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(71) Applicant: **ALPLAST S.p.A.**
I-14016 Tigliole d'Asti (Asti) (IT)

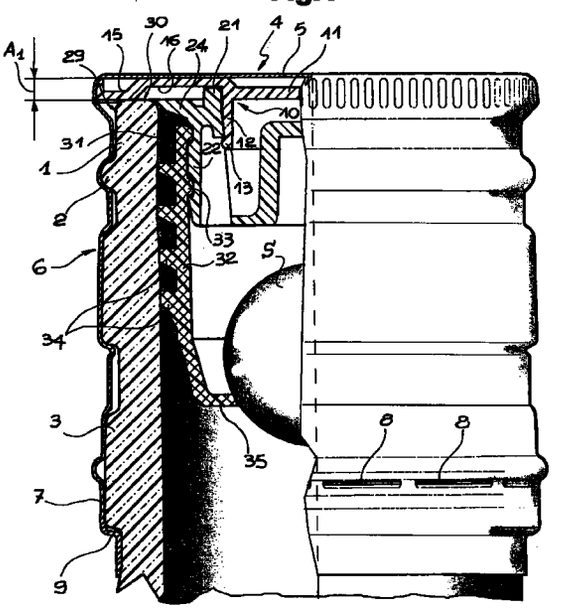
(72) Inventor: **Torchio, Giacinto**
14015 San Damiano D'Asti (Asti) (IT)

(74) Representative:
Jacobacci, Filippo et al
c/o JACOBACCI & PERANI S.p.A.
Corso Regio Parco, 27
10152 Torino (IT)

(54) A security closure for bottles

(57) A security closure for bottles having a threaded neck (1) comprises a metal capsule (4), a pourer (17) of rigid plastics material, a plug (10) of soft plastics material interposed between the bottom of the metal capsule (4) and the pourer (17) and a tubular sealing and locking element (32) of soft plastics material interposed between the neck (1) of the bottle and the pourer (17). The pourer (17) has an intermediate flange (24) which rests on the inner surface of the end of the neck (1) of the bottle, and an upper tubular portion (21) of reduced height which engages in an annular groove (16) formed in the lower surface of a flat peripheral annular part (14) of the plug (10). After the closure has been fitted to the bottle the height (A_1) between the end of the neck (1) of the bottle and the top of the plug (10) is equal to the thickness of a disc seal utilised in a metal capsule closure without pourer after its deformation due to fitting of such closure onto a bottle (1).

Fig.1



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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, comprising 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 (15),

   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.

Fig.1

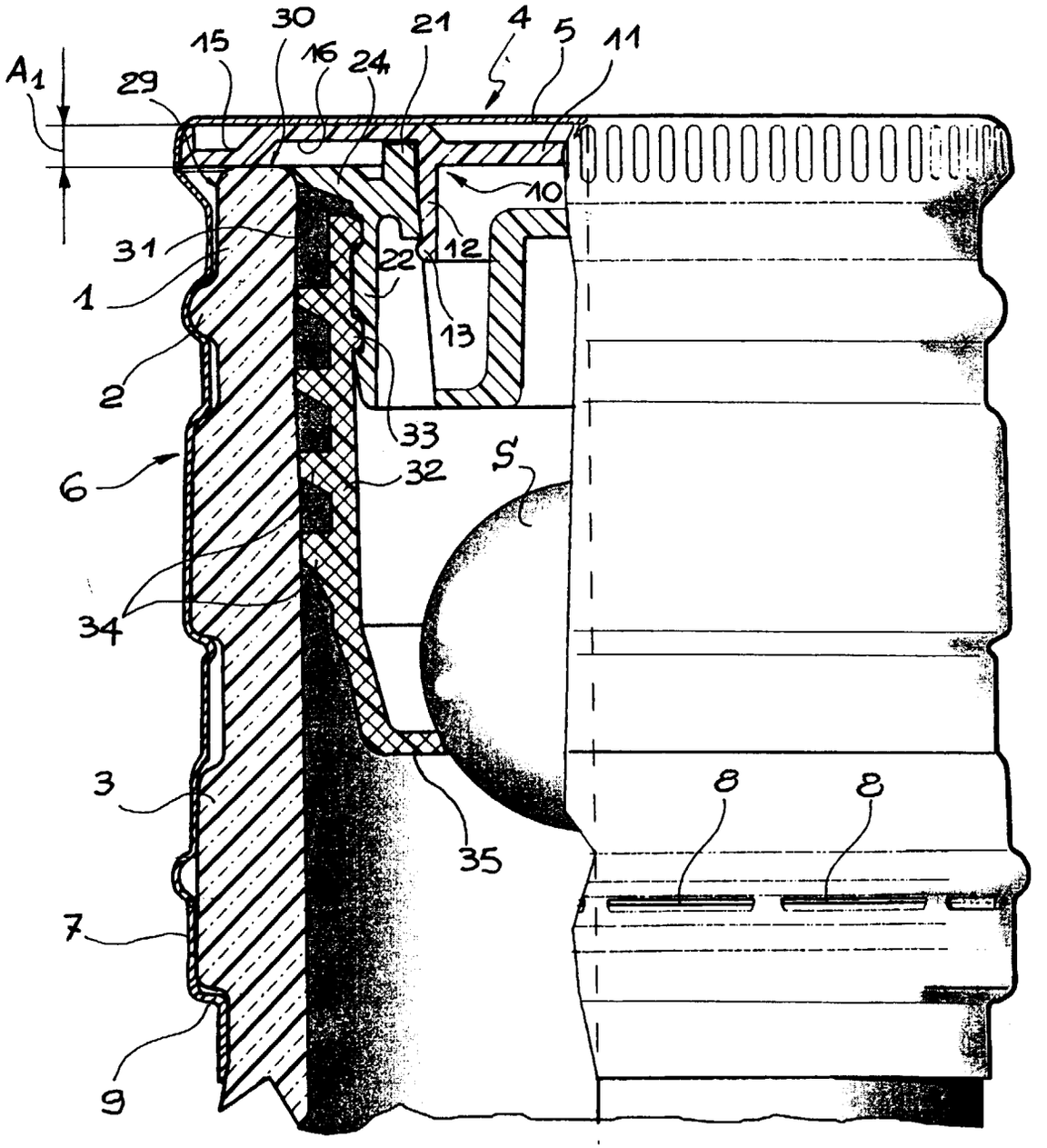


Fig.2

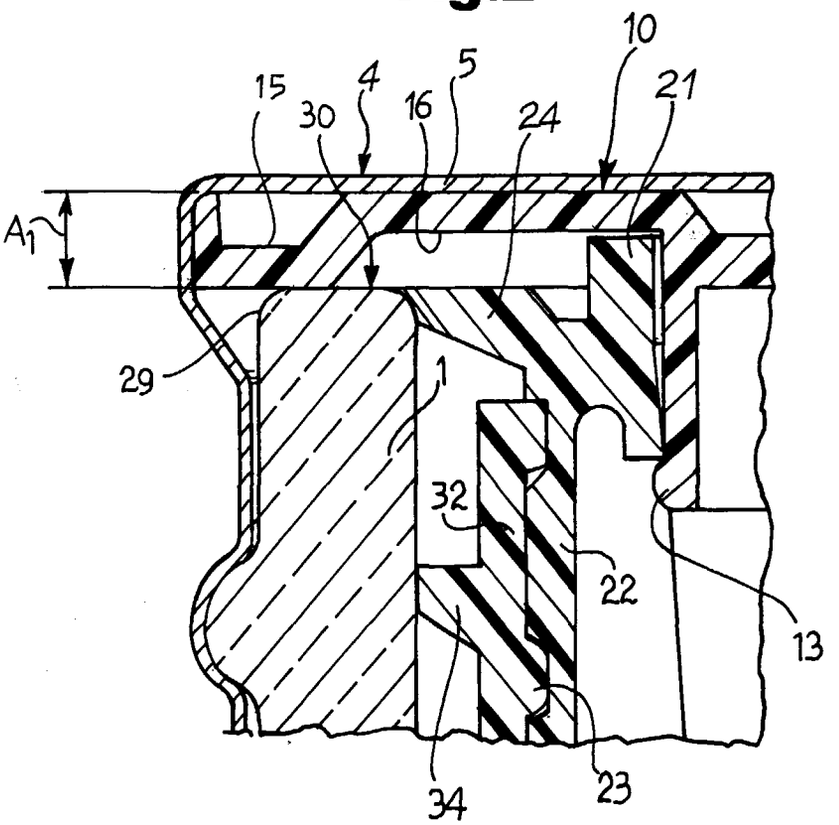


Fig.3

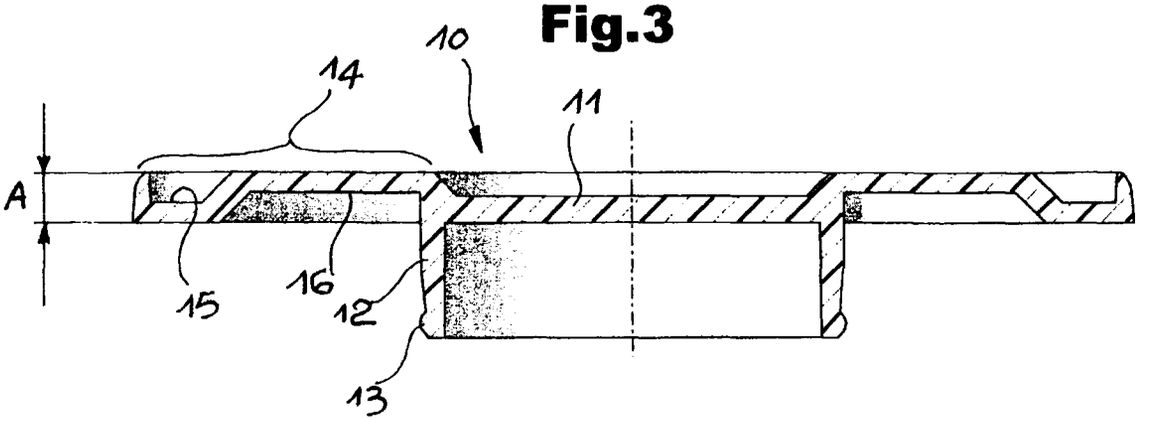
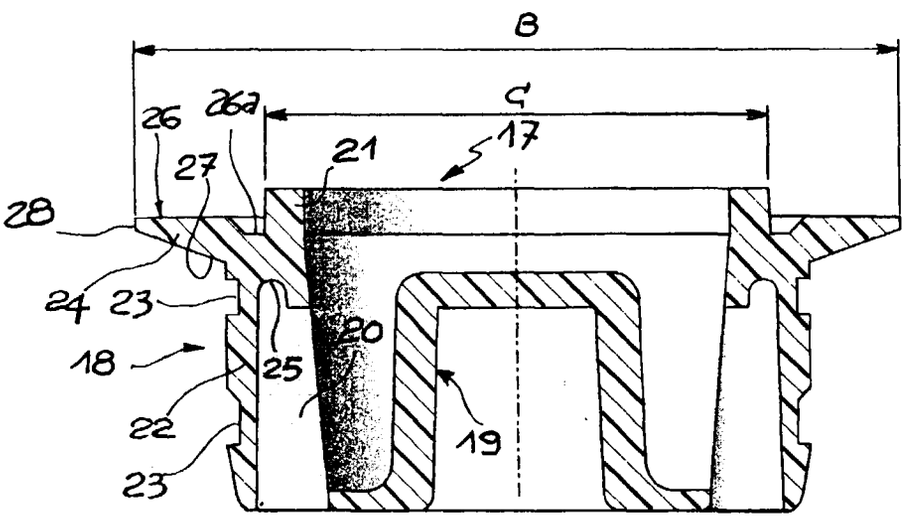


Fig.4



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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 2158

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
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A	GB 2 057 390 A (MONTGOMERY DANIEL & SON LTD) 1 April 1981 (1981-04-01) * fig.1 (ref.23) *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	7 October 1999	Martin, A

CATEGORY OF CITED DOCUMENTS

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