



DEMANDE INTERNATIONALE PUBLIEE EN VERTU DU TRAITE DE COOPERATION EN MATIERE DE BREVETS (PCT)

(51) Classification internationale des brevets ⁷ : B65D 41/62	A1	(11) Numéro de publication internationale: WO 00/63089 (43) Date de publication internationale: 26 octobre 2000 (26.10.00)
<p>(21) Numéro de la demande internationale: PCT/FR00/00992</p> <p>(22) Date de dépôt international: 17 avril 2000 (17.04.00)</p> <p>(30) Données relatives à la priorité: 99/05142 20 avril 1999 (20.04.99) FR 99/10414 9 août 1999 (09.08.99) FR</p> <p>(71) Déposant (pour tous les Etats désignés sauf US): PECHINEY EMBALLAGE ALIMENTAIRE [FR/FR]; 16, boulevard Général Leclerc, F-92115 Clichy (FR).</p> <p>(72) Inventeurs; et (75) Inventeurs/Déposants (US seulement): GRANGER, Jacques [FR/FR]; 13, cours Tourny, F-33500 Libourne (FR). PEYRIN, Yves [FR/FR]; Impasse de la Galté, F-71100 Saint Remy (FR). BOURREAU, Jean-Marie [FR/FR]; 32, route de Colombey, F-71370 Ouroux/Saône (FR), 1, rue de la Virade, F-24700 Le Pizou, (FR).</p> <p>(74) Mandataire: PIGASSE, Daniel; Pechiney, Immeuble SIS, 217, cours Lafayette, F-69451 Lyon Cedex 06 (FR).</p>	<p>(81) Etats désignés: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, brevet ARIPO (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), brevet eurasien (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), brevet européen (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), brevet OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Publiée Avec rapport de recherche internationale.</p>	

ALIAN
R.92
bis
OFFICE

(54) Title: COMPOSITE CLOSURE CAP

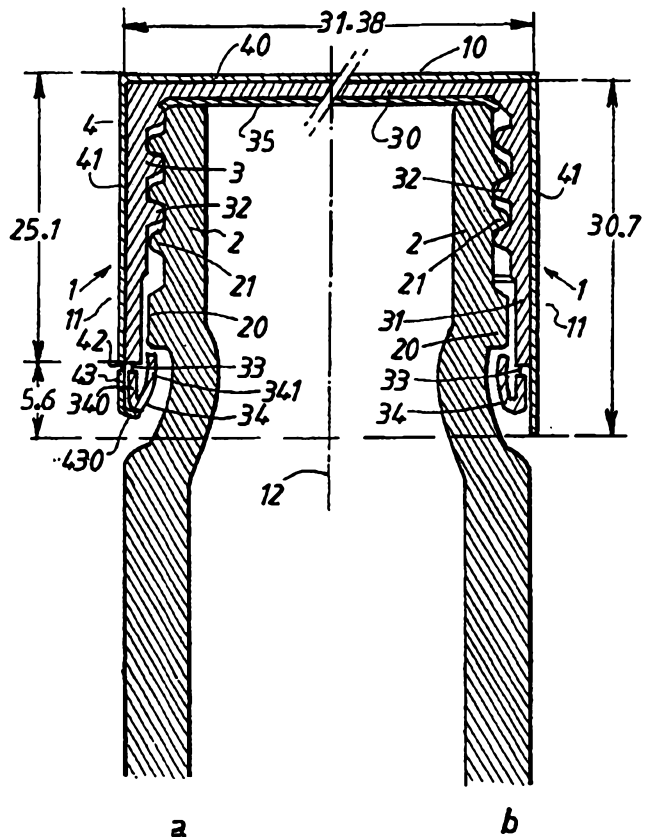
(54) Titre: CAPSULE DE BOUCHAGE COMPOSITE

(57) Abstract

The invention concerns a cap (1) comprising a head and a skirt and is characterised in that it comprises two assembled parts: a) an inner part (3) comprising a head said to be internal (30) and a skirt said to be inner (31), forming an axis of rotation ensuring the so-called technical functions of said cap; b) an external part (4) providing all or part of the decorative function of said cap (1), so as to modify at will the appearance of said cap (1) without modifying its technical functions.

(57) Abrégé

La capsule (1) comprend une tête et une jupe et est caractérisée en ce qu'elle comprend deux parties assemblées: a) une partie intérieure (3) comprenant une tête dite intérieure (30) et une jupe dite intérieure (31), typiquement d'axe de rotation (12), assurant les fonctions dites techniques de ladite capsule, b) une partie extérieure (4) assurant tout ou partie de la fonction de décoration de ladite capsule (1), de manière à pouvoir modifier à volonté l'aspect de ladite capsule (1) sans avoir à modifier lesdites fonctions techniques.



COMPOSITE SEALING CAP

FIELD OF THE INVENTION

The invention relates to the field of caps and, more especially, screw closure caps intended for the closure of recipients or bottles in which the glass ring comprises threading.

These bottles are typically bottles containing aperitifs, liqueurs, alcohol or alcoholic beverages, the consumption of which is typically spread out over time, thus requiring the possibility to close and open said bottles, possibly a large number of times.

These caps most frequently comprise a pilfer-proof or guarantee seal.

STATE OF THE RELATED ART

A large number of sealing caps with guarantee seals are already known.

Some of these caps are made of plastic, as described in the European patent No. 0107 680 in the applicant's name, and typically intended for the closure of plastic water bottles.

Others are made of metal, as described in the French patent No. 2 677 333 or in the French patent applications No. 9705182 or 9706009 in the applicant's name, and typically intended for the closure of bottles containing alcohol, aperitifs and spirits.

PROBLEM STATEMENT

Sealing caps form an important part of the packaging of liquids and make a significant contribution to the final appearance and the image of the packaged product.

The invention aims to meet an increasing demand for products enabling a differentiation, a new aesthetic feature in a field involving many constraints and, given these constraints, where the possibilities for modifications are very limited.

These constraints, other than those resulting from obvious functions for use, are firstly constraints related to the industrial manufacturing of caps at high capacities, at a cost that is not prohibitive.

Then, constraints at the packaging company processing the product to be packaged are involved. For the latter, any modification in the cap must not affect the packaging processes, equipment and standard production capacities, unless in the case of an overall reduction in production costs.

In addition to these constraints, those related to the end user, whose habits or possibilities in terms of opening recipients or bottles must always be taken into account in sealing cap design.

DESCRIPTION OF THE INVENTION

The sealing cap according to the invention, intended for the screw closure of a recipient intended to contain alcoholic beverages, typically a bottle with a neck comprising threading and a pilfer-proof ring, is equipped with sealing means and pilfer-proof means, comprising two assembled parts attached in rotational and axial terms:

a) an inner part, or insert, made of plastic, comprising a so-called inner head and a so-called inner skirt, typically with a rotation axis, with said inner head comprising sealing means and said inner skirt

comprising inner threading on its inner surface intended to co-operate with the threading of said neck,

b) an outer part, or cap, enclosing and hiding at least said inner skirt, with the outer surface of said inner part and the inner surface of said outer part co-operating in view of said assembly of said inner 3 and outer parts, and is characterised in that,

1) said inner part carries out all the so-called technical functions of said cap, and comprises pilfer-proof means, with said inner skirt connected by bridges to a guarantee seal, intended to be held by the ring of said neck and separated from said skirt after a first opening of said cap,

2) said outer part carries out all or part of the decorative function of said cap, and comprises a so-called outer skirt, the length of which is such that it hides, at least before said first opening of said cap, said inner skirt and said guarantee seal, so as to be able to modify the appearance of said cap at will without having to modify said technical functions, with said guarantee seal becoming typically visible after said first opening.

These means according to the invention make it possible to solve the problem described, as illustrated with the figures described below.

DESCRIPTION OF FIGURES

All the figures, except figures 9a and 9b relate to cap embodiments according to the invention which comprise an inner part 3 and an outer part 4, with the references starting with a "3" typically relating to said inner part 3, and those starting with a "4" typically relating to said outer part 4.

Figures 1a to 6b are partial vertical half-sections along the axis 12 of the cap 1 screwed onto a neck 2 of a bottle.

For convenience purposes, two embodiments have been represented opposite each other in figures 1a and 1b, 2a and 2b, 3a and 3b, 5a and 5b, 6a and 6b. In these figures, the cap is sealed by an added seal 35, except in figure 3b where sealing is performed by a lip seal 36.

Figures 7 and 8 are transversal sections perpendicular to the axis 12 of the cap 1.

Figures 1a and 2a, as for figures 3a, 5a and 6a, correspond to a first guarantee seal embodiment, before a first opening in figure 1a and after a first opening in figure 2a, wherein the ends of both the inner skirt 31 and the outer skirt 41 comprise a series of bridges 33, 42 and a guarantee seal 34, 43.

The inner guarantee seal 34 comprises an inner ring 340 and flexible clips 341 that tend to deflect towards the neck.

The outer guarantee seal 43 comprises a rim 430 which passes under the lower end of the inner guarantee seal 34, such that, upon opening, the two guarantee seals 34 and 43 fall onto the neck and clearly indicate that a first opening has already taken place.

Figures 1b and 2b, as for figures 3b, 5b and 6b, correspond to a second guarantee seal embodiment, before a first opening in figure 1b and after a first opening in figure 2b, wherein only the inner skirt 31 comprises a series of bridges 33 and a guarantee seal 34. In this case, the outer skirt 41 is sufficiently long to hide the guarantee seal 34 before the first opening, but sufficiently short so that, once the

bridges 33 have been broken, the guarantee seal becomes visible (in figure 2b) and clearly indicates that a first opening has already taken place.

In figures 1b to 2b, said outer part 4 covers said inner part 3 entirely and is typically cylindrical in shape, the head 40 being flat, and the skirt 41 being cylindrical.

Figures 3a, 3b, 5a, 5b, 6a, 6b and 7 particularly relate to variants of said outer part 4.

Figure 3a: the outer part 4 forms a mushroom cap.

Figure 3b: said outer skirt 41 comprises a two-segment profile of bridged straight lines.

This outer part may be made of either moulded plastic or pressed metal and then assembled with said inner skirt 31.

Figure 5a and 5b: said outer part 4 is limited to an outer skirt 41, which covers said inner skirt 31 completely in figure 5a, and to a significant extent in figure 5b, the diameter of said inner part 3 being greater where said outer skirt 41 is absent so that said cap has a cylindrical skirt 11 of the same radius over its entire height.

Figures 6a and 6b: said inner head 30 is partially covered by said outer head 40.

In figure 6a, the thickness of the inner head 30 is increased where the outer head 40 is absent to obtain a uniform, plane head 10, unlike the case in figure 6b.

Figure 7: said outer skirt 41 has any non-cylindrical shape.

Figures 4a to 4e represent portions of inner 31 and outer 41 skirts and illustrate assembly embodiments of said inner 31 and outer 41 parts using circular

attachment means 44 formed by the co-operation of male circular components on one part, with female components on the other opposite part, so as to eliminate the possibility of a relative movement, in the axial direction, between said inner part 3 and said outer part 4.

Figure 8 illustrates an assembly embodiment of said inner 31 and outer 41 parts using vertical or axial attachment means 45 formed by the co-operation of axial ribbing on the outer surface of said inner skirt 31 with axial grooves on the inner surface of said outer skirt 41, so as to bridge said inner 3 and outer 4 parts in rotation using mechanical means.

Figures 9a and 9b illustrate an assembly embodiment in which the inner skirt 31 comprises a cylindrical taper 37 on its outer surface in which a skirt 41 may be pressed.

Figures 10a and 10b illustrate another embodiment according to the invention in which said outer part 4 is itself composite and composed of an assembly of a head 400 and a skirt 410, with the possibility of using the same or different constituent materials for said head 400 and said skirt 410, increasing creation possibilities further.

Figures 11a to 11d illustrate the decorative possibilities with the localised surface treatment of an aluminium skirt, so as to obtain a contrast in colour, shine, roughness, in a word, appearance, between the hatched part 410 and the non-hatched background 411.

Figures 12a to 12f are partial axial section (figure 12a) or enlarged 12b to 12f views illustrating

radial and/or compression means embodiments intended to increase tightness;

Figure 12a illustrates two embodiments of radial compression means.

5 In the embodiment represented in the left section of figure 12a, which is enlarged in figure 12b, the compression means forms a step with $E_a > E_r$ and the inner head is shaped like an annular rim which approximately covers the edge 22 of the neck.

10 However, in the embodiment represented in the right section of figure 12a, which is enlarged in figure 12c, the compression means forms a step with E_a similar to E_r and the inner head 30 is solid.

Figure 12d illustrates an example of axial
15 compression using a circular rib 300. A circular rib or holding rim 312 enables the seal to remain attached to the cap before use.

Figure 12e illustrates an example of an insert applying radial compression with a curved part 311,
20 with the insert not comprising an inner head.

Figure 12f illustrates an example of an insert applying radial compression with compression means attached to said inner head 30 and not said skirt 31.

25 DETAILED DESCRIPTION OF THE INVENTION

According to the invention, said outer part 4 may comprise a so-called outer skirt 41, and, if applicable, head 40.

Most of the figures illustrate this embodiment.

30 However, special decorative effects could be obtained if the skirt of the cap 1 was partly composed of a portion of said inner skirt 31 and partly of a

portion of said outer skirt 41, as would be the case in figure 5b with a shorter outer skirt 41.

Typically, said outer part 4 may comprise a straight, typically cylindrical, skirt 41, which corresponds to the most common case, but the invention can also be used to create originally shaped caps, with a non-cylindrical straight skirt 11 as represented as a section in figure 7, or a non-straight skirt, as represented in figure 3a.

Said outer part 4 may form a rotation surface, of a constant radius or not depending on the height in question, as illustrated in figure 3a.

In any case, said outer part 4, of any outer shape, is attached to said inner part 3; for this, said outer part 4 and said inner part 3 use mechanical 44, 45 or chemical attachment means, typically by gluing, as the means for said assembly.

Mechanical attachment means have been represented in figures 4a to 4e and 8. The inner 3 and outer 4 parts may also be assembled using a snap-on or clip-on mechanism, with the materials and/or thickness of the parts 3 and 4 enabling elasticity and spring effects enabling their assembly.

In the other figures, the attachment means has not been represented, since it consists of gluing, using a layer of adhesive, or heat-sealing, of all or part of said inner part 3 on all or part of said outer part 4.

According to the invention, said inner part 3 may be a PP insert, comprising inner threading 32, on which the guarantee seal 34 comprises clips 341.

Such an insert may be obtained by PP moulding or injection. It is possible to obtain such a plastic

insert as described in the European patent No. 107 680 in the applicant's name.

According to an embodiment of the invention, said outer part 4 may be of metal, or comprise a metal part inside, and be attached to said insert 3 by gluing.

In this case, said outer part 4 may be made of surface-treated aluminium, typically brushed or anodised, to create a "metallic" colour or appearance.

According to another embodiment of the invention, said outer part 4 may be made of plastic, typically polystyrene, and attached to said insert by mechanical assembly or by gluing. Preferably, said plastic outer part 4 is metal-coated.

Whether by using surface-treated aluminium or coating plastic with metal, the invention makes it possible to obtain a wide variety of decorative effects.

The caps according to the invention may comprise any type of guarantee seal known in itself. Typically, said guarantee seal 34 comprises an inner ring 340 equipped with fastening components 341, typically clips or hooks, turned towards the inside of said cap, and snapped under said ring 20 such that, during said first opening, the bridges 33 break, with said guarantee seal 34 prevented from moving upwards by the co-operation of said components 341 with said ring 20, such that said guarantee seal 34, separated from the rest of said cap, is the visible proof of said first opening.

An example of a guarantee seal, among the many known, is given in the European patent No. 107 680.

In the cases of caps illustrated in figures 1b, 3b, 5b and 6b, the outer skirt 41 hides said guarantee seal 34, before said first opening. However, at the

first opening, during which the bridges 33 are broken, the guarantee seal, separated from the rest of the skirt, falls and is lowered by a few millimetres on the neck and becomes visible as a result, even on a closed
5 bottle, as illustrated in figure 2b.

According to another embodiment illustrated particularly in figures 1a and 1b, said outer skirt 41, like the inner skirt 31, comprises bridges 42 attaching it to a so-called outer ring 43, with said outer ring
10 locked upwards by said inner ring 340, typically by means of a lower rim 430 of said outer ring 43, such that, during said first opening, the outer 43 and inner 340 rings are separated from the rest of said cap.

In any case, the ring 20, by locking, during the
15 first unscrewing, the clips 341 or any component of a guarantee seal of said inner part 3, fulfilling an equivalent function, breaks the bridges 33, and, if applicable, the bridges 42, and therefore causes the guarantee seal to fall onto the neck of the bottle,
20 making it possible to see, unequivocally, that a first opening has already taken place.

The caps according to the invention may comprise any sealing means known in itself, typically by using either a circular lip 36 attached to said inner head,
25 as illustrated in figure 3b, or an added seal 35 as illustrated in the other figures concerning the cap 1.

More precisely, the caps may comprise, in order to guarantee the tightness of the recipient once closed, an added seal 35 of sufficient diameter to cover the
30 edge 22 of the neck 2 and axial and/or radial compression means on the inner surface of said insert, to apply said seal in a tight manner onto said edge 22 of said neck 2 during said closure.

A compression means is said to be axial when it is applied onto the upper part 220 of the edge, and it is said to be radial in the other cases, when it is applied either onto the curved part 221 or onto the vertical part 222 of the edge, as illustrated in figure 5 12d.

Said axial compression means may comprise a circular rib 300 formed on the inner wall of said inner head 30 intended to compress said seal onto the upper 10 part 220 or said edge 22, typically plane, as illustrated in figure 12d.

Said radial compression means may comprise an annular extra thickness 310,302 formed on said inner skirt 31 or on said inner head 30, typically at the 15 bridge 301 between the inner head 30 and the inner skirt 31, and intended to compress said seal onto all or part of the curved part 221, typically inclined, and/or onto the radial part 222, typically vertical, of the edge 22. This extra thickness may be attached to 20 the inner skirt 31, as illustrated in figures 12a to 12e with the reference "310", or attached to the inner head 30 as illustrated in figure 12f with the reference "302".

According to a variant illustrated in figures 12a 25 to 12d, said annular extra thickness 310 may take the form of an annular step positioned at the inner annular angle formed at the bridge of the inner head 30 and the inner skirt 31.

According to another variant illustrated in figure 30 12b, said inner head 30 may comprise an annular rim 38 with a punched central part, typically opposite the mouth 23 of said neck 2. This variant makes it possible

to save weight and material for the plastic insert 3, particularly in the case of radial compression means.

Indeed, the applicant has observed that, the greater the radial type of compression effort, the greater the possibility to reduce the thickness of said inner head 30.

In this case, as illustrated in figure 12e, the cap will have the following characteristics:

a) said inner head 30 has a thickness ranging from 0 to 0.5 mm,

b) said compression means is typically radial, and

c) this compression means comprises a curved part 311 with a curvature typically similar to that of the curved part 221 of said edge which is opposite.

This embodiment makes it possible to reduce the height of the cap, typically by 1 to 2 mm, which may be very useful in practice, given the standardisation constraints in the field of packaging.

The specialist may adapt the shape and exact dimensions of the insert and the axial and/or radial compression means, e.g. the thickness E_a and E_r as illustrated in figure 12b. Indeed, he may choose the thickness of said compression means as a function of the thickness E_j of the seal and the space E_o between said neck and said cap in particular, such that said recipient is closed in a tight manner by said cap, the thickness of the locally compressed seal or the distance E between the end of said compression means and said edge being typically between $0.2 E_j$ and $0.7 E_j$, where E_j is typically between 1 and 2.5 mm.

Said axial and/or radial compression may be an integral part of said insert 3 or form an added part.

Preferably, said compression means is an integral part of said insert, as illustrated in figures 12a to 12f.

It is advantageous for the cap according to the invention to comprise holding means for said added seal, typically a holding rim 312 attached to said inner skirt 31.

EXAMPLES OF APPLICATIONS

10 Firstly, we manufactured inner parts or inserts 3 in PP with a cylindrical outer surface, with a guarantee seal 34, according to the process described in the European patent No. 107 680, and according to a common model for the figures attached, such as figures
15 1a to 2b.

Secondly, we manufactured different outer parts or caps 4:

- in aluminium as represented in figures 1a to 2b, with different surface treatments, as illustrated in
20 figures 11a to 11d,

- in metal-coated polystyrene, as represented in figures 1a to 2b.

Finally, we assembled the caps 4 and the inserts 3 using an adhesive.

25 We also manufactured caps according to figures 12b and 12e using a commercially available seal 35.

ADVANTAGES OF THE INVENTION

30 The invention makes it possible to solve the problem described and paves the way for a wide diversity in terms of appearance. However, these caps offer the same usage behaviour in response to the constraints encountered.

Therefore, the invention enables individualisation and customisation of caps acceptable in economic terms, using the concept according to the invention separating technical functions and aesthetic functions.

LIST OF REFERENCES

	SEALING CAP	1
	HEAD	10
5	SKIRT	11
	ROTATION AXIS	12
	NECK OF RECIPIENT	2
	PILFER-PROOF RING	20
	THREADING	21
10	EDGE	22
	UPPER PART	220
	CURVED PART	221
	VERTICAL PART	222
	MOUTH	23
15	INNER PART OR INSERT	3
	INNER HEAD	30
	CIRCULAR RIB	300
	HEAD-SKIRT BRIDGE	301
	ANNULAR EXTRA THICKNESS ...	302
20	INNER SKIRT	31
	ANNULAR EXTRA THICKNESS ...	310
	CURVED PART	311
	HOLDING RIM	312
	INNER THREADING	32
25	BRIDGES	33
	GUARANTEE SEAL	34
	INNER RING	340
	CLIPS	341
	ADDED SEAL	35
30	LIP SEALS	36
	TAPER	37
	HEAD/ANNULAR RIM	38
	OUTER PART OR CAP	4

	OUTER HEAD	40
	COMPOSITE HEAD	400
	OUTER SKIRT	41
	COMPOSITE SKIRT	410
5	BRIDGES	42
	OUTER RING	43
	LOWER RIM	430
	CIRCULAR ATTACHMENT MEANS .	44
	VERTICAL ATTACHMENT MEANS .	45

CLAIMS

1. Sealing cap (1) intended for the screw closure of a recipient intended to contain alcoholic beverages, typically a bottle with a neck (2) comprising threading (21) and a pilfer-proof ring (20), equipped with
5 sealing means and pilfer-proof means, comprising two assembled parts attached in rotational and axial terms:

a) an inner part (3), or insert, made of plastic, comprising a so-called inner head (30) and a so-called inner skirt (31), typically with a rotation axis (12),
10 with said inner head (30) comprising sealing means and said inner skirt (31) comprising inner threading (32) on its inner surface intended to co-operate with the threading (21) of said neck,

b) an outer part (4), or cap, enclosing and hiding
15 at least said inner skirt (31), with the outer surface of said inner part (3) and the inner surface of said outer part (4) co-operating in view of said assembly of said inner (3) and outer (4) parts, the cap being characterised in that,

20 1) said inner part (3) carries out all the so-called technical functions of said cap, and comprises pilfer-proof means, with said inner skirt (31) connected by bridges (33) to a guarantee seal (34), intended to be held by the ring of said neck and
25 separated from said skirt after a first opening of said cap,

2) said outer part (4) carries out all or part of the decorative function of said cap (1), and comprises a so-called outer skirt (41), the length of which is
30 such that it hides, at least before said first opening of said cap (1), said inner skirt (31) and said

guarantee seal (34), so as to be able to modify the appearance of said cap (1) at will without having to modify said technical functions, with said guarantee seal (34) becoming typically visible after said first opening.

2. Cap according to claim 1 wherein said outer part (4) comprises a so-called outer head (40).

3. Cap according to any of claims 1 to 2 wherein said outer part (4) comprises a straight skirt (41).

4. Cap according to any of claims 1 to 2 wherein said outer part (4) forms a rotation surface, of a constant radius or not depending on the height in question.

5. Cap according to any of claims 1 to 4 wherein said outer part (4), of any outer shape, and said inner part (3) use mechanical (44, 45) or chemical attachment means, typically by gluing, as the means for said assembly, to said inner part (3).

6. Cap according to any of claims 1 to 5 wherein said inner part (3) is a PP insert, equipped with inner threading (32), on which the guarantee seal (34) comprises clips (341).

7. Cap according to any of claims 1 to 6 wherein said outer part (4), made of metal or comprising a metal part, is attached to said insert by gluing.

8. Cap according to claim 7 wherein said outer part (4) is made of surface-treated aluminium, typically brushed or anodised, to create a "metallic" colour or appearance.

9. Cap according to any of claims 1 to 6 wherein said outer part (4), made of plastic, typically polystyrene, is attached to said insert by mechanical assembly or by gluing.

10. Cap according to claim 9 wherein said outer part (4) is metal-coated.

11. Cap according to any of claims 1 to 10 wherein said guarantee seal (34) comprises an inner ring (340) 5 equipped with fastening components (341), typically clips or hooks, turned towards the inside of said cap, and snapped under said ring (20) such that, during said first opening, the bridges (33) break, with said guarantee seal (34) prevented from moving upwards by 10 the co-operation of said components (341) with said ring (20), and such that said guarantee seal (34), separated from the rest of said cap, becomes the visible proof of said first opening.

12. Cap according to claim 11 wherein said outer 15 skirt (41) comprises bridges (42) attaching it to a so-called outer ring (43), with said outer ring locked upwards by said inner ring (340), typically by means of a lower rim (430) of said outer ring (43), such that, during said first opening, the outer (43) and inner 20 (340) rings are separated from the rest of said cap.

13. Cap according to any of claims 1 to 12 wherein said sealing means typically comprises an added seal (35) or a circular lip (36) attached to said inner head.

25 14. Cap according to claim 13 comprising an added seal (35) of sufficient diameter to cover the edge (22) of the neck (2) and axial and/or radial compression means on the inner surface of said insert, to apply said seal in a tight manner onto said edge (22) of said 30 neck (2) during said closure.

15. Cap according to claim 14 wherein said axial compression means comprises a circular rib (300) formed on the inner wall of said inner head (30) intended to

compress said seal onto the upper part (220) of said edge (22), typically plane.

16. Cap according to any of claims 14 to 15 wherein said radial compression means comprises an annular extra thickness (310, 302) formed on said inner skirt (31) or on said inner head (30), typically at the bridge (301) between the inner head (30) and the inner skirt (31), and intended to compress said seal onto all or part of the curved part (221), typically inclined, and/or onto the radial part (222), typically vertical, of the edge (22).

17. Cap according to claim 16 wherein said annular extra thickness (310) takes the form of an annular step positioned at the inner annular angle formed at the bridge of the inner head (30) and the inner skirt (31).

18. Cap according to any of claims 14 to 17 wherein said inner head (30) comprises an annular rim (38) with a punched central part, typically opposite the mouth (23) of said neck (2).

19. Cap according to any of claims 14 to 18 wherein, a) said inner head (30) has a thickness ranging from 0 to 0.5 mm, b) said compression means is typically radial, and c) this compression means comprises a curved part (311) with a curvature typically similar to that of the curved part (221) of said edge which is opposite.

20. Cap according to any of claims 14 to 19 wherein the thickness of said compression means is chosen as a function of the thickness E_j of the seal and the space E_o between said neck and said cap in particular, such that said recipient is closed in a tight manner by said cap, the thickness of the locally compressed seal or the distance E between the end of

said compression means and said edge being typically between $0.2 E_j$ and $0.7 E_j$, where E_j is typically between 1 and 2.5 mm.

21. Cap according to any of claims 14 to 20
5 wherein said axial and/or radial compression means is an integral part of said insert (3) or forms an added part.

22. Cap according to any of claims 13 to 21
10 comprising holding means for said added seal, typically a holding rim (312) attached to said inner skirt (31).

ABSTRACTCOMPOSITE SEALING CAP

5 The cap (1) comprises a head and skirt and is characterised in that it comprises two assembled parts:

 a) an inner part (3) comprising a so-called inner head (30) and a so-called inner skirt (31), typically with a rotation axis (12), carrying out the so-called
10 technical functions of said cap,

 b) an outer part (4) carrying out all or part of the decorative function of said cap (1), so as to be able to modify the appearance of said cap (1) at will without having to modify said technical functions.

15

Fig. 1a&b

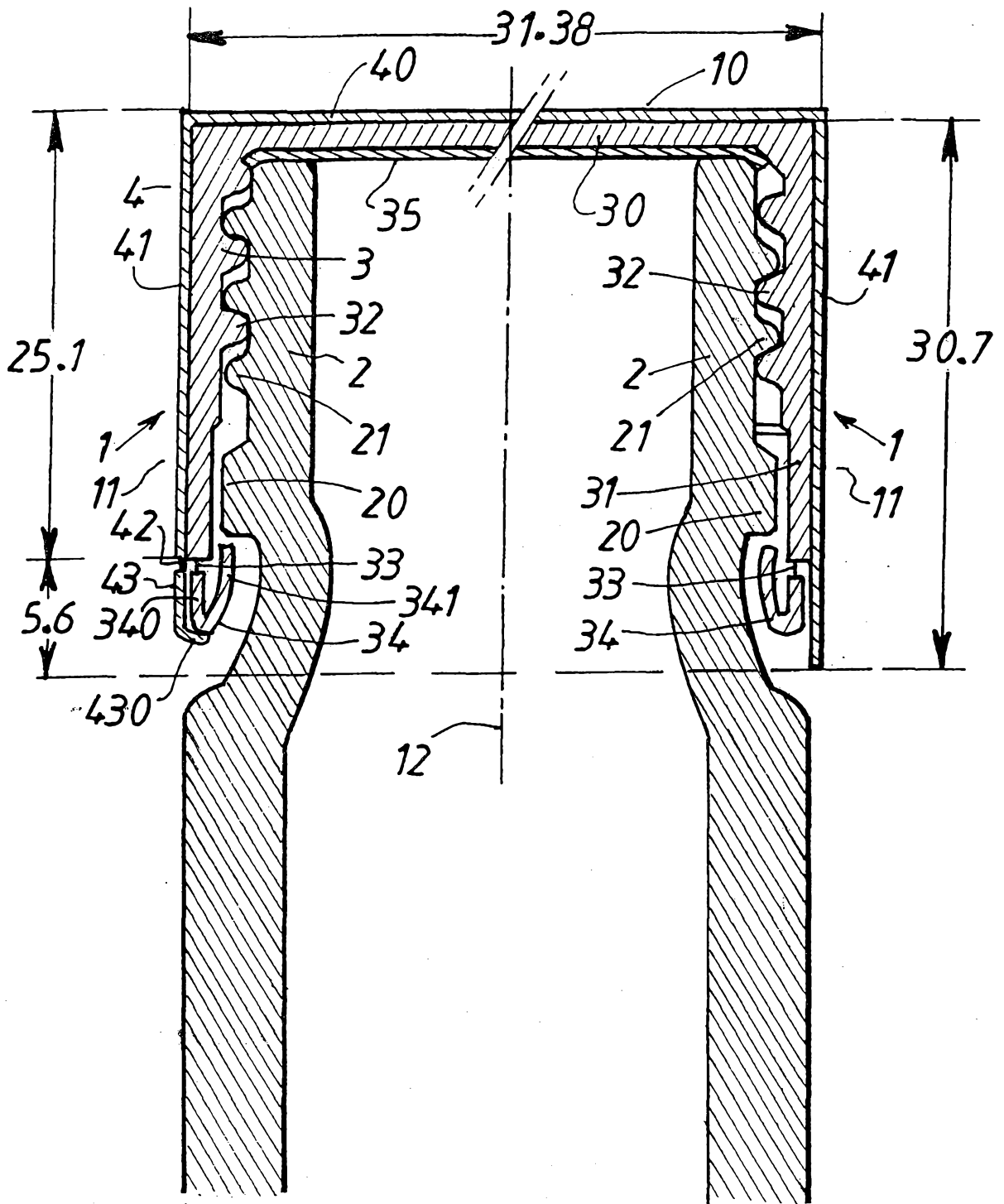


FIG.1a

FIG.1b

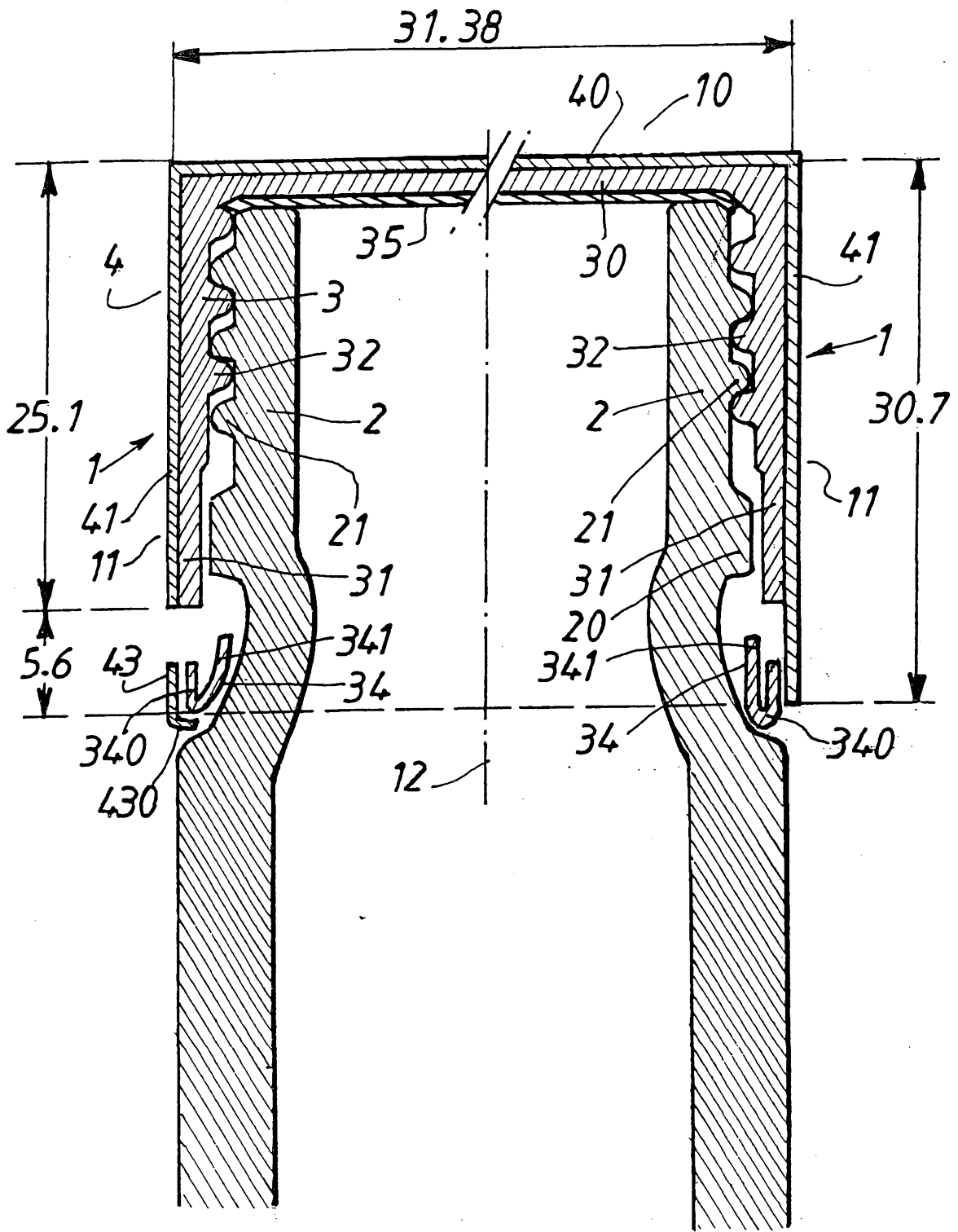


FIG. 2a

FIG. 2b

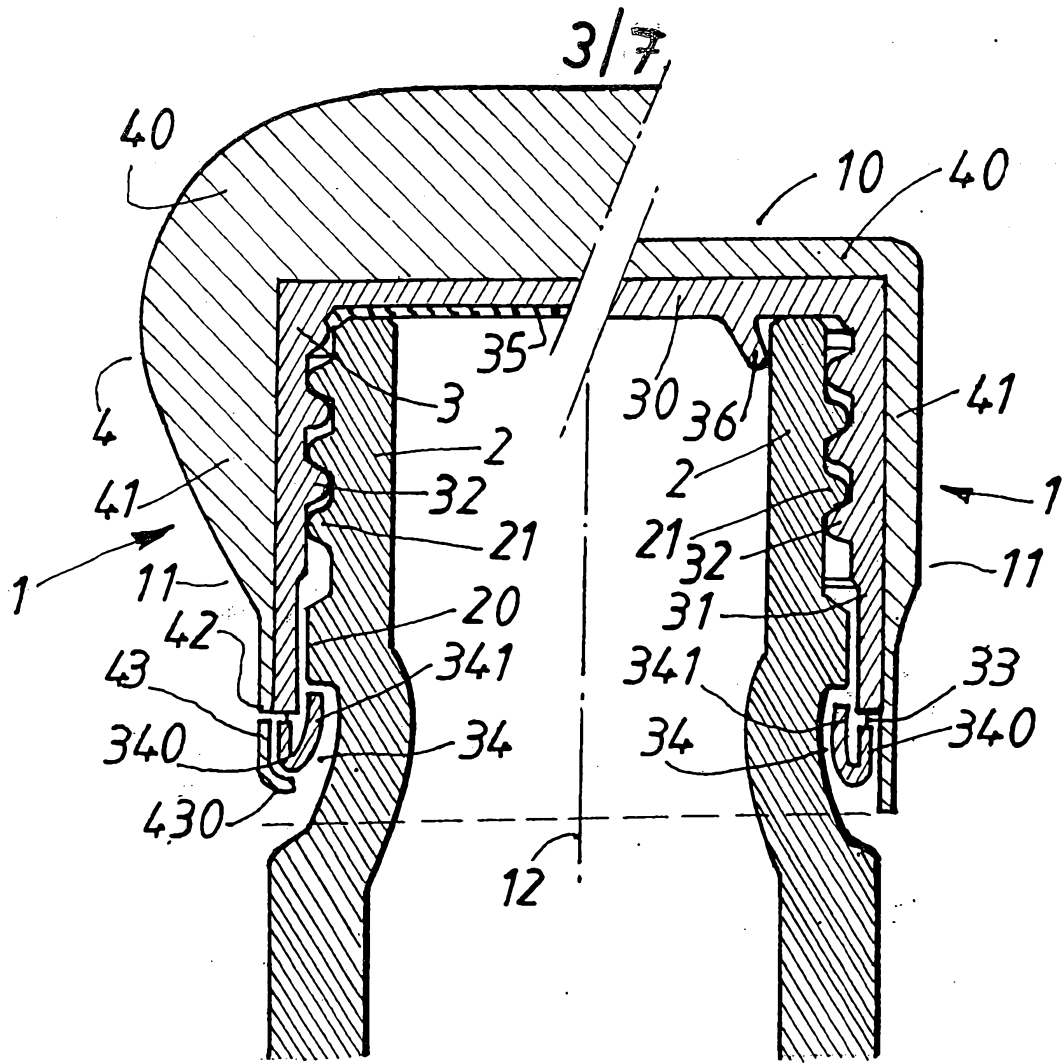


FIG. 3a

FIG. 3b

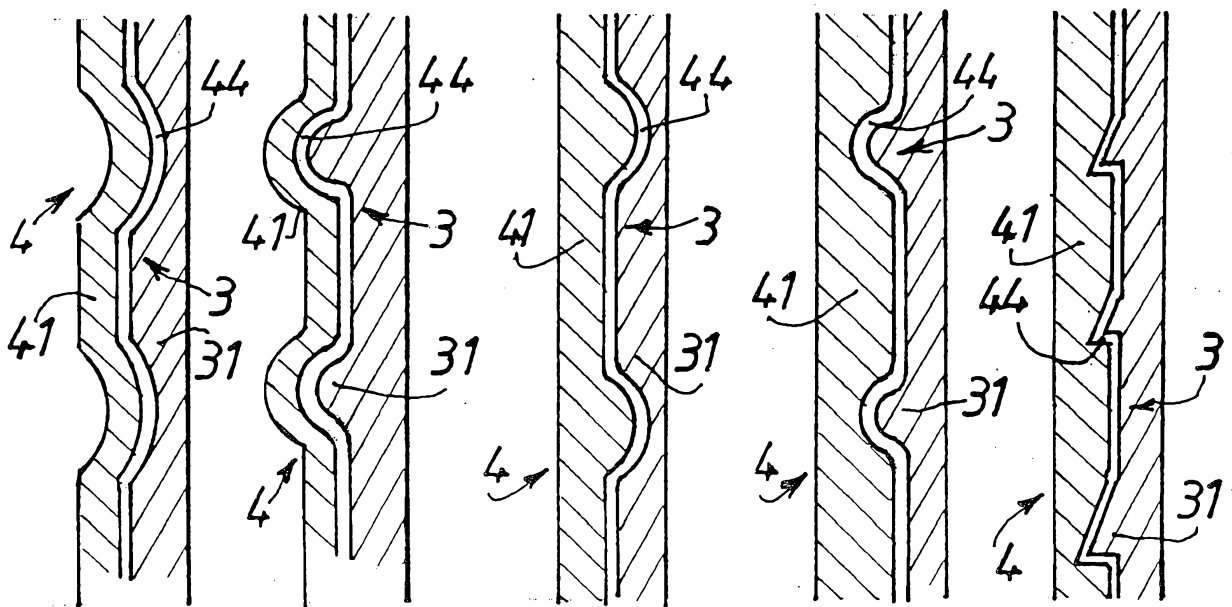


FIG. 4a

FIG. 4b

FIG. 4c

FIG. 4d

FIG. 4e

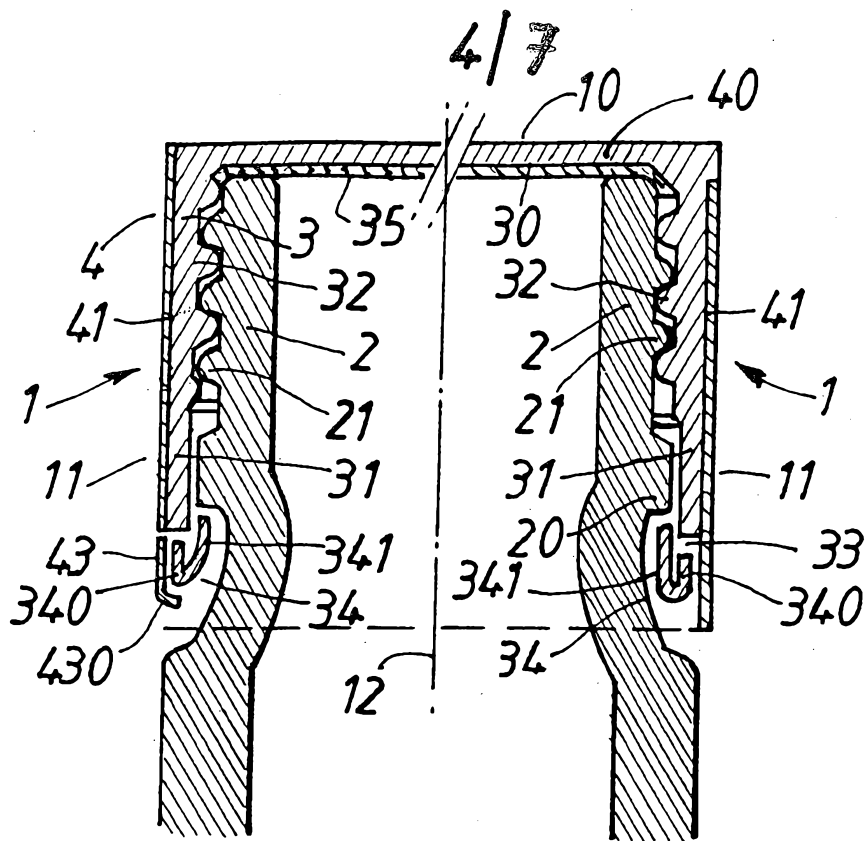


FIG. 5a

FIG. 5b

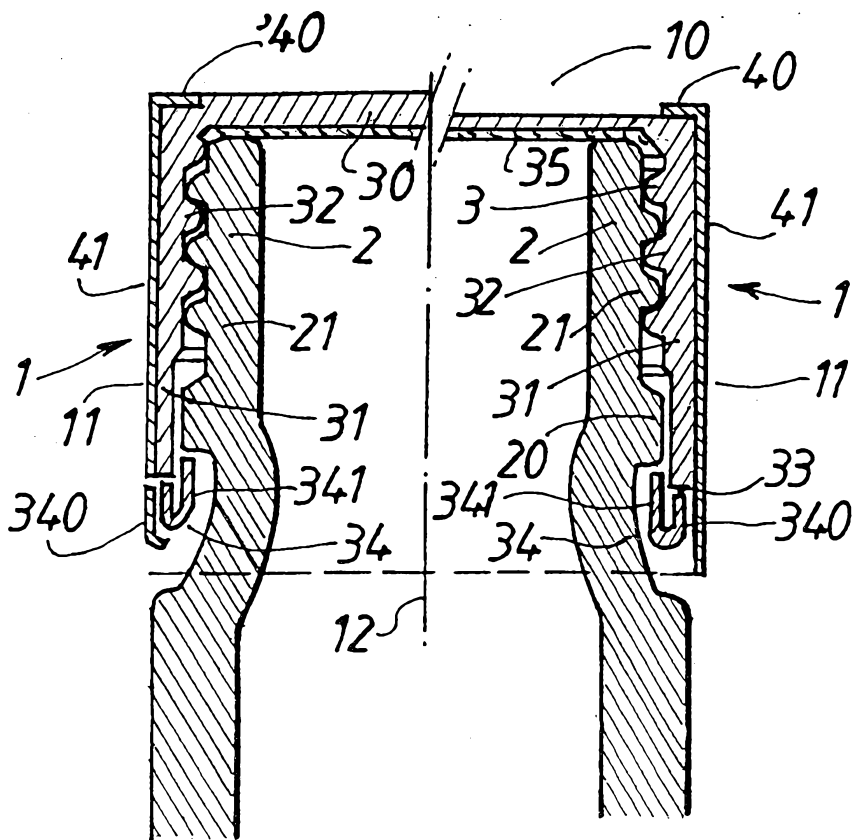


FIG. 6a

FIG. 6b

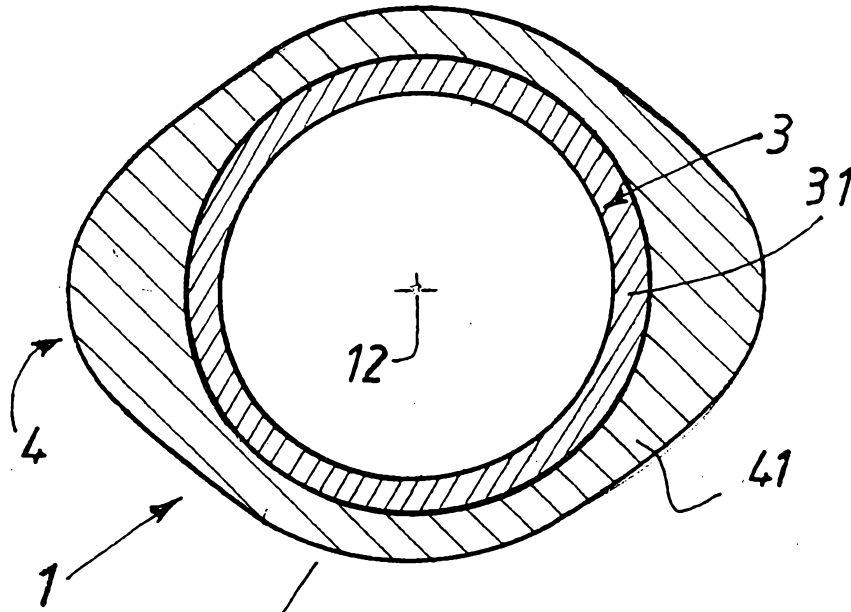


FIG. 7

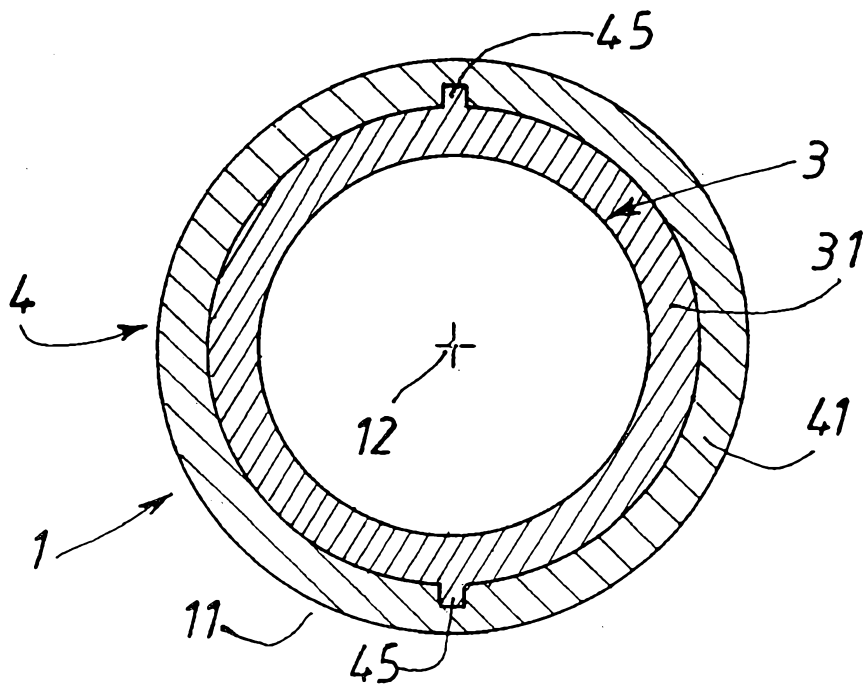


FIG. 8

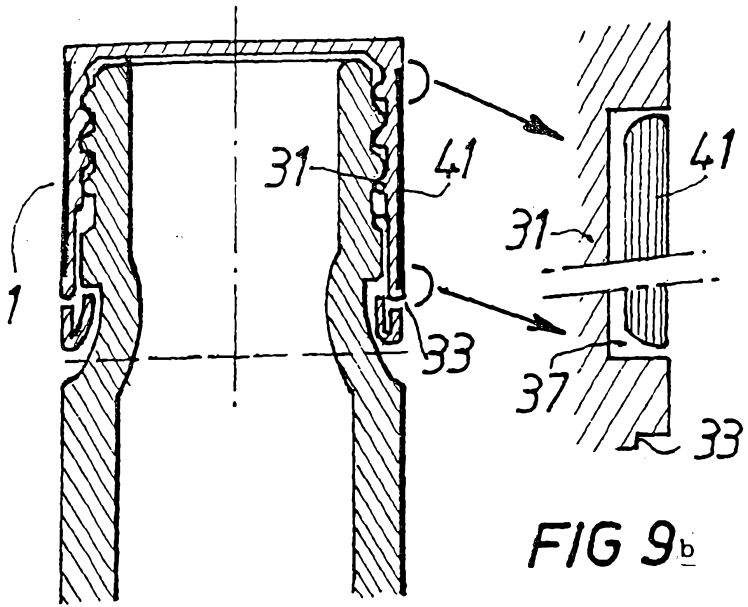


FIG. 9a

FIG. 9b

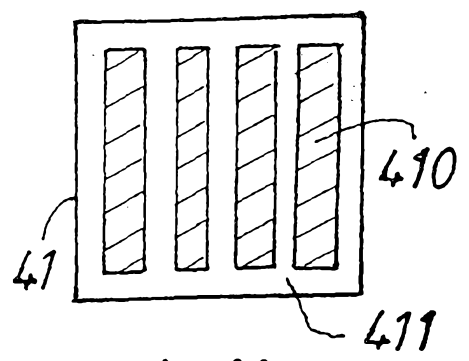


FIG. 11a

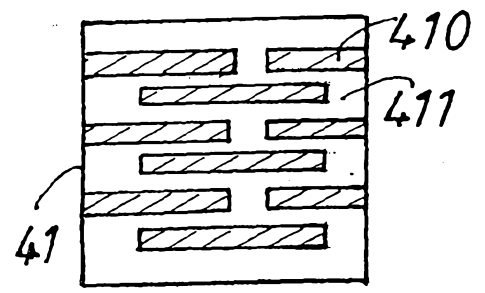


FIG. 11b

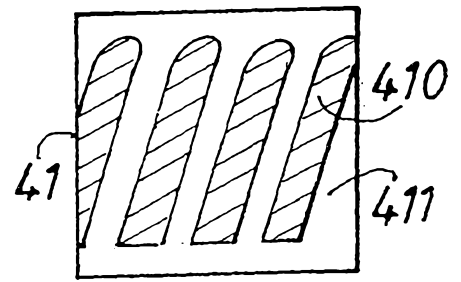


FIG. 11c

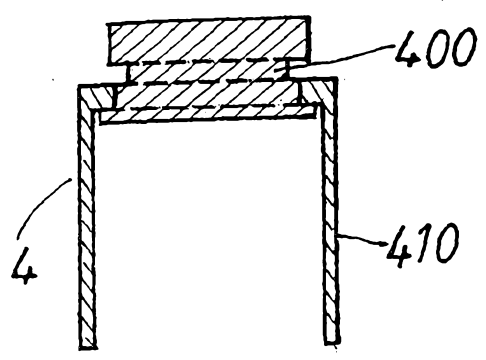


FIG. 10a

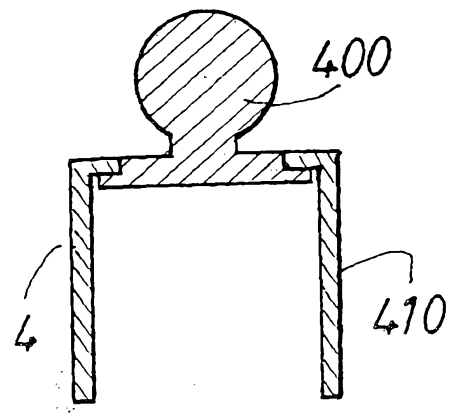


FIG. 10b

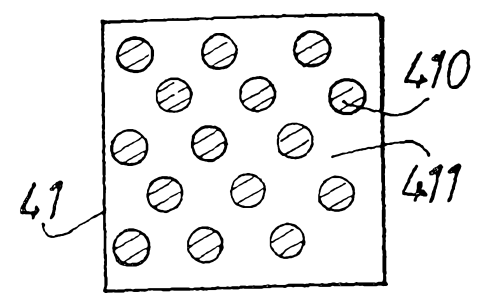


FIG. 11d

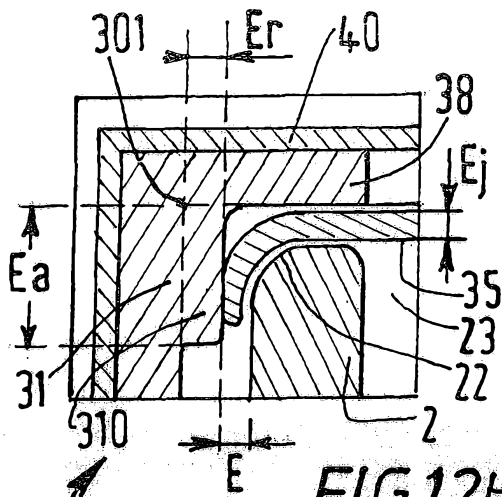


FIG. 12b

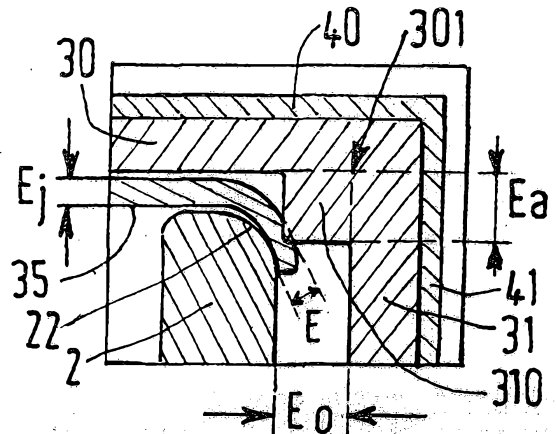


FIG. 12c

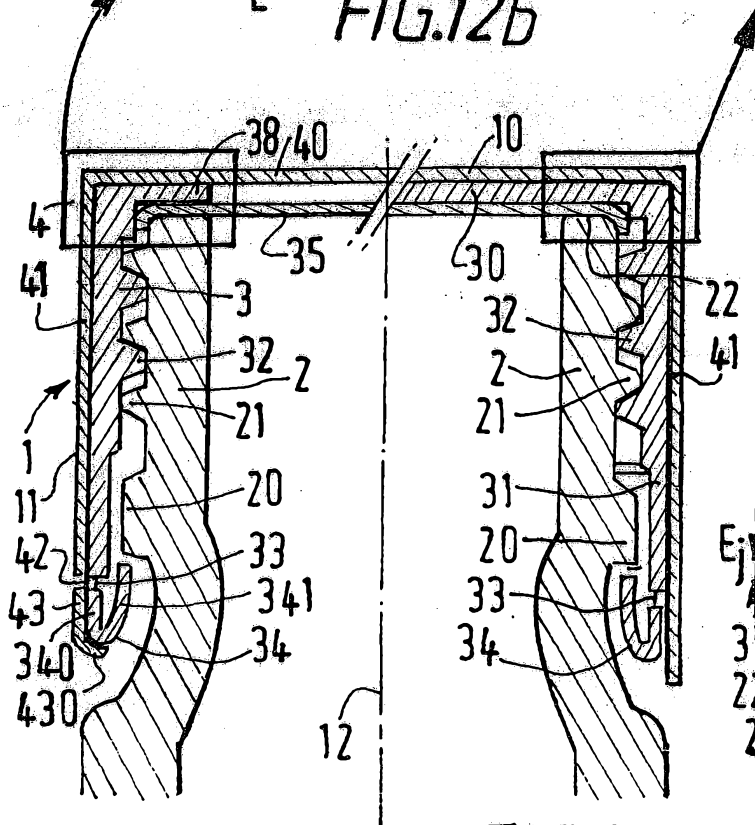


FIG. 12a

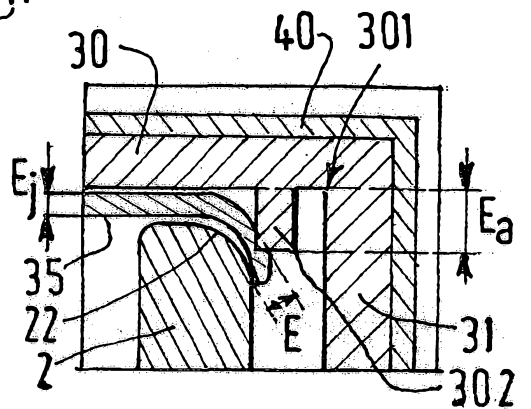


FIG. 12f

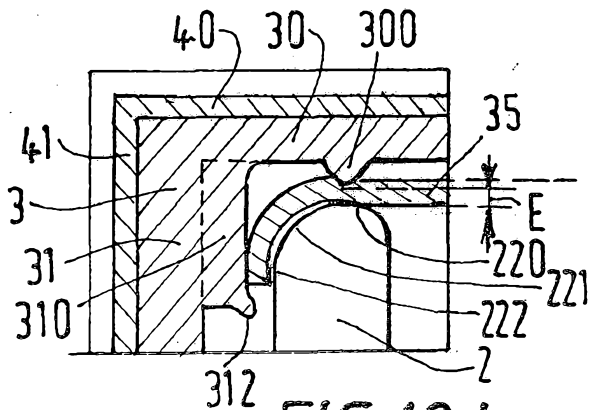


FIG. 12d

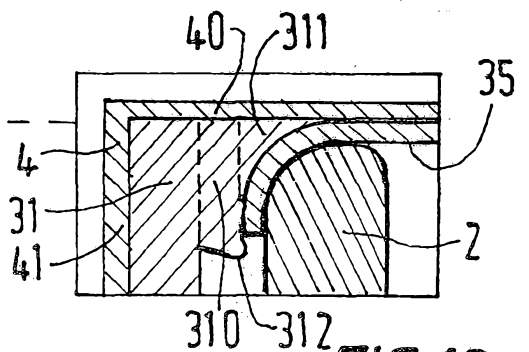


FIG. 12e