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(54) Title: FLIP-TOP CAP WITH WARRANTY SEAL FOR POUCHES

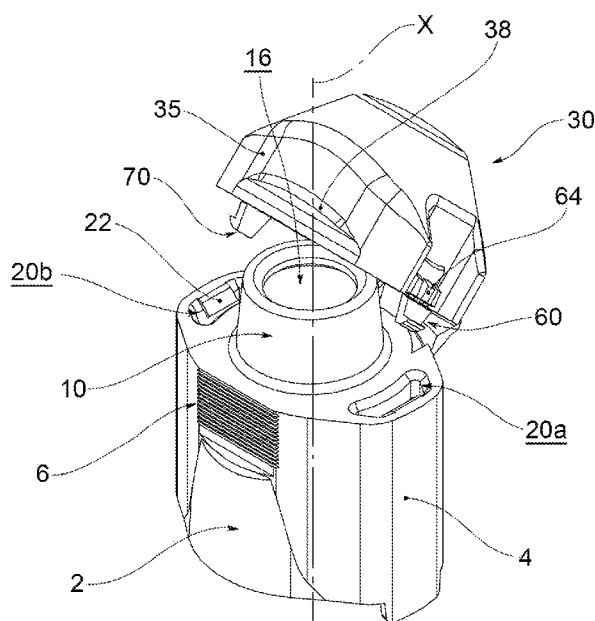


FIG.2b

(57) Abstract: A flip-top cap (1) for pouches comprises a skirt (2), a tube (10), a main surface (8), at least one warranty window (20a, 20b) on the main surface (8), equipped with hooking means, a closure (30) hinged to the skirt (2), at least one warranty hook (60, 70) attached to the closure (30) by means of at least one breakable element (62,72). In a closed configuration of the cap, said warranty hook (60, 70) is inserted through the warranty window (60,70) and, to pass into an open configuration, said warranty hook (60, 70) engages with said coupling means and said breakable element (62,72) and encounters breakage due to the resistance exerted by said coupling means.



EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
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DESCRIPTION

"Flip-top cap with warranty seal for pouches"

[0001] The present invention is placed in the field of plastic caps, and in particular in the field of "flip top" caps, which may be opened easily, for example, with a movement of the thumb.

[0002] In particular, the present invention provides for the application of a flip-top cap to the spout of a flexible thin-walled bag, usually called a "pouch".

10 [0003] Even for such pouches, there is a need to make tampering or the first opening of the cap visible, through the use of a warranty seal, usually called a "tamper-evident seal".

[0004] For this type of cap, however, the known warranty seals have some drawbacks, as they very often make opening particularly difficult.

[0005] The object of the present invention is to create a flip-top cap that overcomes the drawbacks mentioned and at the same time satisfies the requirements of the sector.

[0006] Such object is achieved by a cap made according to claim 1. The dependent claims describe further advantageous embodiments of the invention.

25 [0007] The features and advantages of the cap according to the present invention will be apparent from the

description given below, provided by way of non-limiting example, in accordance with the accompanying figures, wherein:

- figures 1a and 1b show a cap according to an embodiment of the present invention, in a fully open configuration;
- figures 2a and 2b represent the cap of figures 1a and 1b, in a partially open configuration;
- figures 3a and 3b show the cap of figures 1a and 1b in a closed configuration;
- figure 4 shows a plan view of the cap of figures 1a and 1b;
- figure 5 shows a first side view of the cap of figure 4 (hinge side);
- figure 6 represents a second side view of the cap of figure 4 (warranty hook side);
- figure 7 shows an enlargement of the detail VII of figure 6;
- figure 8 shows a section of the cap, according to the sectional plane VIII-VIII of figure 4;
- figure 9 shows an enlargement of the detail IX of figure 8;
- figure 10 represents the cap in an initial configuration of first closure;
- figures 11a to 11d schematically show a succession of steps from the first closure to the first opening of the

cap according to the invention.

[0008] With reference to the accompanying figures, a flip-top cap suitable to be applied to a spout of a thin-walled flexible bag, known as a "pouch", is indicated
5 collectively at 1.

[0009] Preferably, the cap 1 comprises a skirt 2, consisting of a tubular skirt wall 4.

[0010] For example, in a predefined angular position, said skirt 2 has an underlying region 6, for example
10 rectangular, preferably provided with a succession of straight ridges, so that touching with the thumb indicates the correct position for opening.

[0011] The cap 1 further has a flat main reference surface 8, typically placed at the top of the skirt 2, and a tube
15 10 protruding from said main surface 8 along a main axis X. The main surface 8 lies on an imaginary plane orthogonal to the main axis X.

[0012] Preferably, the main surface 8 has a rhomboidal shape, that is, wider in the central portion where the
20 tube 10 is placed and tapered laterally to the tube towards rounded vertices. Correspondingly, the skirt 2 also has a rhomboidal cross-section that resembles the shape of the main surface.

[0013] The tube 10 comprises a tubular tube wall 12, for
25 example frustoconical, ending with a tube edge 14,

typically circular, which delimits the mouth 16 of said tube 10.

[0014] Preferably, moreover, the cap 1 comprises a tube extension 11, which extends axially below the main surface 8, as an extension of said tube 10, inside the skirt wall 4.

[0015] The cap 1 further comprises a tubular connection portion 13, having an axial extension, arranged inside the skirt wall 4 and radially spaced therefrom; the connection portion 13 is internally threaded and is continuously connected to the tube 10.

[0016] A gap 15 is therefore created between the connection portion 13 and the skirt wall 4, which, when the cap is applied to the spout, is closed at the bottom by a portion of the spout.

[0017] By means of the connection portion 13, the cap 1 may be screwed to the spout of the flexible pouch to create a fluidic continuity between it and the tube 10.

[0018] According to an alternative embodiment, the same tube is threaded internally and may be screwed to the spout of the flexible pouch.

[0019] The cap 1 further comprises at least one warranty window 20a, 20b on the main surface 8, through or blind, arranged in a predefined angular position around the tube 10.

[0020] For example, according to the embodiment illustrated, the cap 1 has a first warranty window 20a and a second warranty window 20b, arranged diametrically opposite relative to the tube 10.

5 [0021] For example, said warranty openings 20a, 20b are flanked by the tube 10, each in its respective tapered portion of the main tapered surface 8.

[0022] Each warranty window 20a, 20b comprises a warranty tab 22 suitable for making a coupling for a corresponding
10 warranty hook, which will be discussed hereinafter.

[0023] In other words, the warranty tab 22 is an example of embodiment of coupling means suitable for making a coupling for a warranty hook.

[0024] For such purpose, said warranty tab 22 comprises a
15 tab wall 24 protruding from the edge of the warranty window 20a, 20b, inclined towards the inside of the same opening 20a, 20b, so as to form a guide for the entrance of said warranty hook and a hook that opposes the escape of the same.

20 [0025] The cap 1 further comprises a closure 30 to close the mouth 16 of the tube 10.

[0026] The closure 30 comprises a cover 32 suitable to overlap the tube 10, inside of which there is arranged a tubular tang 34 suitable to penetrate in the tube 10
25 through the mouth 16, so as to close it tightly.

[0027] When the closure 30 closes the tube 10, the tang 34 is coaxial with the tube 10 along the main axis X.

[0028] The cover 32 comprises a cover wall 35 having at its base an annular cover edge 36, having, for example, a
5 shape corresponding to that of the main surface 8. When the closure 30 closes the tube 10, the cover edge 36 rests on the main surface 8.

[0029] Preferably, said closure 30 comprises an opening ridge 38, protruding externally from the cover 32, in a
10 predefined angular position of the cover edge 36.

[0030] When the closure 30 closes the tube 10, the opening ridge 38 overlaps the underlying region 6 of the skirt 2.

[0031] The cap 1 further comprises a hinge 40 for hinging the closure 30 with the skirt 2.

15 [0032] Said hinge 40 comprises at least one shank 42a, 42b that joins the skirt 2 to the cover 32.

[0033] Said shank 42a, 42b preferably has two parts: a first shank part 44 joined to the skirt 2 and a second shank part 46 joined to the cover 32; said parts are
20 joined together so as to form a bendable knee.

[0034] For example, in the embodiment illustrated, there is a first shank 42a and a second shank 42b, spaced apart from each other, arranged in the rear area of the cap 1, i.e. on the side opposite to the opening ridge 38.

25 [0035] Preferably, moreover, the cap 1 comprises elastic

means suitable to bring the closure 30 towards a closed configuration.

[0036] For example, said elastic means comprise a sheet 50, preferably placed between the two shanks 42a, 42b of the
5 hinge 40, which is elastically deformable and connected to the skirt 2 and the cover 32, so as to push the closure 30 towards the closed configuration.

[0037] Said elastic means, according to a preferred embodiment, are also suitable to bring the closure 30
10 into a fully open configuration when said closure 30 is beyond an angular limit closing position.

[0038] In other words, when the closure 30 is moved beyond the angular closing limit position, said sheet 50 automatically bends backwards, bringing the closure 30
15 into the fully open configuration.

[0039] Preferably, said angular limit closing position corresponds to an inclination of 45° of the closure with respect to the main surface 8.

[0040] The cap 1 further comprises at least one warranty
20 hook 60, 70 joined, in an unopened cap configuration, to the cover 32 of the closure 30, and in particular protruding from the cover edge 36.

[0041] The warranty hook 60, 70 is joined to the cover 32 by breakable elements 62, 72, for example in the form of
25 very thin feet, which join the warranty hook 60, 70 to

the cover edge 36 or to blocks 64, 74 joined to the cover 32.

[0042] For example, according to the embodiment illustrated, there is a first warranty hook 60 and a
5 second warranty hook 70, arranged diametrically opposed.

[0043] Each warranty hook 60, 70 is joined to the cover 32 by means of three breakable elements 62, 72, protruding from three blocks 64, 74 joined to the cover 32 at the cover edge 36.

10 [0044] Preferably, said blocks 64, 74 are accommodated in a respective loop 66, 76 formed by the cover wall 35 of the cover 32.

[0045] For example, in the embodiment illustrated, the cover wall 35 is shaped so as to form a first loop 66,
15 which accommodates the first warranty hook 60, and a second loop 76, which accommodates the second warranty hook 70; said loops 66, 76 are diametrically opposed, for example, obtained at the tapered portions of the main rhomboidal surface 8.

20 [0046] The warranty hook 60, 70 is suitable to pass through the respective warranty window 20a, 20b and to snap into place with the respective warranty tab 22.

[0047] The cap 1 is made of a single piece of plastic material, by means of injection molding, in the
25 completely open initial configuration.

[0048] Once the pouch is filled, the cap is applied to the pouch; alternatively, the cap is first closed and then applied to the pouch.

[0049] During the first closure of the cap (figure 11a),
5 the warranty hook 60, 70 passes through the respective warranty window 20a, 20b, the insertion thereof being made easier by the shape of the warranty tab 22.

[0050] The warranty tab 22 is flexible and bends by the action of the warranty hook 60, 70 (figure 11b), until
10 the warranty hook 60, 70 has penetrated sufficiently to release the warranty tab 22 (figure 11c).

[0051] The warranty tab 22 thus returns to its original shape and forms a coupling able to engage the warranty hook 60, 70.

15 [0052] When the cap is first opened (figure 11d), the warranty hook 60, 70 tries to exit through the warranty window 20a, 20b, but the warranty tab 22 constitutes an obstacle.

[0053] A suitable action on the closure 30 causes the
20 further rotation of the cap 1, until the continuity between the warranty hook 60, 70 and the cover 32 breaks, due, for example, to the breakage of the breakable elements 62, 72.

[0054] In other words, while the closure 30 moves into the
25 opening configuration, the breakable elements 62, 72

break, and the warranty hook 60, 70 remains engaged with the warranty tab 22.

[0055] The opening of the cap remains very evident to any user.

5 [0056] In particular, the warranty hook 60, 70 remains confined in the gap 15 formed between the connection portion 13 and the skirt wall 4 and, being detached from the cover 32 that supported it, tends to fall by gravity along said gap 15, which is closed at the bottom by the
10 spout portion. On the other hand, at the top the warranty flap 22 acts as an obstacle preventing the warranty hook 60, 70 from escaping through the warranty window 20a, 20b.

[0057] Innovatively, the cap according to the present
15 invention overcomes the drawbacks mentioned with reference to the known art. In particular, the warranty seal allows tampering or the first opening of the cap to be seen, without making the cap difficult to open.

[0058] It is apparent that one skilled in the art, in order
20 to meet contingent needs, may make changes to the cap described above, all contained within the scope of protection defined by the following claims.

Claims

1. Cap (1) for thin-walled flexible bags, generally known as "pouches", comprising
- a tubular skirt (2) consisting of a skirt wall (4);
 - 5 - a tube (10) having a central main axis (X), comprising a tubular tube wall (12) which defines a mouth (16);
 - a main surface (8) orthogonal to the main axis (X), from which said tube (10) protrudes axially;
 - at least one warranty window (20a, 20b) on said main
10 surface (8), provided with hooking means;
 - a closure (30) hinged to said skirt (2) to rotate about a hinge axis (Y) orthogonal to the main axis (X), suitable to close said mouth (16) of the tube (10);
 - at least one warranty hook (60, 70), integral with the
15 closure (30) by at least one breakable element (62, 72);
 - a tubular connection portion (13), having axial extension, arranged inside the skirt wall (4) and radially spaced therefrom, between the connection portion (13) and the skirt wall (4) creating a gap (15)
20 accessible at the top through said at least one warranty window (20a, 20b);
- wherein, in a closed configuration of the cap, said warranty hook (60, 70) is inserted through the warranty window (60, 70); and
- 25 in order to switch to an open configuration, said

warranty hook (60, 70) engages with said hooking means and said breakable element (62, 72), encounters breakage due to the resistance exerted by said hooking means, and remains confined in the gap (15).

5 2. Cap according to claim 1, wherein said warranty hook (60, 70), in an unopened cap configuration, protrudes from a free cover edge (36) of a cover (32) of the closure (30).

3. Cap according to claim 2, wherein a first warranty
10 hook (60) and a second warranty hook (70) are provided, arranged diametrically opposite to the tube (10).

4. Cap according to any one of the preceding claims, wherein said hooking means comprise at least one warranty
15 tab (22) projecting inside said warranty window (20a, 20b).

5. Cap according to claim 4, wherein said warranty tab (22) is flexible to allow the snap engagement with the warranty hook (60, 70) at the first closure of the cap.

6. Cap according to claim 4 or 5, wherein, in the opening
20 configuration, said tab is suitable to create an obstacle to the release of the warranty hook (60,70) from the gap (15) through the warranty window (20a, 20b).

7. Cap according to any one of the preceding claims, wherein the skirt (2) has externally, in a predefined
25 angular position, an underlying region (6) that can be

detected by touch.

8. Cap according to claim 7, wherein the closure (30) comprises an opening ridge (38) in a predefined angular position, such that, in the closed configuration, said
5 opening ridge (38) overlaps said underlying region (6).

9. Cap according to any one of the preceding claims, wherein the closure (30) comprises a tubular tang (34) suitable to penetrate into the tube (10) through the mouth (16), so as to close it tightly.

10 10. Cap according to any one of the preceding claims, comprising a hinge (40) for hinging the closure (30) with the skirt (2), wherein said hinge (40) comprises at least one shank (42a, 42b) which joins the skirt (2) to the closure (30), wherein said shank (42a, 42b) has two
15 parts: a first shank part (44) joined to the skirt (2) and a second shank part (46) joined to the closure (30), said parts being joined together so as to form a bendable knee.

11. Cap according to claim 10, wherein a first shank
20 (42a) and a second shank (42b) are provided, spaced from each other.

12. Cap according to any one of the preceding claims, comprising elastic means suitable to bring the closure (30) towards the closed configuration.

25 13. Cap according to claim 12, wherein said elastic means

comprise a sheet (50), elastically deformable and connected to the skirt 2 and to the closure (30), so as to push the closure (30) towards the closed configuration.

5 14. Cap according to claim 12 or 13, wherein said elastic means are also adapted to bring the closure (30) into a fully open configuration, when said closure (30) is beyond an angular limit closing position.

15 15. Cap according to claim 14, wherein said angular limit closing position corresponds to an inclination of 45° of the closure (30) with respect to the main surface (8).

16. Assembly comprising:

- a thin-walled flexible bag, generally known as a "pouch", provided with a spout; and
- 15 - a cap made according to any one of the preceding claims, applied to the pouch.

17. Assembly according to claim 16, wherein the cap is screwable onto the spout.

18. Assembly comprising:

- 20 - a spout;
- a cap according to any one of the preceding claims, applied to the spout;
- wherein the gap (15) is closed at the bottom by a portion of the spout.

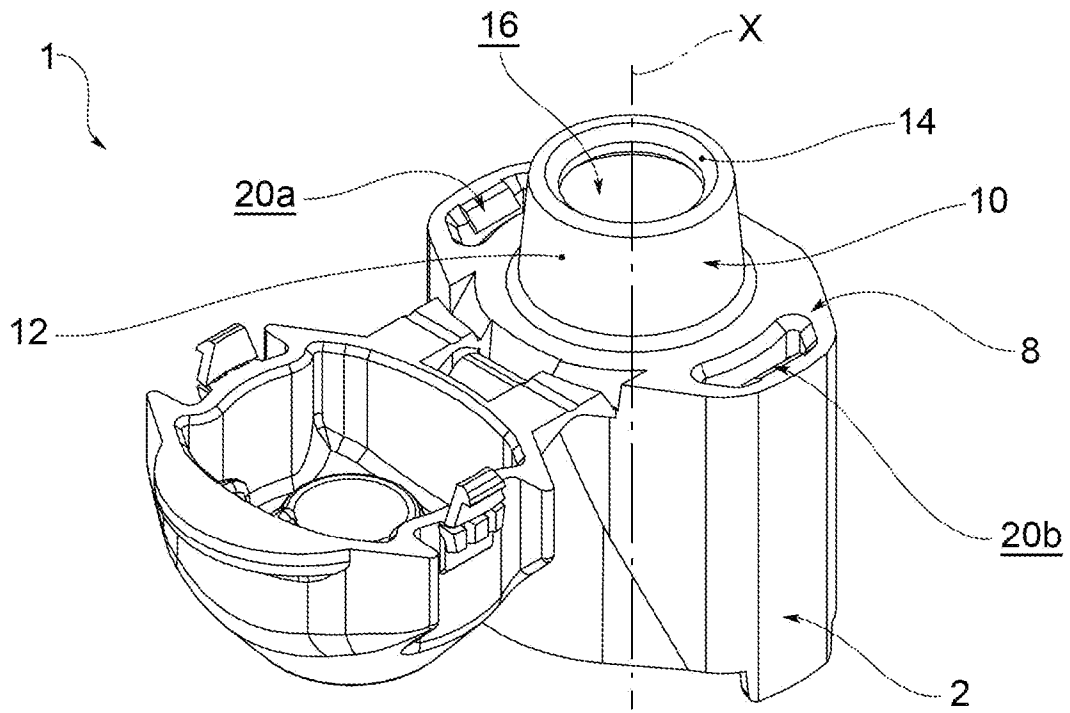


FIG.1a

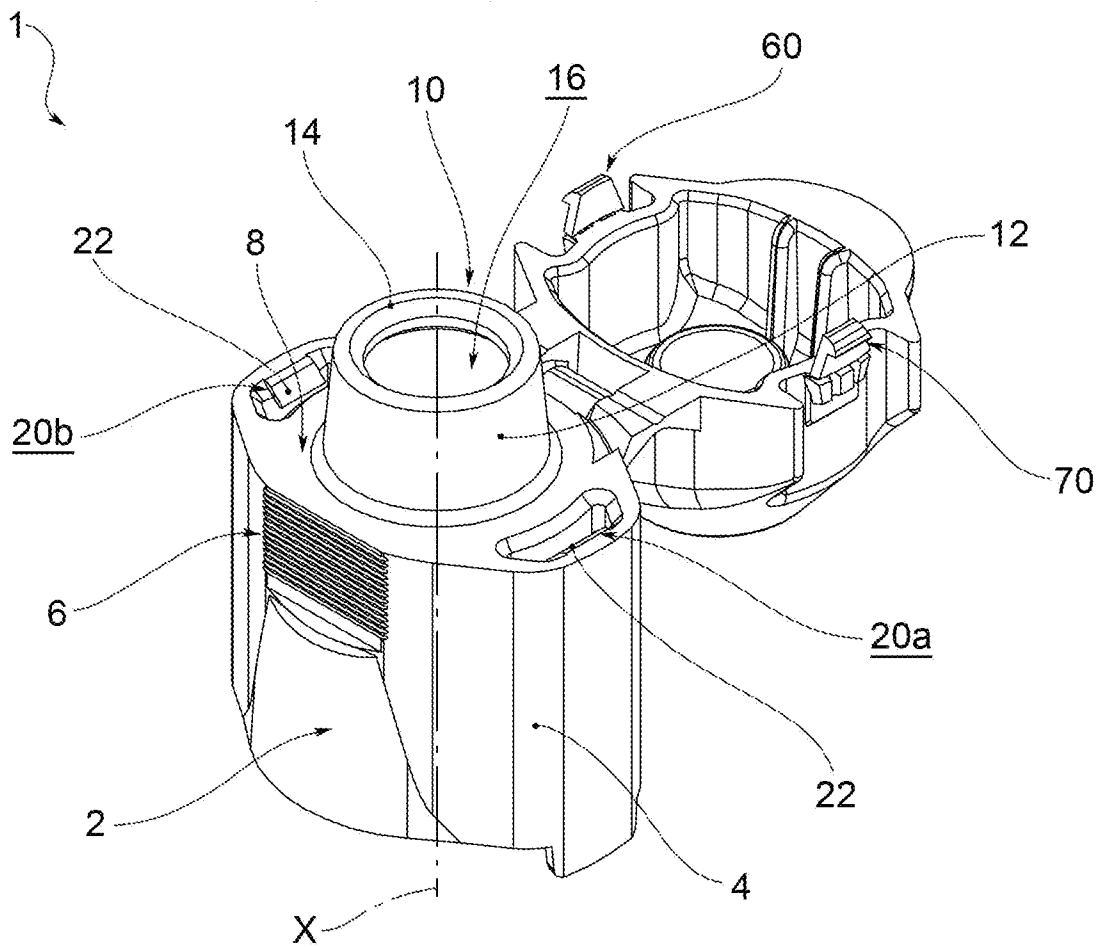


FIG.1b

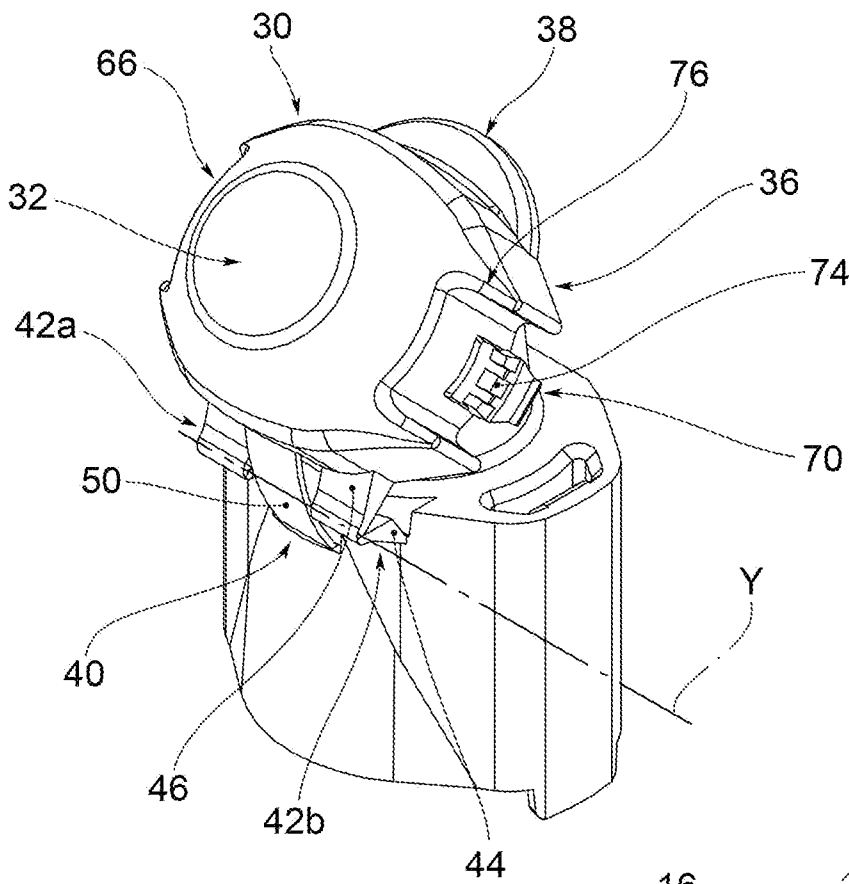


FIG.2a

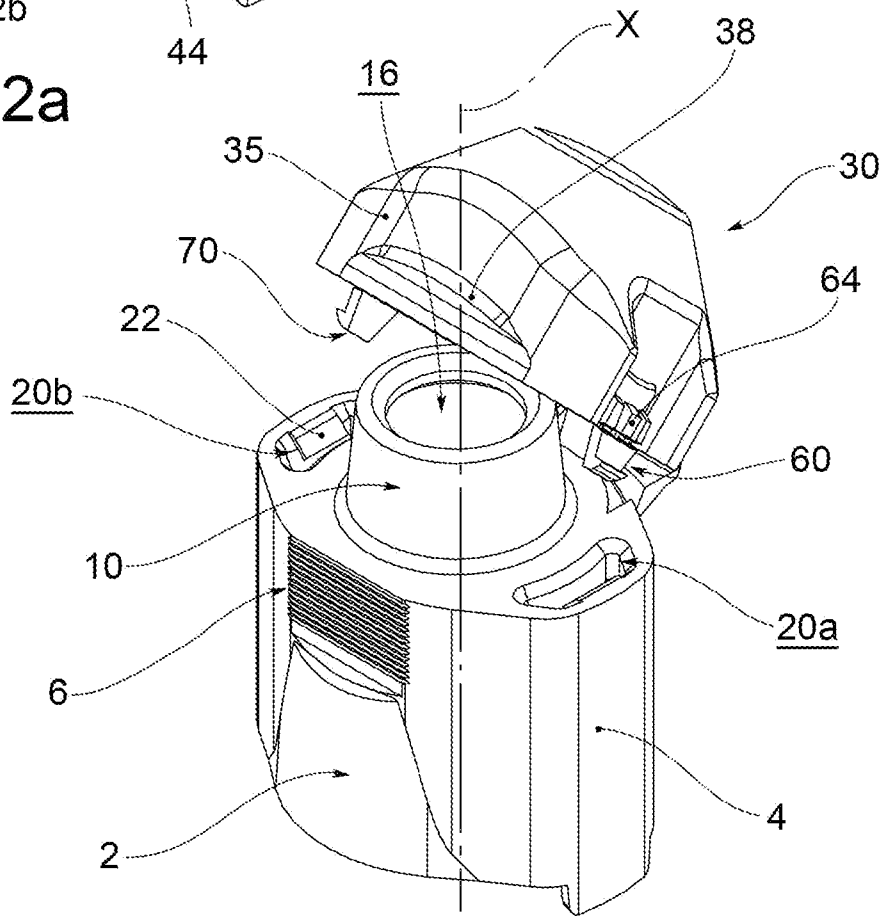


FIG.2b

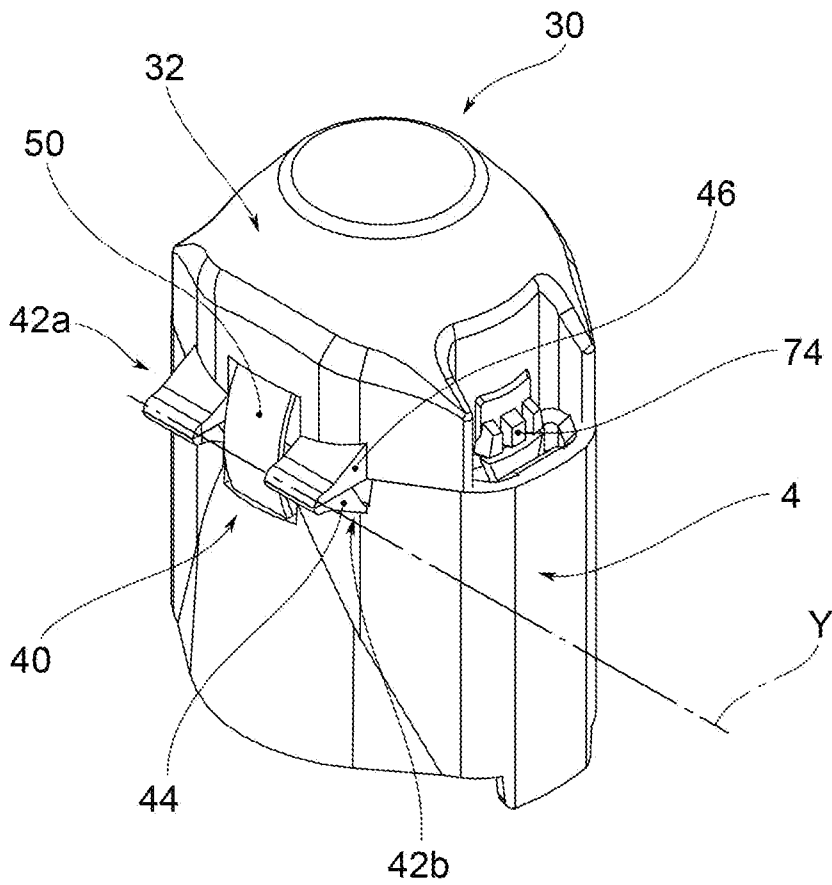


FIG.3a

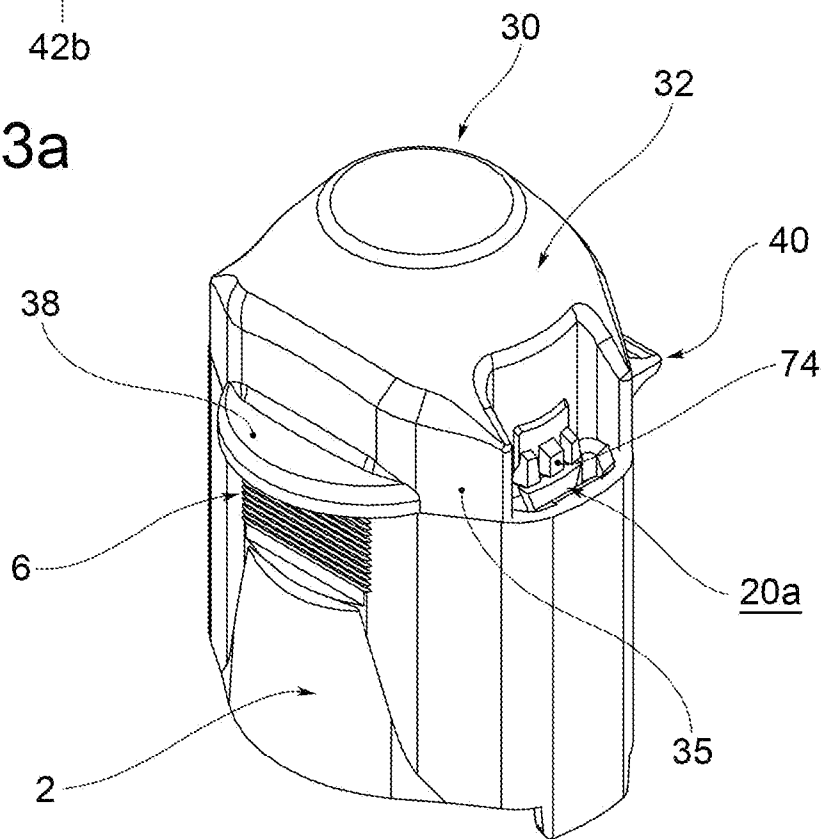


FIG.3b

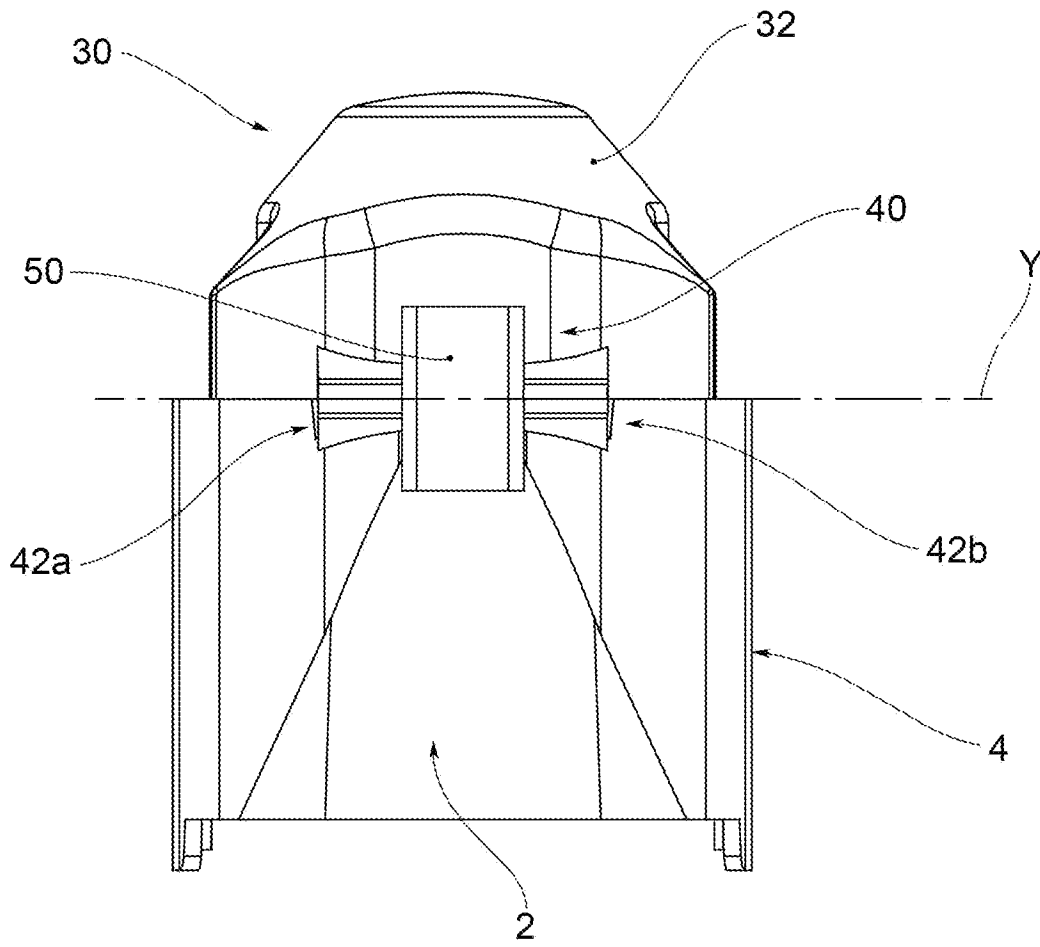


FIG.5

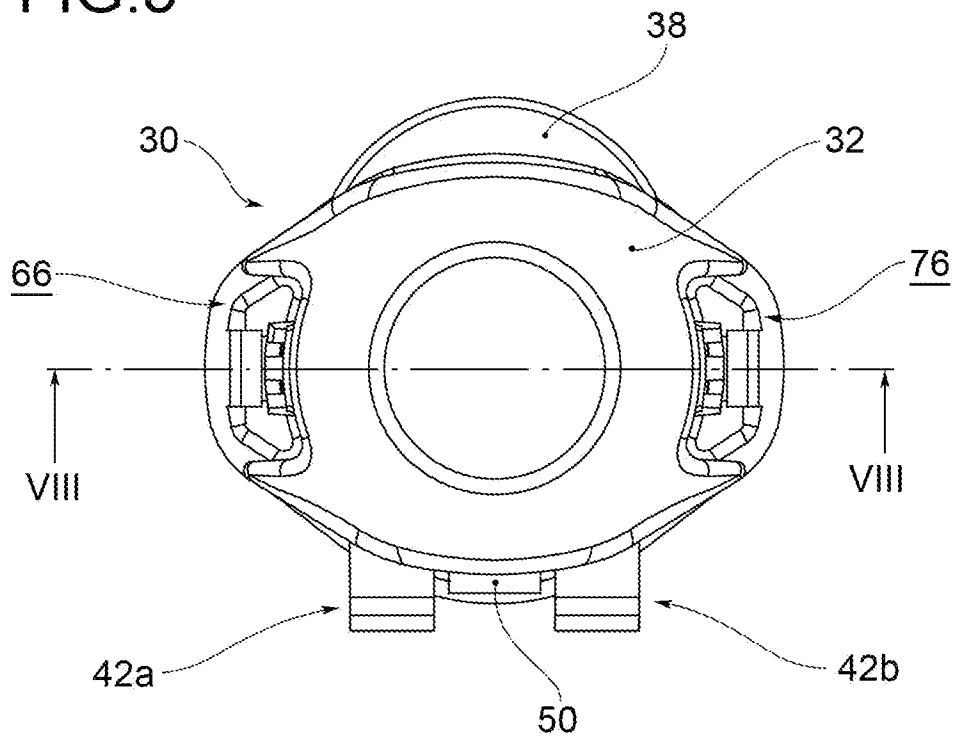


FIG.4

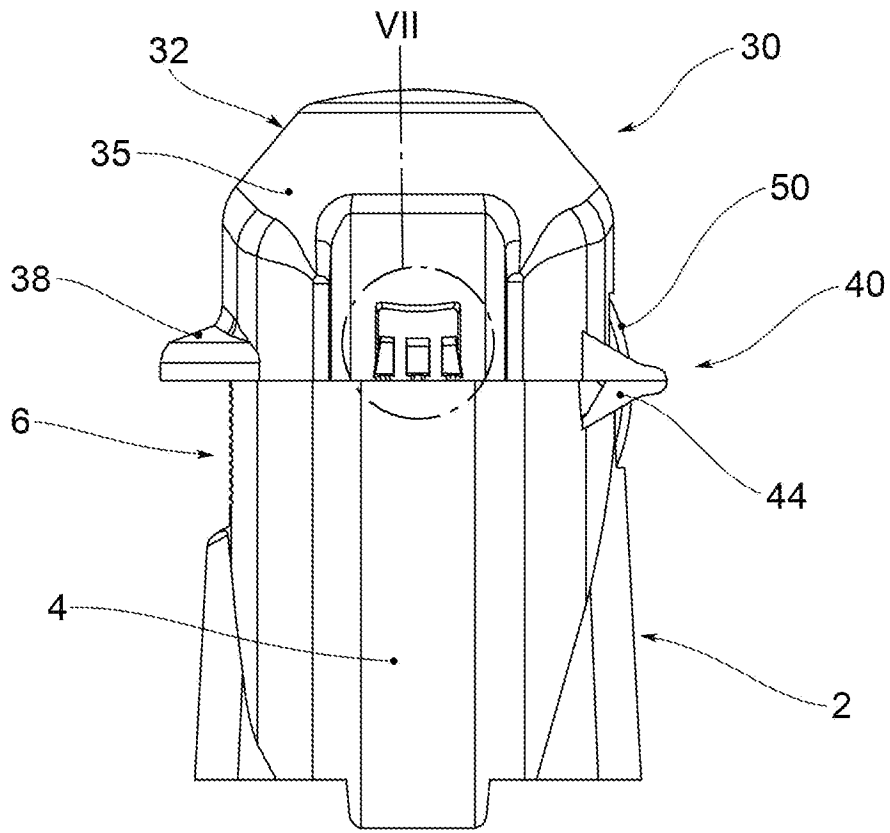


FIG. 6

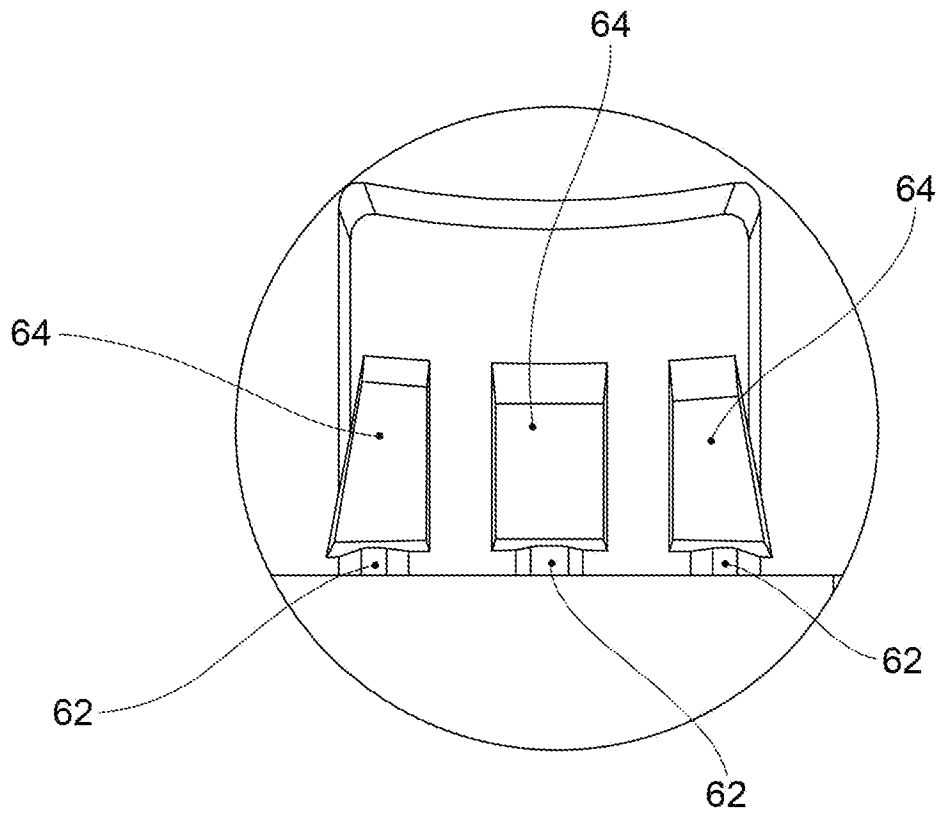


FIG. 7

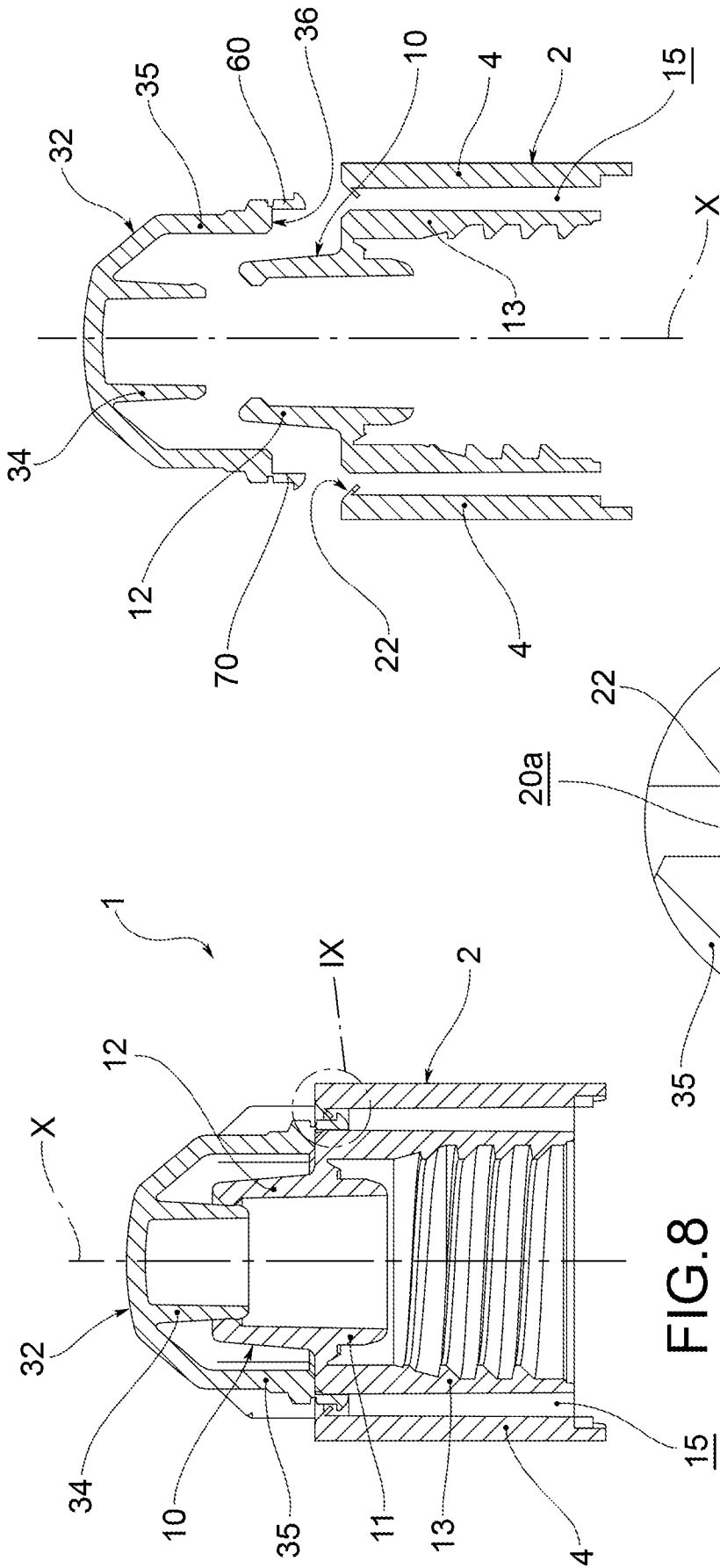


FIG.10

FIG.8

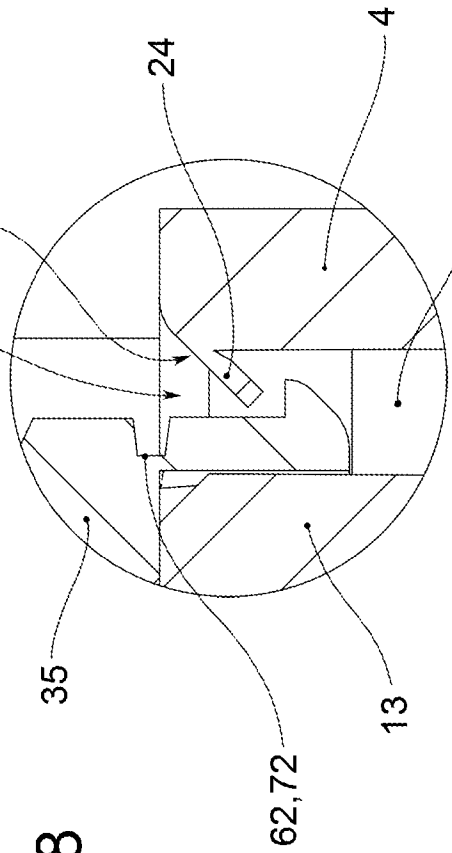


FIG.9

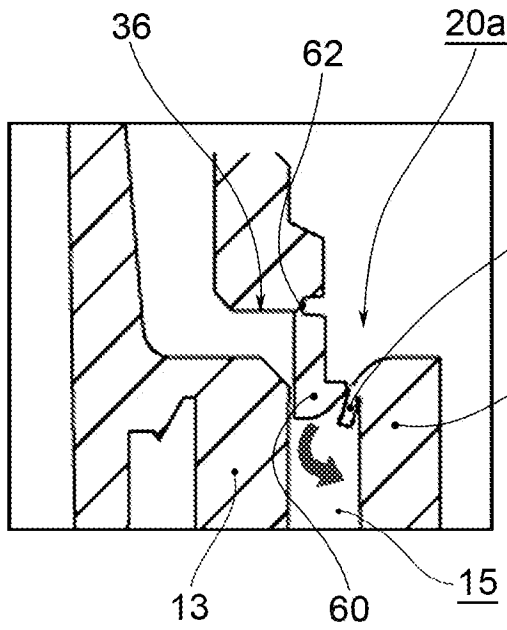


FIG. 11a

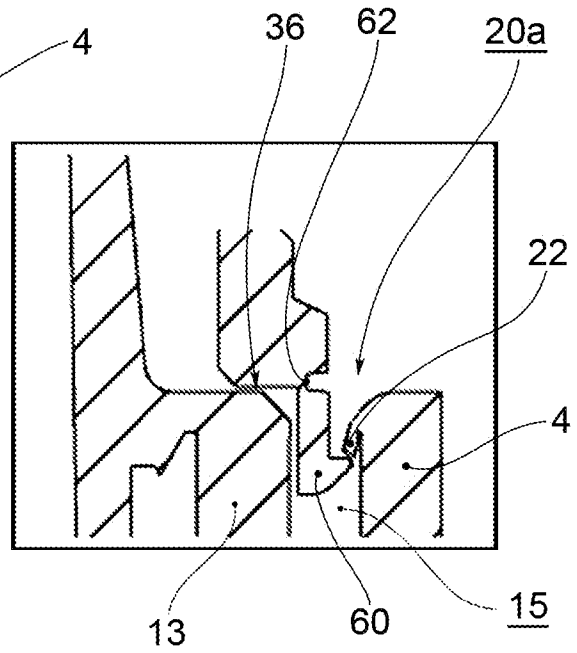


FIG. 11b

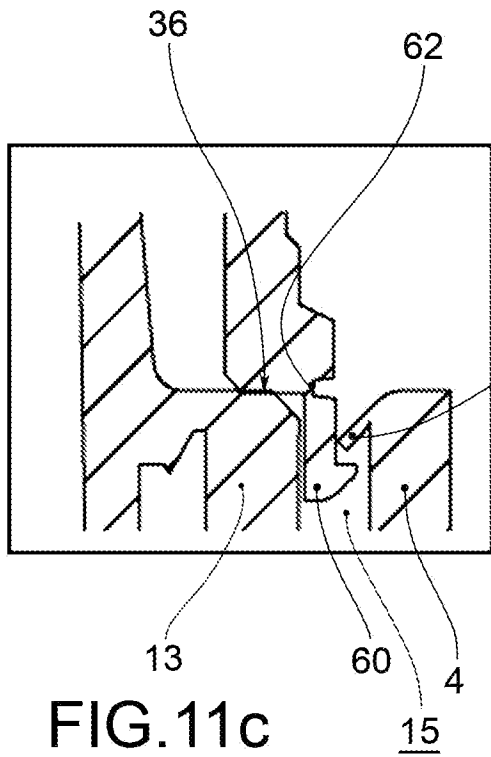


FIG. 11c

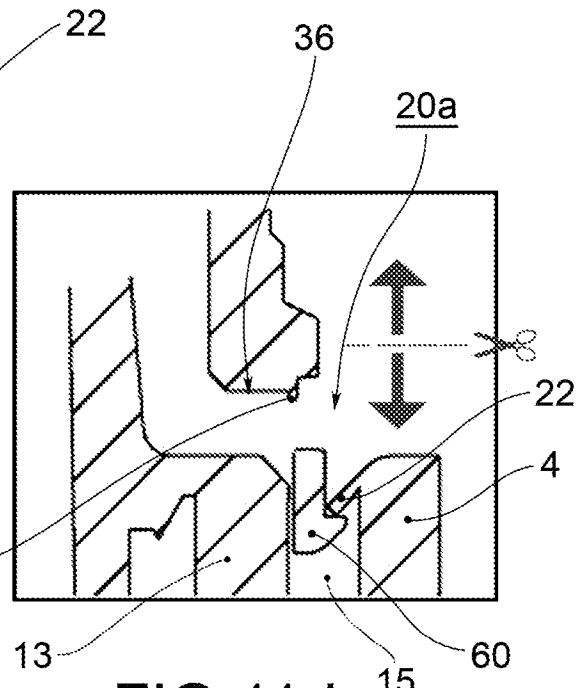


FIG. 11d

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2018/060194

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D47/08 B65D55/02
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2014/122485 A2 (OBRIST CLOSURES SWITZERLAND [CH]) 14 August 2014 (2014-08-14) page 22, line 12 - page 24, line 6; figures 41-121	1-3, 9-14,16, 17
X	WO 2010/112801 A1 (OBRIST CLOSURES SWITZERLAND [CH]; BENOIT-GONIN CLAUDE [FR]; GREENWOOD) 7 October 2010 (2010-10-07) page 5, line 27 - page 8, line 35; figures	1,2
X	WO 2012/136230 A1 (APTAR FREYUNG GMBH [DE]; KOENIGSEDER BRUNO [DE]; LENZ FRANZ [DE]; STIF) 11 October 2012 (2012-10-11) page 9, paragraph 1-2	1,2,7-17
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Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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Date of the actual completion of the international search	Date of mailing of the international search report
8 March 2019	15/03/2019

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Fournier, Jacques
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INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2018/060194

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2012/168461 A1 (TOPITS JEFFREY [US] ET AL) 5 July 2012 (2012-07-05) paragraph [0019]; figure 2 -----	16,17

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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