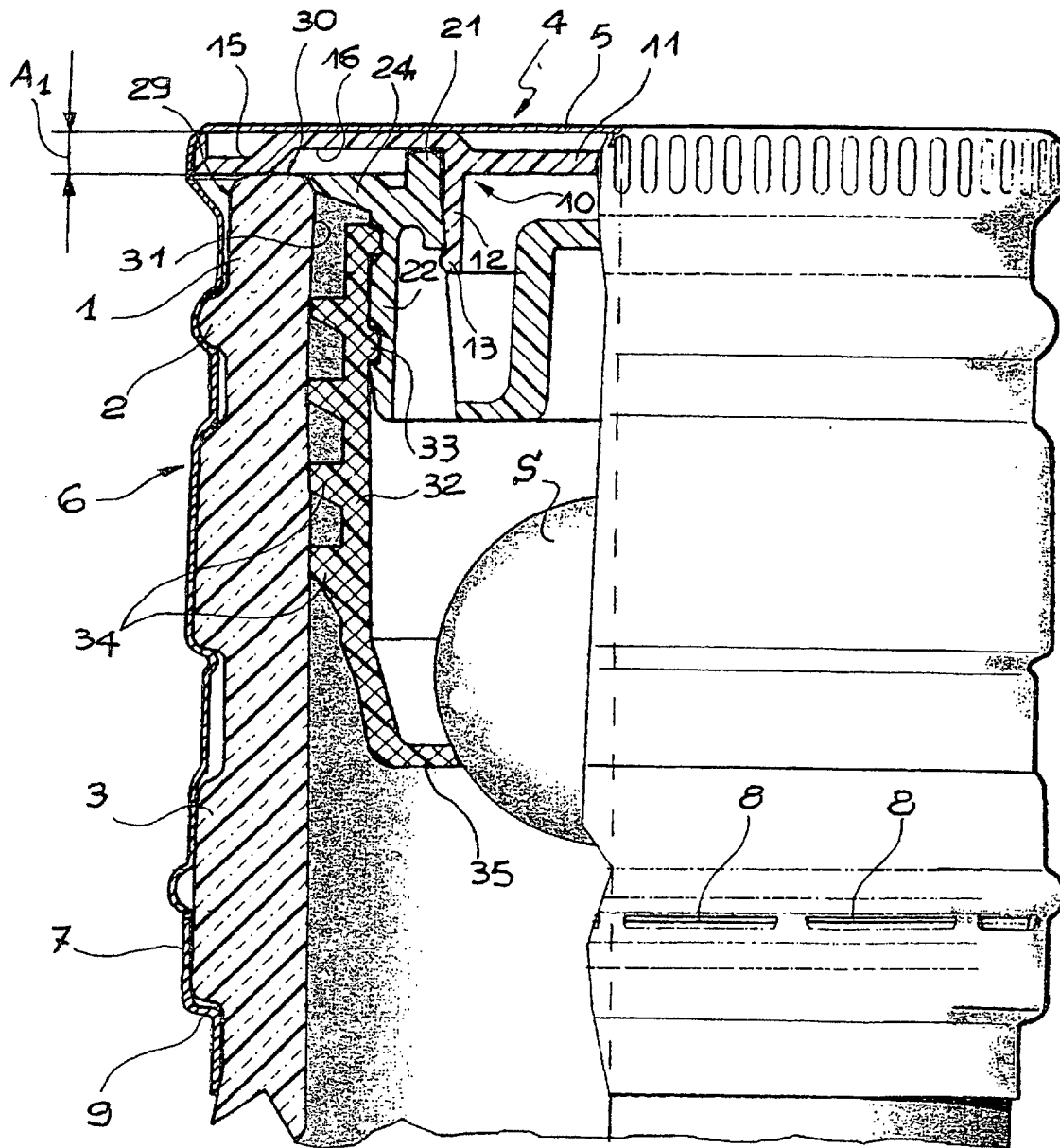


Fig.2

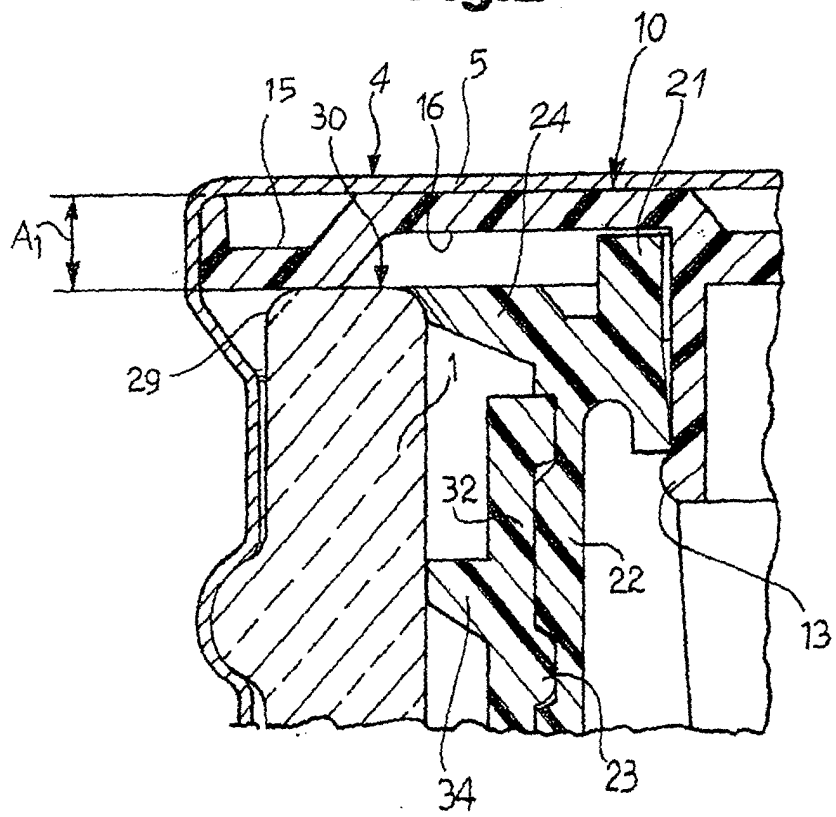


Fig.3

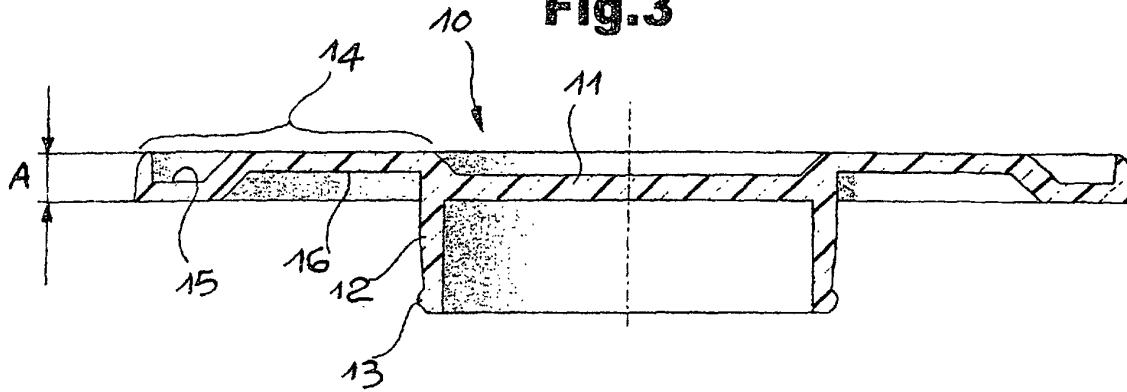


Fig.4

