(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 570 135 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
18.06.2025 Bulletin 2025/25

(21) Application number: **24210895.9**

(22) Date of filing: **05.11.2024**

(51) International Patent Classification (IPC):
A47G 19/22 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
A47G 19/2272

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(30) Priority: **14.12.2023 JP 2023211057**

(71) Applicants:
- **Thermos L.L.C.**
  Schaumburg, IL 60173 (US)
- **Thermos K.K.**
  Tsubame-shi, Niigata-ken (JP)

(72) Inventor: **Kikuchi, Shogo**
Tsubame City (JP)

(74) Representative: **Barker Brettell LLP**
100 Hagley Road
Edgbaston
Birmingham B16 8QQ (GB)

(54) CAP UNIT AND CAPPED CONTAINER

(57) To provide a cap unit capable of increasing the degree of freedom in appearance while preventing a port forming member from being unintentionally detached from an outer cylinder member of a cap main body in a port attaching and detaching mechanism. The present invention includes a cap main body 7 that closes an upper opening part 2d of a container main body 2, and a lid body 9 that is rotatably attached to the cap main body 7 via a hinge part 8. The cap main body 7 has an outer cylinder member 10 having an opening partl0b at an upper part, a port forming member 11 with a liquid passage opening part 14 which is opened and closed by rotation of the lid body 9, and a port attaching and detaching mechanism 15 that detachably attaches the port forming member 11 to the opening part 10b of the outer cylinder member 10. The port attaching and detaching mechanism 15 has a structure such that the port forming member 11 is attached to the opening part 10b of the outer cylinder member 10 by sliding the port forming member 11 against the inner lower surface of the outer cylinder member 10.

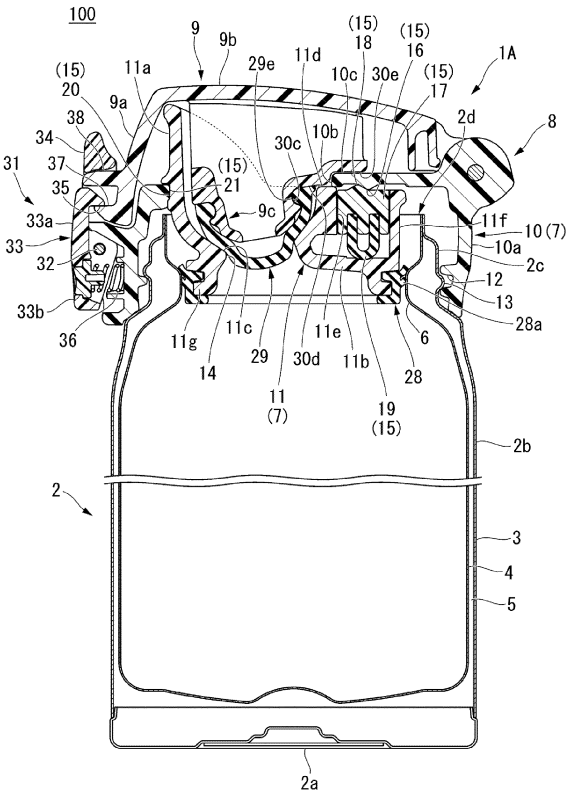


FIG. 2

EP 4 570 135 A1

Description

TECHINICAL FIELD

[0001] The present invention relates to a cap unit and a capped container.

BACKGROUND

[0002] Conventionally, there have been capped containers with a cap unit that can be detachably attached to a container main body open on an upper part.

[0003] Furthermore, some cap units include a cap main body that closes the upper opening part of the container main body, and are equipped with an outer cylinder member having an opening part on an upper part, a port forming member attached to an opening part of the outer cylinder member and provided with a liquid passage opening that communicates with the inside of the container main body, and a port attaching and detaching mechanism that detachably attaches the port forming member to the opening part of the outer cylinder member (see, for example, Japanese Patent 5312542).

[0004] The port attaching and detaching mechanism has a lock operation member rotatably attached to the outer cylinder member of the cap main body, and a biasing member that biases the lock operation member toward a first side in the rotation direction.

The port attaching and detaching mechanism releases the locked state of the port forming member with respect to the outer cylinder member of the cap main body by rotating the lock operation member toward a second side in the rotation direction against the biasing force of the biasing member. This enables removing the port forming member from the opening part of the outer cylinder member.

[0005] In addition, the cap unit is structured so that a waterproof packing attached to a lower end part of the port forming member is tightly attached to the entire circumference of a protrusion part protruding from the inside of the container main body, thereby sealing (water tight) the space between the container main body and the cap main body via the waterproof packing.

[0006] However, in the conventional cap unit described above, when the pressure inside the container main body was reduced, the port forming member, which was in close contact with the protrusion part of the container main body via the waterproof packing, could be suctioned onto the container main body, causing the port forming member to separate from the opening part of the outer cylinder member of the cap main body.

[0007] Furthermore, in conventional cap units, when the lock operation member was rotated erroneously, the locked state of the port forming member relative to the outer cylinder member of the cap main body could be unintentionally released, causing the port forming member to separate from the opening part of the outer cylinder member.

[0008] In addition, in the conventional port attaching and detaching mechanism that releases the locked state of the port forming member relative to the outer cylinder member of the cap main body by rotating a separate lock operation member, the lock operation member must be located in an easy-to-operate position, which limits the freedom of appearance and does not necessarily enhance the ease of use of the mechanism.

SUMMARY OF THE INVENTION

[0009] The present invention has been proposed in consideration of the aforementioned conventional circumstances, and aims to provide a cap unit in a port attaching and detaching mechanism that prevents the port forming member from unintentionally detaching from the outer cylinder member of the cap main body, while allowing for greater freedom in appearance. Furthermore, a capped container equipped with such a cap unit is also provided, thereby allowing for further improved usability.

[0010] In order to achieve the above objectives, the present invention provides the following means.

[1] A cap unit detachably attached to a container main body open on an upper part, containing:

a cap main body that closes an upper opening part of the container main body; and
a lid body rotatably attached to the cap main body via a hinge part; wherein
the cap main body includes an outer cylinder member having an opening part on an upper part, a port forming member having a liquid passage opening part that is opened and closed by rotation of the lid body, and a port attaching and detaching mechanism that detachably attaches the port forming member to the opening part of the outer cylinder member; and
the port attaching and detaching mechanism has a structure in which the port forming member is attached to the opening part of the outer cylinder member by sliding the port forming member against the inner lower surface of the outer cylinder member.

[2] The cap unit according to [1], wherein

the port attaching and detaching mechanism has a first locking part provided on the outer cylinder member and a second locking part provided on the port forming member; and
the second locking part is locked to the first locking part when the port forming member is slid along the inner lower surface of the outer cylinder member.

[3] The cap unit according to [2], wherein

the port attaching and detaching mechanism has a lock member provided on an upper surface of the port forming member and attached so as to be freely movable downward, and a biasing member that biases the lock member upward; and
the second locking part is provided on the lock member.

[4] The cap unit according to [1], wherein
the port attaching and detaching mechanism has a third locking part provided on a front side of the port forming member and a fourth locking part formed by a front side of the opening part of the outer cylinder member; and the third locking part is locked to the fourth locking part when the port forming member is slid against the inner lower surface of the outer cylinder member.

[5] The cap unit according to [1], wherein

the port attaching and detaching mechanism includes a pair of fifth locking parts provided so as to inwardly recess the left and right sides of the port forming member, and a pair of sixth locking parts provided on the left and right sides of the opening part of the outer cylinder member; and
the pair of fifth locking parts is locked to the pair of fourth locking parts when the port forming member is slid against the inner lower surface of the outer cylinder member.

[6] The cap unit according to [1], wherein

the outer cylinder member has a peripheral wall part formed in a substantially cylindrical shape;
the port attaching and detaching mechanism includes a pair of seventh locking parts provided so as to protrude outward from both the left and right sides of the port forming member, and a pair of eighth locking parts provided on both the left and right sides of the inner surface of the peripheral wall part of the outer cylinder member; and
the pair of seventh locking parts is locked to the pair of eighth locking parts when the port forming member is slid against the inner lower surface of the outer cylinder member.

[7] The cap unit according to [1], wherein

the port attaching and detaching mechanism has a positioning recess part provided on one of either the outer cylinder member or the port forming member, and a positioning protrusion part provided on the other of either the outer cylinder member or the port forming member; and
when the port forming member is slid against the inner lower surface of the outer cylinder member, the positioning protrusion part engages with the positioning recess part, thereby preventing the port forming member from rotating relative to the outer cylinder member.

[8] The cap unit according to [1], further comprising:

a plug part protruding from an inner lower surface of the lid body; and
a lid packing that closes the liquid passage opening part in a state in which the lid packing is detachably attached to the plug part; wherein
the plug part has a mating protrusion part having a convex shape that is rotationally asymmetric with respect to a center axis thereof;
the lid packing has a mating recess part having a recessed shape corresponding to the mating protrusion part; and
an attachment direction of the lid packing relative to the plug part is set by mating the mating protrusion part into the mating recess part.

[9] The cap unit according to [8], wherein
the cap main body has an upper wall part between the opening part and the hinge part; and when the lid packing is attached to the plug part in a direction different from the attachment direction, the lid packing abuts against the upper wall part before blocking the liquid passage opening part.

[10] A capped container, including: the cap unit according to any one of [1] to [9], and a container main body to which the cap unit is attached.

[0011] As described above, the present invention provides a cap unit for a port attaching and detaching mechanism that prevents the port forming member from unintentionally detaching from the outer cylinder member of the cap main body while allowing for greater freedom in appearance; and a capped container that is equipped with such a cap unit, thereby allowing for further improved usability.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1 is a perspective view depicting the exterior appearance of a capped container provided with a cap unit according to Embodiment 1 of the present invention.
FIG. 2 is a cross-sectional view depicting the configuration of the capped container provided with the cap unit in FIG. 1.
FIG. 3 is a perspective view depicting a state in which a lid body of the cap unit depicted in FIG. 1 is in an open position.

FIG. 4 is a cross-sectional view depicting a state before the port forming member is attached to the outer cylinder member of the cap unit depicted in FIG. 1.

FIG. 5 is a cross-sectional view depicting a state after the port forming member has been attached to the outer cylinder member of the cap unit depicted in FIG. 1.

FIG. 6 is a perspective view depicting a state before the port forming member is attached to the outer cylinder member of the cap unit depicted in FIG. 1, as viewed from below.

FIG. 7 is a perspective view depicting a state after the port forming member has been attached to the outer cylinder member of the cap unit depicted in FIG. 1, as viewed from below.

FIG. 8 is a perspective view of the cap unit depicted in FIG. 1 after the port forming member and the lid packing have been removed, as viewed from above.

FIG. 9 is a perspective view of the cap unit depicted in FIG. 1 with the port forming member removed from the outer cylinder member, as viewed from below.

FIG. 10 is a perspective view of the port forming member included in the cap unit depicted in FIG. 1, as viewed from above.

FIG. 11 is a cross-sectional view of the port forming member taken along line A-A in FIG. 10.

FIG. 12(A) is a perspective view of the lid packing as viewed from the front side, and (B) is a perspective view of the lid packing as viewed from the back side.

FIG. 13 is a perspective view depicting different attachment directions of the lid packing relative to the plug part of the lid body.

FIG. 14 is a cross-sectional view depicting a state in which the lid body is rotated toward a closed position in the state depicted in FIG. 13.

FIG. 15 is a cross-sectional view depicting a state before the port forming member is attached to the outer cylinder member of the cap unit according to a second embodiment of the present invention.

FIG. 16 is a cross-sectional view depicting a state after the port forming member has been attached to the outer cylinder member of the cap unit depicted in FIG. 15.

FIG. 17 is a plan view of the cap unit depicted in FIG. 15 with the port forming member removed from the outer cylinder member, as viewed from below.

FIG. 18 is a perspective view of the port forming member included in the cap unit depicted in FIG. 15, as seen from above.

FIG. 19 is a perspective view of the cap unit taken along line B-B depicted in FIG. 16.

FIG. 20 is a plan view depicting a state in which the port forming member is removed from the outer cylinder member of the cap unit according to a third embodiment of the present invention, as viewed from below.

FIG. 21 is a perspective view of the port forming member included in the cap unit depicted in FIG. 20, as viewed from above.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] The following is a detailed description of the embodiment of the present invention with reference to the drawings.

Embodiment 1

[0014] First, a capped container 100 provided with a cap unit 1A as depicted in FIG. 1 to FIG. 14 will be described as Embodiment 1 of the present invention.

[0015] Note that FIG. 1 is a perspective view depicting the external appearance of the capped container 100 provided with the cap unit 1A. FIG. 2 is a cross-sectional view depicting the configuration of the capped container 100 provided with the cap unit 1A. FIG. 3 is a perspective view depicting a state in which a lid body 9 of the cap unit 1A is in an open position. FIG. 4 is a cross-sectional view depicting a state before the port forming member 11 is attached to the outer cylinder member 10 of the cap unit 1A. FIG. 5 is a cross-sectional view depicting a state after the port forming member 11 has been attached to the outer cylinder member 10 of the cap unit 1A. FIG. 6 is a perspective view depicting a state before the port forming member 11 is attached to the outer cylinder member10 of the cap unit 1A, as viewed from below. FIG. 7 is a perspective view depicting a state after the port forming member 11 has been attached to the outer cylinder member 10 of the cap unit 1A, as viewed from below. FIG. 8 is a perspective view of the cap unit 1A from which the port forming member 11 and the lid packing 29 have been removed, as viewed from above. FIG. 9 is a perspective view of the cap unit 1A with the port forming member 11 removed from the outer cylinder member 10, as viewed from below. FIG. 10 is a perspective view of the port forming member 11 included in the cap unit 1A, as viewed from above. FIG. 11 is a cross-sectional view of the port forming member 11 taken along line A-A in FIG. 10. FIG. 12(A) is a perspective view of the lid packing 29 as seen from the front side. FIG. 12(B) is a perspective view of the lid packing 29 as seen from the back side. FIG. 13 is a perspective view depicting different attachment directions of the lid packing 29 relative to the plug part 9c of the lid body 9. FIG. 14 is a cross-sectional view depicting a state in which the lid body 9 is rotated toward a closed position in the state depicted in FIG. 13.

[0016] As depicted in FIG. 1 and FIG. 2, the capped container 100 of the present embodiment has a cap unit 1A of the present embodiment and a container main body 2 to which the cap unit 1A is detachably attached.

[0017] The capped container 100 is a beverage container that can keep beverages (liquids) contained in the container main body 2 cool or warm by means of the container main body 2 having a vacuum insulation struc-

ture.

[0018] Specifically, the container main body 2 is configured as a double structure having a cylindrical outer container with an outer container 3 and an inner container 4 made of, for example, stainless steel that are mutually joined at the periphery of the opening part in a state where the inner container 4 is stored inside the outer container 3.

A vacuum insulating layer 5 is provided between the outer container 3 and the inner container 4. The vacuum insulating layer 5 can be formed, for example, by plugging the degassing hole on the bottom of the outer container 3 in a chamber that has been depressurized (evacuated) to a high vacuum.

[0019] The container main body 2 has a substantially circular bottom part 2a, a substantially cylindrical trunk part 2b rising from the outer circumference of the bottom part 2a, and a substantially cylindrical opening neck part 2c that is reduced in diameter at the upper part side of the trunk part 2b. An upper end part of the opening neck part 2c is opened in a circular shape as an upper opening part 2d of the container main body 2A. Furthermore, the inner circumferential surface of the opening neck part 2c (upper part side of the trunk part 2b) is smaller in diameter than the inner circumferential surface of the trunk part 2b. Furthermore, a ring-shaped protrusion part 6 is provided to protrude inward around the entire circumference, below the inner circumferential surface of the opening neck part 2c (below the reduced diameter part on the upper part side of the trunk part 2b).

[0020] Note that although the capped container 100 of the present embodiment has a substantially cylindrical external shape as a whole, the external shape of the capped container 100 is not limited to any particular shape, and can be modified in size and design. The outer surface of the container main body 2 may be painted or printed.

[0021] As depicted in FIGS. 1 to 3, the cap unit 1A of the present embodiment contains a cap main body 7 that closes the upper opening part 2d of the aforementioned container main body 2, and a lid body 9 that is freely rotatably attached to the cap main body 7 via a first hinge part 8.

[0022] Note that in the following description, the side where the lid body 9 is attached to the cap main body 7 via the first hinge part 8 is referred to as the "rear side (back side)" of the cap unit 1A (capped container 100), and the opposite side is referred to as the "front side (front surface side)" of the cap unit 1A (capped container 100), and the direction connecting these is referred to as the front-back direction. In addition, the side where the lid body 9 is located relative to the container main body 2 is referred to as the "upper side", the direction where the container main body 2 is located relative to the lid body 9 is referred to as the "lower side", and the direction connecting these is referred to as the "up-down direction". In addition, a direction perpendicular to the up-down direction is defined as a radial direction, and a radial direction that is perpendicular to the front-back direction is defined as the "left-right direction". Note that unless otherwise specified, the following directions refer to the directions when the lid body 9 is in the closed position (closed position) as depicted in FIG. 2.

[0023] As depicted in FIGS. 2 to 9, the cap main body 7 has an outer cylinder member 10 and a port forming member 11 made of, for example, a heat resistant resin.

[0024] The outer cylinder member 10 has a peripheral wall part 10a formed in a substantially cylindrical shape so as to be continuous with the trunk part 2b of the container main body 2, and an upper wall part 10c having an opening part 10b at the upper part of the peripheral wall part 10a that is smaller in diameter than the peripheral wall part 10a.

[0025] The cap main body 7 is detachably attached by screwing to the opening neck part 2c of the container main body 2. Therefore, a female screw part 12 is provided on the inner circumferential surface of the peripheral wall part 10a (outer cylinder member 10). On the other hand, a male screw part 13 that screws into the female screw part 12 is provided on the outer circumferential surface of the opening neck part 2c.

[0026] As depicted in FIGS. 2 to 11, the port forming member 11 has an upper port forming part 11a located above the opening part 10b of the outer cylinder member 10, a lower port forming part 11b located below the opening part 10b of the outer cylinder member 10, a bottom wall part 11c located between the upper port forming part 11a and the lower port forming part 11b, and an inner wall part 11d located on the side opposite the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c).

[0027] The upper port forming part 11a, which serves as a pouring port or a drinking port, is provided in a diagonally cut shape protruding upward from the front side of the port forming member 11. The lower port forming part 11b is a part that mates into the inside of the container main body 2 from the upper opening part 2d of the container main body 2, and is provided so as to protrude in a generally circular plate shape from the lower end part of the port forming member 11 in the radially expanding direction. The bottom wall part 11c is configured as a recess part formed by recessing the inside of the upper port forming part 11a to match the shape of the opening part 10b. A liquid passage opening 14 is provided in the center of the bottom wall part 11c with a circular opening. The inner wall part 11d protrudes in the radially expanding direction from the lower periphery of the upper port forming part 11a, and has a surface that abuts against the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c) located near the front side. The portion near the rear side of the inner wall part 11d is slightly lower than the front side and forms a continuous surface.

[0028] When attached to the opening neck part 2c of the container main body 2, the cap main body 7 closes the upper opening part 2d of the container main body 2 and is

connected to the inside of the container main body 2 via a liquid passage opening 14 formed in the port forming member 11.

[0029] In the cap main body 7, the port forming member 11 is detachably attached to the opening part 10b of the outer cylinder member 10 via a port attaching and detaching mechanism 15. As depicted in FIGS. 2 to 11, the port attaching and detaching mechanism 15 has a structure in which the port forming member 11 is attached to the opening part 10b of the outer cylinder member 10 by abutting the port forming member 11 against the inner lower surface (lower surface of the upper wall part 10c) of the outer cylinder member 10 of the cap main body 7 and then sliding toward the opposite side (front side) from the first hinge part 8.

[0030] Specifically, the port attaching and detaching mechanism 15 has a first locking part 16 provided on the inner lower surface (lower surface of the upper wall part 10c) of the outer cylinder member 10 in the cap main body 7, a lock member 17 located on the upper surface of the port forming member 11 and attached so as to be freely movable downward, a second locking part 18 provided on the upper surface of the lock member 17 (port forming member 11), and a first biasing member 19 that biases the lock member 17 upward.

[0031] The first locking part 16 is configured by a protrusion part that protrudes downward from the lower surface of the upper wall part 10c located between the opening part 10b and the first hinge part 8. As depicted in FIGS. 10 and 11, the lock member 17 is located rearward of the bottom wall part 11c of the port forming member 11 and is disposed inside a hole part 11e formed in the inner wall part 11d, with the upper surface forming a surface continuous with the upper surface of the portion near the rear side of the inner wall part 11d. The lock member 17 has a pair of left and right elastic pieces 17a that protrude downward in parallel, and tab parts 17b that protrude outward in the left-right direction from the tip end (lower end) of the pair of elastic pieces 17a.

[0032] On the other hand, the port forming member 11 has a cylinder wall part 11f that forms a hole part 11e, and the tip end (lower end) side of the cylinder wall part 11f is curved inward in the left-right direction. The rear side of the cylinder wall part 11f connects between the lower port forming part 11b and the inner wall part 11d. When the lock member 17 is inserted inside the hole part 11e, the tab parts 17b provided on the pair of elastic pieces 17a are engaged with the lower end of the cylinder wall part 11f, thereby preventing the lock member 17 from slipping up out from the hole part 11e.

[0033] The second locking part 18 is configured by a protrusion part protruding upward from the upper surface of the lock member 17.

[0034] The first biasing member 19 is made of an elastic material such as rubber, elastomer, or the like. The first biasing member 19 is located between the pair of elastic pieces 17a of the lock member 17, and is disposed between the lock member 17 and the lower port forming part 11b of the port forming member 11. It should be noted that a spring member such as a coil spring may be used for the first biasing member 19 instead of the elastic member described above. As a result, in the port attaching and detaching mechanism 15, the lock member 17 is biased upward by the elasticity of the first biasing member 19. Moreover, the lock member 17 can be moved downward against the bias of the first biasing member 19 while the first biasing member 19 is being elastically deformed.

[0035] The port attaching and detaching mechanism 15 also has a third locking part 20 provided on the front side of the port forming member 11, a fourth locking part 21 provided on the front side of the opening part 10b of the outer cylinder member 10, a pair of fifth locking parts 22 provided so as to recess inwardly on both the left and right sides of the port forming member 11, a pair of sixth locking parts 23 provided on both the left and right sides of the opening part 10b of the outer cylinder member 10, a pair of seventh locking parts 24 provided so as to protrude outward from both the left and right sides of the port forming member 11, and a pair of eighth locking parts 25 provided on both the left and right sides of the inner surface of the peripheral wall part 10a of the outer cylinder member 10.

[0036] The third locking part 20 is configured as a groove part cut inward along the shape of the front side of the opening part 10b of the outer cylinder member 10 at the front side of the upper port forming part 11a. The lower end side of the third locking part 20 is provided with a front flange part 20a that protrudes forward over approximately half the circumference of the front side of the port forming member 11 and forms the lower side of the groove part of the third locking part 20. The fourth locking part 21 is configured in a generally arc shape by the front side of the opening part 10b of the outer cylinder member 10.

[0037] The pair of fifth locking parts 22 are formed by a pair of recess parts recessed inward and rearward from both left and right side ends of the third locking part 20 of the port forming member 11, respectively. The pair of sixth locking parts 23 are formed by a pair of inclined parts that incline backward from both the left and right ends of the fourth locking part 21 of the outer cylinder member 10 so as to widen the opening part 10b to the left and right, so as to not interfere with the shape of the outer circumferential side of the upper port forming part 11a. Note that the shape of the pair of sixth locking parts 23 can be appropriately modified to correspond to the shape of the outer circumferential side of the upper port forming part 11a, and does not interfere with the upper port forming part 11a of the port forming member 11 when mated to the inside of the opening part 10b from below.

[0038] The pair of seventh locking parts 24 are located behind a pair of cutout parts 24a that cut out on both the left and right sides of the inner wall part 11d of the port forming member 11, corresponding to the pair of eighth locking parts 25, and are formed from a pair of flange

parts that protrude outward from both the left and right sides. The pair of eighth locking parts 25 are formed by a pair of flange parts provided on the inner surface side of the peripheral wall part 10a of the outer cylinder member 10 so as to protrude inward from both the left and right sides.

[0039] As depicted in FIGS. 4 and 6, in the port attaching and detaching mechanism 15, the upper port forming part 11a of the port forming member 11 is mated from the lower side to the inside of the opening part 10b of the outer cylinder member 10 (cap main body 7), while the inner wall part 11d of the port forming member 11 is abutted against the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c).

At this time, the upper port forming part 11a of the port forming member 11 is aligned with the pair of sixth locking parts 23, and the pair of eighth locking parts 25 are aligned with the pair of cutout parts 24a so as to not interfere with each other.

[0040] From this state, as depicted in FIGS. 5 and 7, the port forming member 11 is slid toward the opposite side (front side) from the first hinge part 8. At this time, the port forming member 11 is slid toward the opposite side (front side) from the first hinge part 8, while aligning the left-right center of the outer cylinder member 10 and the port forming member 11 along the inclined shape of the pair of sixth locking parts 23.

[0041] Furthermore, at this time, the third locking part (groove part) 20 on the front side of the port forming member 11 is locked to the fourth locking part 21 located on the front side of the opening part 10b of the outer cylinder member 10 (cap main body 7). As a result, the front of the port forming member 11 is locked to the outer cylinder member 10 in the front-back direction and up-down direction. The port forming member 11 can slide until the third locking part (groove part) 20 abuts against the fourth locking part 21.

[0042] In addition, the pair of fifth locking parts 22 on the left and right sides of the port forming member 11 are similarly locked to the pair of sixth locking parts 23 located on the left and right sides of the outer cylinder member 10 (cap main body 7). As a result, the portion of the left and right parts of the port forming member 11 slightly toward the front are locked to the outer cylinder member 10 in the front-back direction, the left-right direction and the up-down direction.

[0043] In addition, the seventh locking part 24, which is a pair of flange parts provided to protrude outward from both the left and right sides of the port forming member 11, is similarly locked to the eighth locking part 25, which is a pair of flange parts provided to protrude inward from both the left and right sides on the inner surface side of the peripheral wall part 10a of the outer cylinder member 10 (cap main body 7). As a result, the portion slightly behind the left and right of the port forming member 11 are locked to the outer cylinder member 10 in the left-right direction and the up-down direction.

[0044] Furthermore, in the port attaching and detaching mechanism 15, when the port forming member 11 is slid toward the opposite side (front side) from the first hinge part 8, the lock member 17 is moved downward against the bias of the first biasing member 19, and the second locking part (protrusion part) 18 rides over the first locking part (protrusion part) 16 to provide a clicking sensation. Thereafter, the second locking part 18 is locked to the first locking part 16 by the lock member 17 returning to the original position because of the bias of the first biasing member 19. Thereby, the port forming member 11 can be attached to the opening part 10b of the outer cylinder member 10 in the cap main body 7.

[0045] On the other hand, in the port attaching and detaching mechanism 15, as depicted in FIGS. 5 and 7, the port forming member 11 is slid from a state in which the port forming member 11 is attached to the opening part 10b of the outer cylinder member 10 (cap main body 7) toward the first hinge part 8 (rear side). At this time, as depicted in FIGS. 4 and 6, the second locking part 18 rides over the first locking part 16, providing a clicking sensation and releasing the locking state of the second locking part 18 relative to the first locking part 16.

[0046] Furthermore, the locked state of the third locking part 20 relative to the fourth locking part 21 located in front of the opening part 10b of the outer cylinder member 10 (cap main body 7) is released, and the locked state of the pair of fifth locking parts 22 relative to the pair of sixth locking parts 23 is released. Furthermore, the locked state of the pair of seventh locking parts 24 relative to the pair of eighth locking parts 25 is also released in the same manner. Thereby, the port forming member 11 can be removed downward from the opening part 10b of the outer cylinder member 10 in the cap main body 7.

[0047] As depicted in FIGS. 6, 7, 9 and 10, the port attaching and detaching mechanism 15 has a positioning recess part 26 provided on either the outer cylinder member 10 or the port forming member 11 (port forming member 11 in the present embodiment), and a positioning protrusion part 27 provided on the other (outer cylinder member 10 in the present embodiment). The positioning recess part 26 is formed as a cutout in the front center part of the front flange part 20a. On the other hand, the positioning protrusion part 27 is formed to protrude downward from the lower surface of the upper wall part 10c located in front of the inner opening part 10b of the outer cylinder member 10.

[0048] As depicted in FIGS. 5 and 7, in the port attaching and detaching mechanism 15, the positioning protrusion part 27 engages with the positioning recess part 26 when the port forming member 11 is slid toward the opposite side (front side) from the first hinge part 8. As a result, the port forming member 11 is prevented from rotating around the center axis relative to the outer cylinder member 10. In other words, when the cap main body 7 (cap unit 1A) is attached to or detached from the opening neck part 2c of the container main body 2 by screwing, the port forming member 11 does not rotate

relative to the outer cylinder member 10.

[0049] In addition, when removing the port forming member 11 from the opening part 10b of the outer cylinder member 10, the port attaching and detaching mechanism 15 requires a sliding operation to push the lower port forming part 11b or the periphery of the upper port forming part 11a to the back. In this case, when the cap unit 1A (cap main body 7) is attached to the container main body 2, the port forming member 11 is located inside the container main body 2 from the upper opening part 2d, and therefore cannot slide, and the port forming member 11 cannot be removed. This prevents unintentional detachment due to an incorrect operation. Similarly, even if the pressure inside the container main body 2 is reduced, the port forming member 11 will not detach.

[0050] In addition, in the port attaching and detaching mechanism 15, when the port forming member 11 is removed from the opening part 10b of the outer cylinder member 10, the operating part is the lower port forming part 1 1b or the periphery of the upper port forming part 11a. Therefore, there is no need to provide a separate operating part. In addition, the first locking part 16 and the second locking part 18 (lock member 17), which provide a clicking sensation when attaching and detaching, are located at positions that cannot be seen with the naked eye when the port forming member 11 is attached to the outer cylinder member 10. In addition, with regard to each of the third locking part 20 to eighth locking part 25, the respective locking parts do not need to be touched and operated when attaching or detaching the device, and therefore the locking parts do not need to be provided in positions that are easy to see or operate. Therefore, the cap main body 7 of the present embodiment can increase the degrees of freedom in terms of appearance.

[0051] The waterproof packing 28 is detachably attached to the lower port forming part 11b of the port forming member 11, as depicted in FIGS. 2, 10, and 11. The waterproof packing 28 is a ring-shaped sealing member for sealing the space between the protrusion part 6 (container main body 2) and the port forming member 11 (cap main body 7), and is made of an elastic material such as a heat-resistant rubber, elastomer, or the like, such as silicone rubber.

[0052] The waterproof packing 28 is mated to the outer circumferential part of a lower flange part 11g provided on the outer circumferential part of the lower end side of the lower port forming part 11b (port forming member 11). When the lower port forming part 11b (port forming member 11) is mated inside the container main body 2, the waterproof packing 28 elastically deforms and comes into close contact with the protrusion part 6 across the entire circumference. Thereby, the gap between the protrusion part 6 (container main body 2) and the port forming member 11 (cap main body 7) can be sealed by the waterproof packing 28.

[0053] On the other hand, the waterproof packing 28 can be removed from the lower flange part 11g (port forming member 11) by elastically deforming (pulling and stretching) the waterproof packing itself. Thereby, the waterproof packing 28 and the port forming member 11 can be washed separately, and the space between the waterproof packing 28 and the port forming member 11 can be kept hygienic.

[0054] Note that the waterproof packing 28 may not only be detachably attached to the port forming member 11 as described above, but a configuration is also acceptable that the waterproof packing can also be inseparably attached to the port forming member 11 by, for example, integral molding.

[0055] Furthermore, two elastic flange parts 28a are provided on the outer circumference of the waterproof packing 28, protruding in the radial outward direction. When the cap main body 7 (cap unit 1A) is attached to the container main body 2, the seal packing 28 adheres to the protrusion part 6 of the container main body 2 over the entire circumference thereof while the elastic flange part 28a is elastically deformed. Thereby, the gap between the protrusion part 6 (container main body 2) and the port forming member 11 (cap main body 7) can be sealed (water tight). Note that the waterproof packing 28 is not necessarily limited to the shape described above. For example, the number of elastic flange parts 28a is not limited to the two described above, but can be one or a plurality.

[0056] As depicted in FIGS. 10 and 11, wall-like vertical ribs 11h are provided on both the left and right sides of the lower side of the inner wall part 11d of the port forming member 11, extending vertically so as to connect the inner wall part 11d and the lower port forming part 11b. The vertical ribs 11h increase the rigidity of the port forming member 11 and suppress deformation mainly in the up-down direction. A vertical rib 11h prevents the inner wall part 11d from deforming in the up-down direction, and in the port attaching and detaching mechanism 15, the clicking sensation when the second locking part 18 rides over the first locking part 16 can be stabilized.

[0057] As depicted in FIGS. 2 and 3, the lid body 9 opens and closes the liquid passage opening 14 of the port forming member 11, and is made of, for example, a heat resistant resin. The lid body 9 has a peripheral wall part 9a formed in a substantially cylindrical shape so as to be continuous with the peripheral wall part 10a of the outer cylinder member 10 (cap main body 7), a top wall part 9b covering the top surface of the peripheral wall part 9a, and a plug part 9c integrally assembled so as to protrude from the lower surface of the top wall part 9b. Note that the lid body 9 may be formed of, for example, an arm part that is connected to the first hinge part 8 so as to be freely hinged, and a cap part that is attached to the side of the arm part opposite to the side connected to the first hinge part 8 so as to be freely rotatable horizontally, or may be composed of a plurality of other parts. Furthermore, the plug part 9c may be molded as a separate member from the lid body 9 and then assembled together, as in the present embodiment, or may be molded integrally with the lid body 9.

[0058] A lid packing 29 is detachably attached to the plug part 9c of the lid body 9, as depicted in FIGS. 2 to 5, and FIG. 12. The lid packing 29 is a sealing member for closing the liquid passage opening 14 of the port forming member 11, as depicted in FIG. 12(A), (B). The lid packing 29 is made of an elastic member, and can be made of the same material as the waterproof packing 28.

[0059] The lid packing 29 has a first seal protrusion part 29a protruding from the front side (lower side in FIG. 12(A), (B)), a second seal protrusion part 29b protruding from the front side outward from the periphery of the first seal protrusion part 29a, a first mating recess part 29c with a back side (upper side in FIG. 12(A), (B)) recessed to correspond to the shape of the first seal protrusion part 29a, a second mating recess part 29d with a back side recessed to correspond to the shape of the second mating recess part 29b, a first locking protrusion part 29e that protrudes inward from the periphery of the first mating recess part 29c, and a cutout part 29f where a portion of the periphery of the second seal protrusion part 29b and the second mating recess part 29d have been cutout.

[0060] In the present embodiment, the first seal protrusion part 29a has a circular dome-like protruding shape. The second seal protrusion part 29b has a shape in which rounded, approximately triangular corners protrude from both the left and right sides of the first seal protrusion part 29a on the first hinge part 8 side (rear side). The cutout part 29f is formed in the center of the first hinge part 8 side (rear side) of the second seal protrusion part 29b and the second mating recess part 29d.

[0061] On the other hand, as depicted in FIGS. 4, 5 and 8, the plug part 9c has a first mating protrusion part 30a that protrudes in a shape corresponding to the first mating recess part 29c, a second mating protrusion part 30b that protrudes from both the left and right sides in a shape corresponding to the second mating recess part 29d, and a first locking recess part 30c where the periphery of the first mating protrusion part 30a is recessed in the radial direction to a shape corresponding to the first locking protrusion part 29e. In addition, the plug part 9c has a protrusion part 30d on the first hinge part 8 side (rear side) between the two second mating protrusion parts 30b protruding from both the left and right sides, which protrudes in a shape corresponding to the cutout part 29f toward the outside (rear side) of the periphery. In addition, the plug part 9c has a step part 30e that has the same width as the protrusion part 30d and is provided in a stepped shape continuing from the protrusion part 30d toward the outside (rear side) and upward (downward in FIGS. 4, 5 and 8).

[0062] As depicted in FIGS. 2 to 5, the lid packing 29 is configured such that with the first mating protrusion part 30a mated to the first mating recess part 29c, the first locking protrusion part 29e is locked to the first locking recess part 30c, and the second mating protrusion part 30b is mated to the second mating recess part 29d. At this time, the protrusion part 30d of the plug part 9c is locked to the cutout part 29f, and the protrusion part 30d protrudes toward the outside (rear side) of the lid packing 29. Thereby, the lid packing 29 can be attached to the plug part 9c of the lid body 9. In other words, the lid packing 29 is mated to the plug part 9c.

[0063] In the closed position of the lid body 9 as depicted in FIG. 2, when the lid packing 29 closes the liquid passage opening 14 of the port forming member 11, the first seal protrusion part 29a elastically deforms and comes into close contact with the entire circumference of the liquid passage opening 14 of the port forming member 11. Thereby, the liquid passage opening 14 of the port forming member 11 can be closed (sealed) by the lid packing 29.

[0064] On the other hand, the lid packing 29 itself can be removed from the plug part 9c (lid body 9). Thereby, the lid packing 29 and the lid body 9 can be washed separately, and the space between the lid packing 29 and the lid body 9 can be kept hygienic.

[0065] In the cap unit 1A of the present embodiment, the aforementioned plug part 9c has a convex shape that is left-right symmetrical with respect to the center axis connecting in the front-back direction and rotationally asymmetric with respect to the center axis connecting in the up-down direction, thereby setting the attachment direction of the lid packing 29 relative to the plug part 9c (lid body 9). In other words, the lid packing 29 is freely rotatable relative to the plug part 9c only if the first mating protrusion part 30a is mated to the first mating recess part 29c and the first locking protrusion part 29e is locked to the first locking recess part 30c. On the other hand, the attachment direction of the lid packing 29 to the plug part 9c is set to only one direction if the second mating protrusion part 30b is mated to the second mating recess part 29d in conjunction, and the protrusion part 30d is locked to the cutout part 29f.

[0066] In the cap unit 1A of the present embodiment, as depicted in FIGS. 13 and 14, when the lid packing 29 is attached to the plug part 9c in a direction other than the correct attachment direction depicted in FIG. 3 described above, the height of the step part 30e is set so that the lid packing 29 abuts against the portion between the opening part 10b of the upper wall part 10c and the first hinge part 8 before the lid packing 29 blocks the liquid passage opening 14.

[0067] In other words, if the attachment direction of the lid packing 29 is not the correct direction, the lid packing 29 will abut so as to be sandwiched between the step part 30e and the portion between the opening part 10b of the upper wall part 10c and the first hinge part 8, before the lid packing 29 blocks the liquid passage opening 14, and thus the lid body 9 cannot be rotated to the closed position. Therefore, the user can easily recognize that the attachment direction of the lid packing 29 is incorrect.

[0068] Furthermore, in the cap unit 1A of the present embodiment, as depicted in FIG. 3 and FIG. 12 (A), (B), the aforementioned second seal protrusion part 29b protrudes outward from the periphery of the first seal protrusion part 29a, so the lid packing 29 can easily be

removed from the plug part 9c by pinching the portion where the second seal protrusion part 29b is provided.

[0069] A second biasing member (not depicted) is provided between the cap main body 7 and the lid body 9 to bias the lid body 9 in a direction that opens the liquid passage opening 14 of the port forming member 11 (opening part direction). The second biasing member is made of a spring member such as a torsion spring, and is attached to the inside of the first hinge part 8. Note that the second biasing member is not limited to the spring member described above, but may be, for example, a ring-shaped elastic member made of rubber, elastomer, or the like that is hooked between the lid body 9 and the cap main body 7 to bias the lid body 9 in the opening direction.

[0070] The cap unit 1A of the present embodiment includes a lid lock mechanism 31 that secures the lid body 9 to the cap main body 7 when the lid body 9 is in a position that closes the upper part of the cap main body 7 (closed position). The lid lock mechanism 31 has a lock button member 33 rotatably attached to the cap main body 7 via a second hinge part 32, and a ring stopper 34 rotatably attached to the cap main body 7 via the second hinge part 32.

[0071] The lock button member 33 is rotatably supported by a second hinge part 32 provided on the front side of the outer cylinder member 10 (peripheral wall part 10a). The lock button member 33 has a first arm part 33a extending upward from the second hinge part 32, and a second arm part 33b extending downward from the second hinge part 32. A hook part 35 is provided at the tip end of the first arm part 33a (upper end of the lock button member 33) so as to protrude rearward.

A third biasing member 36 made of an elastic member such as a coil spring or the like is provided between the second arm part 33b and the peripheral wall part 10a. It should be noted that the third biasing member 36 may be a spring member such as rubber, elastomer, or the like, instead of the elastic member described above.

[0072] The ring stopper 34 is made of a partially open ring-shaped member, and both ends thereof are supported on the outside of the second hinge part 32 so as to freely rotate. Thereby, the ring stopper 34 can rotate in the vertical direction.

[0073] On the other hand, the lid lock mechanism 31 has a lock receiving part 37 where the hook part 35 of the lock button member 33 is locked, and a stopper receiving part 38 where the ring stopper 34 is hooked. The lock receiving part 37 is formed of a tab part protruding forward from the lower end part on the front side of the lid body 9 (peripheral wall part 9a). The stopper receiving part 38 has a shape corresponding to the inside of the ring stopper 34, and includes a wall part that protrudes forward from a position surrounding the periphery of the lock receiving part (tab part) 37 of the peripheral wall part 9a.

[0074] With the lid lock mechanism 31, when the lid body 9 closes the upper part of the cap main body 7, the hook part 35 of the lock button member 33 is locked to the lock receiving part 37, so a state is maintained where the lid body 9 closes the upper part of the cap main body 7. From this state, the locked state of the hook part 35 with respect to the lock receiving part 37 is released by pressing the second arm part 33b side of the lock button member 33 against the biasing force of the third biasing member 36. Thereby, the lid body 9 can be biased by the second biasing member so as to rotate in the opening direction.

[0075] On the other hand, with the lid lock mechanism 31, when the lid 9 closes the upper part of the cap main body 7, the ring stopper 34 is hooked to the stopper receiving part 38, and thereby rotation in the opening direction of the lid body 9 is prevented. As a result, the lid lock mechanism 31 can prevent the lid body 9 from being opened due to unnecessary operation of the lock button member 33.

[0076] With the cap unit 1A of the present embodiment having the aforementioned configuration, the port forming member 11 is attached to the opening part 10b of the outer cylinder member 10 by sliding from a state in which the port forming member 11 is abutted against the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c) to the opposite side (front side) from the first hinge part 8 using the aforementioned port attaching and detaching mechanism 15 in the cap main body 7. As a result, with the cap unit 1A of the present embodiment, when the pressure inside the container main body 2 is reduced, the port forming member 11, which is in close contact with the protrusion part 6 of the container main body 2 via the waterproof packing 28 adheres to the container main body 2, so the port forming member 11 can be prevented from coming off the opening part 10b of the outer cylinder member 10.

[0077] Furthermore, with the cap unit 1A of the present embodiment, the locked state of the port forming member 11 relative to the outer cylinder member 10 in the cap main body 7 can be prevented from being unintentionally released and causing the port forming member 11 to separate from the opening part 10b of the outer cylinder member 10.

[0078] With the cap unit 1A of the present embodiment, the lock member 17 is located on the side of the cap main body 7 described above that faces the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c). In this case, the lock member 17 is not exposed above the upper surface of the cap main body 7 (upper surface of the upper wall part 10c), and thus the degrees of freedom of appearance, including the upper surface of the cap main body 7 (upper surface of the upper wall part 10c) can be increased.

[0079] For example, with the cap unit 1A of the present embodiment, the upper surface of the upper wall part 10c forms a flat surface, so when tilting the container main body 2 to drink a beverage in the container main body 2 by causing the beverage to flow out from the liquid passage opening 14, the cap main body 7 (outer cylinder member 10) does not hit the nose of the user, thereby improving

the feel of use by the user.

[0080] Furthermore, with the cap unit 1A of the present embodiment, if the attachment direction of the aforementioned lid packing 29 is incorrect, the lid packing 29 abuts against the upper surface of the upper wall part 10c before the lid packing 29 blocks the liquid passage opening 14, and thus the user can easily recognize that the attachment direction of the lid packing 29 is incorrect.

[0081] As described above, with the cap unit 1A of the present embodiment, the aforementioned port attaching and detaching mechanism 15 enables an increase in the attachment strength of the port forming member 11 to the outer cylinder member 10 of the cap main body 7, while increasing the degrees of freedom of appearance. Therefore, a capped container 100 including such a cap unit 1A can be made even easier to use.

Embodiment 2

[0082] Next, Embodiment 2 of the present invention is described, for example, as the cap unit 1C depicted in FIG. 15 to FIG. 19.

[0083] Note that FIG. 15 is a cross-sectional view depicting a state before the port forming member 11 is attached to the outer cylinder member 10 of the cap unit 1B. FIG. 16 is a cross-sectional view depicting a state after the port forming member 11 has been attached to the outer cylinder member 10 of the cap unit 1B. FIG. 17 is a plan view of the cap unit 1B with the port forming member 11 removed from the outer cylinder member 10, as viewed from below. FIG. 18 is a perspective view of the port forming member 11 included in the cap unit 1B, as viewed from above. FIG. 19 is a perspective view of the cap unit 1B taken along line B-B depicted in FIG. 16. In the following description, the same parts equivalent to the above cap unit 1A shall be omitted and the same symbols shall be used in the drawings.

[0084] The cap unit 1B of the present embodiment has basically the same configuration as the cap unit 1A, except that the configuration of the port attaching and detaching mechanism 15 is changed from that of the cap unit 1A.

[0085] Specifically, the port attaching and detaching mechanism 15 of the present embodiment has a lock piece 39 provided with a second locking part 18, instead of the aforementioned lock member 17 and first biasing member 19, as depicted in FIGS. 15 to 19. Note that, in the port forming member 11, the cylinder wall part 11f with the hole part 11e and the vertical rib 11h are omitted.

[0086] The lock piece 39 is a plate-like elastic piece that protrudes rearward from the center part rearward of the bottom wall part 11c of the port forming member 11, and is provided so as to be elastically deformable downward. The second locking part 18 is configured by a protrusion part that protrudes upward from the rear tip end of the lock piece 39.

[0087] In addition, the port attaching and detaching mechanism 15 of the present embodiment has a positioning recess part 40 provided in either the outer cylinder member 10 or the port forming member 11 (in the present embodiment, the port forming member 11), and a positioning protrusion part 41 provided in the other (in the present embodiment, the outer cylinder member 10), instead of the aforementioned positioning recess part 26 and positioning protrusion part 27.

[0088] The positioning recess part 40 is formed by a pair of slits that are cut out on the left and right sides of the inner wall part 11d with a lock piece 39 interposed therebetween. The positioning protrusion part 41 is formed by a pair of protrusion parts protruding downward from both the left and right sides of the first locking part 16 on the lower surface of the upper wall part 10c.

[0089] With the port attaching and detaching mechanism 15 of the present embodiment, the same attachment and detachment operation as with the port attaching and detaching mechanism 15 of the cap unit 1A described above can be performed when attaching or detaching the port forming member 11 with regard to the opening part 10b of the outer cylinder member 10 (cap main body 7). In other words, while mating the upper port forming part 11a of the port forming member 11 from the lower side to the inside of the opening part 10b of the outer cylinder member 10 (cap main body 7), the inner wall part 11d of the port forming member 11 is abutted against the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c). At this time, the pair of eighth locking parts 25 are aligned with the pair of cutout parts 24a.

[0090] From this state, the port forming member 11 is slid to the opposite side as the first hinge part 8 (to the front side). At this time, the port forming member 11 can slide until the front flange part 20a abuts against the inside of the peripheral wall part 10a of the outer cylinder member 10.

[0091] Furthermore, at that time, the third locking part (groove part) 20 is locked to the fourth locking part 21, the pair of fifth locking parts 22 are locked to the pair of sixth locking parts 23, and the pair of seventh locking parts 24 are locked to the pair of eighth locking parts 25, similar to the aforementioned cap unit 1A. As a result, the front of the port forming member 11 is locked to the outer cylinder member 10 in the front-back direction, up-down direction, and left-right direction.

[0092] Furthermore, with the port attaching and detaching mechanism 15 of the present embodiment, as depicted in FIGS. 15 and 16, when the port forming member 11 is slid toward the opposite side (front side) as the first hinge part 8, the second locking part (protrusion part) 18 rides over the first locking part (protrusion part) 16 while elastically deforming the lock piece 39 downward, thereby providing a clicking sensation. Thereafter, the lock piece 39 elastically returns to the original position, and the second locking part 18 is locked to the first locking part 16. Thereby, the port forming member 11 can be attached to the opening part 10b of the outer cylinder member 10 in the cap main body 7.

[0093] In addition, with the port attaching and detaching mechanism 15 of the present embodiment, the upper port forming part 1 1a of the port forming member 11 is mated from the lower side to the inside of the opening part 10b of the outer cylinder member 10 (cap main body 7), while the inner wall part 11d of the port forming member 11 is abutted against the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c), so the positioning protrusion part (pair of protrusion parts) 41 engages with the positioning recess part (pair of slits) 40. Furthermore, from this state, when the port forming member 11 is slid toward the opposite side (front side) as the first hinge part 8, the positioning protrusion part (pair of protrusion parts) 41 is secured in an engaged state to the positioning recess part (pair of slits) 40. As a result, the port forming member 11 is prevented from rotating around the center axis relative to the outer cylinder member 10. In other words, when the cap main body 7 (cap unit 1B) is attached to or detached from the opening neck part 2c of the container main body 2 by screwing, the port forming member 11 does not rotate relative to the outer cylinder member 10.

[0094] Note that in the present embodiment, the positioning protrusion part 41 is engaged with the positioning recess part 40, so the port forming member 11 is prevented from rotating relative to the outer cylinder member 10. Therefore, unlike the cap unit 1A, the positioning recess part 26 and the positioning protrusion part 27 are not provided.

[0095] On the other hand, in the port attaching and detaching mechanism 15, as depicted in FIG. 16, the port forming member 11 is slid from a state in which the port forming member 11 is attached to the opening part 10b of the outer cylinder member 10 (cap main body 7) toward the first hinge part 8 (rear side). At this time, as depicted in FIG. 15, the second locking part 18 rides over the first locking part 16, providing a clicking sensation and releasing the locking state of the second locking part 18 relative to the first locking part 16.

[0096] Furthermore, the locked state of the third locking part 20 relative to the fourth locking part 21, the locked state of the pair of fifth locking parts 22 relative to the pair of sixth locking parts 23, and the locked state of the pair of seventh locking parts 24 relative to the pair of eighth locking parts 25 are similarly released. Thereby, the port forming member 11 can be removed downward from the opening part 10b of the outer cylinder member 10 in the cap main body 7.

[0097] With the cap unit 1B of the present embodiment having the aforementioned configuration, the port forming member 11 is attached to the opening part 10b of the outer cylinder member 10 by sliding from a state in which the port forming member 11 is abutted against the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c) to the opposite side (front side) from the first hinge part 8 using the aforementioned port attaching and detaching mechanism 15 in the cap main body 7. As a result, with the cap unit 1B of the present embodiment, when the pressure inside the container main body 2 is reduced, the port forming member 11, which is in close contact with the protrusion part 6 of the container main body 2 via the waterproof packing 28 adheres to the container main body 2, so the port forming member 11 can be prevented from coming off the opening part 10b of the outer cylinder member 10.

[0098] Furthermore, with the cap unit 1B of the present embodiment, the locked state of the port forming member 11 relative to the outer cylinder member 10 in the cap main body 7 can be prevented from being unintentionally released and causing the port forming member 11 to separate from the opening part 10b of the outer cylinder member 10.

[0099] With the cap unit 1B of the present embodiment, the lock piece 39 is located on the side of the cap main body 7 described above that faces the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c). In this case, the lock piece 39 is not exposed above the upper surface of the cap main body 7 (upper surface of the upper wall part 10c), and thus the degrees of freedom of appearance, including the upper surface of the cap main body 7 (upper surface of the upper wall part 10c) can be increased.

[0100] Furthermore, with the port attaching and detaching mechanism 15 of the present embodiment, the aforementioned lock piece 39 is integrally formed with the port forming member 11, so the number of parts can be reduced.

[0101] As described above, with the cap unit 1B of the present embodiment, the aforementioned port attaching and detaching mechanism 15 enables an increase in the attachment strength of the port forming member 11 to the outer cylinder member 10 of the cap main body 7, while increasing the degrees of freedom of appearance. Therefore, a capped container 100 including such a cap unit 1B can be made even easier to use.

Embodiment 3

[0102] Next, Embodiment 3 of the present invention is described, for example, as the cap unit 1C depicted in FIG. 20 and FIG. 21.

[0103] Note that FIG. 20 is a plan view of the cap unit 1C with the port forming member 11 removed from the outer cylinder member 10, as viewed from below. FIG. 21 is a perspective view of the port forming member 11 included in the cap unit 1C, as viewed from above. In the following description, the same parts equivalent to the above cap unit 1A shall be omitted and the same symbols shall be used in the drawings.

[0104] The cap unit 1C of the present embodiment has basically the same configuration as the cap unit 1A, except that the configuration of the port attaching and detaching mechanism 15 is changed from that of the cap unit 1A.

[0105] Specifically, the port attaching and detaching mechanism 15 of the present embodiment has a pair of

lock pieces 42 provided with a second locking part 18, instead of the aforementioned lock member 17 and first biasing member 19, as depicted in FIGS. 20 and 21. Note that, in the port forming member 11, the cylinder wall part 11f with the hole part 11e and the vertical rib 11h are omitted.

[0106] The pair of locking pieces 42 are thin elastic plate-like pieces that protrude rearward from both sides sandwiching the inner wall part 11d rearward of the bottom wall part 11c of the port forming member 11, and are both arranged so as to be elastically deformable inward. The second locking parts 18 are formed by a protrusion part that protrudes outward in the left-right direction from the tip ends of the pair of lock pieces 42, respectively.

[0107] On the other hand, the first locking part 16 is configured of a pair of protrusion parts located on the rear side of the upper wall part 10c that protrude downward from the lower surface on both the left and right sides, and protrude inward from the outer side in the left-right direction.

[0108] With the port attaching and detaching mechanism 15 of the present embodiment, the same attachment and detachment operation as with the port attaching and detaching mechanism 15 of the cap unit 1A described above can be performed when attaching or detaching the port forming member 11 with regard to the opening part 10b of the outer cylinder member 10 (cap main body 7). In other words, while mating the upper port forming part 1 1a of the port forming member 11 from the lower side to the inside of the opening part 10b of the outer cylinder member 10 (cap main body 7), the inner wall part 11d of the port forming member 11 is abutted against the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c). At this time, the pair of eighth locking parts 25 are aligned with the pair of cutout parts 24a.

[0109] From this state, the port forming member 11 is slid to the opposite side as the first hinge part 8 (to the front side). At this time, the port forming member 11 can slide until the front flange part 20a abuts against the inside of the peripheral wall part 10a of the outer cylinder member 10.

[0110] Furthermore, at that time, the third locking part (groove part) 20 is locked to the fourth locking part 21, the pair of fifth locking parts 22 are locked to the pair of sixth locking parts 23, and the pair of seventh locking parts 24 are locked to the pair of eighth locking parts 25, similar to the aforementioned cap unit 1A. As a result, the front of the port forming member 11 is locked to the outer cylinder member 10 in the front-back direction, up-down direction, and left-right direction.

[0111] Furthermore, when the port forming member 11 is attached to the opening part 10b of the outer cylinder member 10, the positioning protrusion part 27 is engaged with the positioning recess part 26, in the same manner as in the cap unit 1A. As a result, the port forming member 11 is prevented from rotating around the center axis relative to the outer cylinder member 10. In other words, when the cap main body 7 (cap unit 1C) is attached to or detached from the opening neck part 2c of the container main body 2 by screwing, the port forming member 11 does not rotate relative to the outer cylinder member 10.

[0112] Furthermore, with the port attaching and detaching mechanism 15, when the port forming member 11 is slid toward the opposite side (front side) as the first hinge part 8, the pair of lock pieces 42 are elastically deformed toward the inside, and the second locking part (protrusion part) 18 rides over the first locking part (protrusion part) 16, thereby providing a clicking sensation. Thereafter, the pair of lock pieces 42 elastically return to the original position, and the second locking part 18 is locked to the first locking part 16. Thereby, the port forming member 11 can be attached to the opening part 10b of the outer cylinder member 10 in the cap main body 7.

[0113] On the other hand, with the port attaching and detaching mechanism 15, the port forming member 11 is slid from a state in which the port forming member 11 is attached to the opening part 10b of the outer cylinder member 10 (cap main body 7) toward the first hinge part 8 (rear side). At this time, the second locking parts 18 ride over the first locking parts 16, providing a clicking sensation and releasing the locked state of the second locking part 18 relative to the first locking part 16.

[0114] Furthermore, the locked state of the third locking part 20 relative to the fourth locking part 21, the locked state of the pair of fifth locking parts 22 relative to the pair of sixth locking parts 23, and the locked state of the pair of seventh locking parts 24 relative to the pair of eighth locking parts 25 are similarly released. Furthermore, the engagement between the positioning recess part 26 and the positioning protrusion part 27 is released. Thereby, the port forming member 11 can be removed downward from the opening part 10b of the outer cylinder member 10 in the cap main body 7.

[0115] With the cap unit 1C of the present embodiment having the aforementioned configuration, the port forming member 11 is attached to the opening part 10b of the outer cylinder member 10 by sliding from a state in which the port forming member 11 is abutted against the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c) to the opposite side (front side) from the first hinge part 8 using the aforementioned port attaching and detaching mechanism 15 in the cap main body 7. As a result, with the cap unit 1C of the present embodiment, when the pressure inside the container main body 2 is reduced, the port forming member 11, which is in close contact with the protrusion part 6 of the container main body 2 via the waterproof packing 28 adheres to the container main body 2, so the port forming member 11 can be prevented from coming off the opening part 10b of the outer cylinder member 10.

[0116] Furthermore, with the cap unit 1C of the present embodiment, the locked state of the port forming member 11 relative to the outer cylinder member 10 in the cap

main body 7 can be prevented from being unintentionally released and causing the port forming member 11 to separate from the opening part 10b of the outer cylinder member 10.

[0117] With the cap unit 1C of the present embodiment, the pair of lock pieces 42 are located on the side of the cap main body 7 described above that faces the inner lower surface of the outer cylinder member 10 (lower surface of the upper wall part 10c). In this case, the pair of lock pieces 42 are not exposed above the upper surface of the cap main body 7 (upper surface of the upper wall part 10c), and thus the degrees of freedom of appearance, including the upper surface of the cap main body 7 (upper surface of the upper wall part 10c) can be increased.

[0118] Furthermore, with the port attaching and detaching mechanism 15 of the present embodiment, the aforementioned pair of lock pieces 42 are integrally formed with the port forming member 11, so the number of parts can be reduced.

[0119] As described above, with the cap unit 1C of the present embodiment, the aforementioned port attaching and detaching mechanism 15 enables an increase in the attachment strength of the port forming member 11 to the outer cylinder member 10 of the cap main body 7, while increasing the degrees of freedom of appearance. Therefore, a capped container 100 including such a cap unit 1C can be made even easier to use.

[0120] Note that the present invention is not necessarily limited to the above embodiments, and various changes can be made without departing from the purpose of the invention.

For example, the above embodiment depicts an application where the present invention is applied to a beverage container having a heat/cold insulation function provided by the container main body 2 having the aforementioned vacuum insulation structure, but the present invention can be widely applied to a capped container having a container main body and a cap unit that can be freely attached and detached to the container main body.

DESCRIPTION OF SYMBOLS

[0121] 1A, 1B, 1C. Cap unit 2. Container main body 7. Cap main body 8. First hinge part 9. Lid body 10. Outer cylinder member 11. Port forming member 14. Liquid passage opening 15. Port attaching and detaching mechanism 16. First locking part 17. Lock member 18. Second locking part 19. First biasing member 20. Third locking part 21. Fourth locking part 22. Fifth locking part 23. Sixth locking part 24. Seventh locking part 25. Eighth locking part 26. Positioning recess part 27. Positioning protrusion part 28. Waterproof packing 29. Lid packing 31. Lid lock mechanism 100. Capped container.

Claims

1. A cap unit detachably attached to a container main body open on an upper part, comprising:

a cap main body that closes an upper opening part of the container main body; and
a lid body rotatably attached to the cap main body via a hinge part;
wherein the cap main body includes an outer cylinder member having an opening part on an upper part, a port forming member having a liquid passage opening part that is opened and closed by rotation of the lid body, and a port attaching and detaching mechanism that detachably attaches the port forming member to the opening part of the outer cylinder member; and
the port attaching and detaching mechanism has a structure in which the port forming member is attached to the opening part of the outer cylinder member by sliding the port forming member against the inner lower surface of the outer cylinder member.

2. The cap unit according to claim 1, wherein

the port attaching and detaching mechanism has a first locking part provided on the outer cylinder member and a second locking part provided on the port forming member; and
the second locking part is locked to the first locking part when the port forming member is slid along the inner lower surface of the outer cylinder member.

3. The cap unit according to claim 2, wherein

the port attaching and detaching mechanism has a lock member provided on an upper surface of the port forming member and attached so as to be freely movable downward, and a biasing member that biases the lock member upward; and
the second locking part is provided on the lock member.

4. The cap unit according to any preceding claim, wherein

the port attaching and detaching mechanism has a third locking part provided on a front side of the port forming member and a fourth locking part formed by a front side of the opening part of the outer cylinder member; and
the third locking part is locked to the fourth locking part when the port forming member is slid against the inner lower surface of the outer cylinder member.

5. The cap unit according to any preceding claim,

wherein

the port attaching and detaching mechanism includes a pair of fifth locking parts provided so as to inwardly recess the left and right sides of the port forming member, and a pair of sixth locking parts provided on the left and right sides of the opening part of the outer cylinder member; and
the pair of fifth locking parts is locked to the pair of fourth locking parts when the port forming member is slid against the inner lower surface of the outer cylinder member.

6. The cap unit according to any preceding claim, wherein

the outer cylinder member has a peripheral wall part formed in a substantially cylindrical shape;
the port attaching and detaching mechanism includes a pair of seventh locking parts provided so as to protrude outward from both the left and right sides of the port forming member, and
a pair of eighth locking parts provided on both the left and right sides of the inner surface of the peripheral wall part of the outer cylinder member; and
the pair of seventh locking parts is locked to the pair of eighth locking parts when the port forming member is slid against the inner lower surface of the outer cylinder member.

7. The cap unit according to any preceding claim, wherein

the port attaching and detaching mechanism has a positioning recess part provided on one of either the outer cylinder member or the port forming member, and a positioning protrusion part provided on the other of either the outer cylinder member or the port forming member; and
when the port forming member is slid against the inner lower surface of the outer cylinder member, the positioning protrusion part engages with the positioning recess part, thereby preventing the port forming member from rotating relative to the outer cylinder member.

8. The cap unit according to any preceding claim, further comprising:

a plug part protruding from an inner lower surface of the lid body; and
a lid packing that closes the liquid passage opening part in a state in which the lid packing is detachably attached to the plug part; wherein
the plug part has a mating protrusion part having a convex shape that is rotationally asymmetric with respect to a center axis thereof;
the lid packing has a mating recess part having a recessed shape corresponding to the mating protrusion part; and
an attachment direction of the lid packing relative to the plug part is set by mating the mating protrusion part into the mating recess part.

9. The cap unit according to claim 8, wherein

the cap main body has an upper wall part between the opening part and the hinge part; and
when the lid packing is attached to the plug part in a direction different from the attachment direction, the lid packing abuts against the upper wall part before blocking the liquid passage opening part.

10. A capped container comprising:

the cap unit according to any one of claims 1 to 9; and
a container main body to which the cap unit is attached.

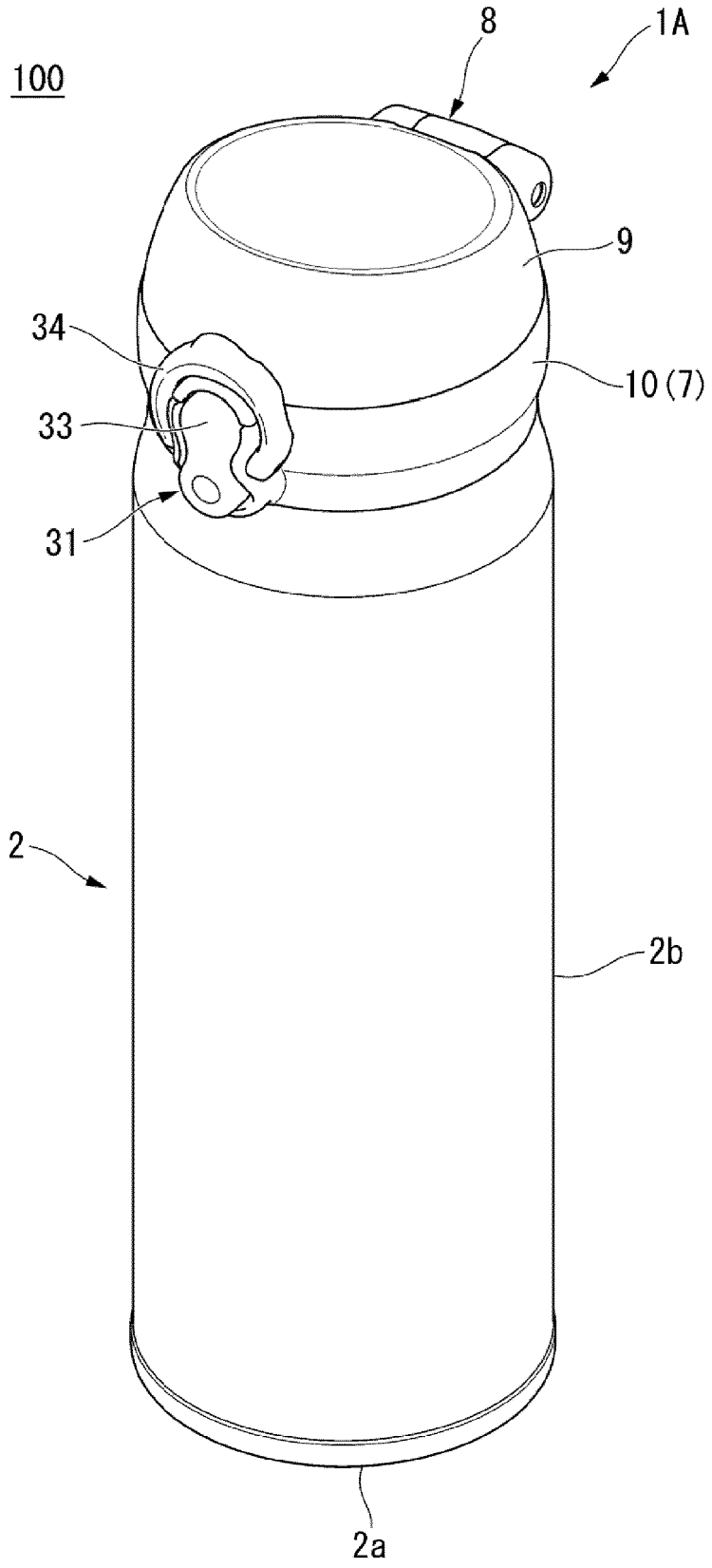


FIG. 1

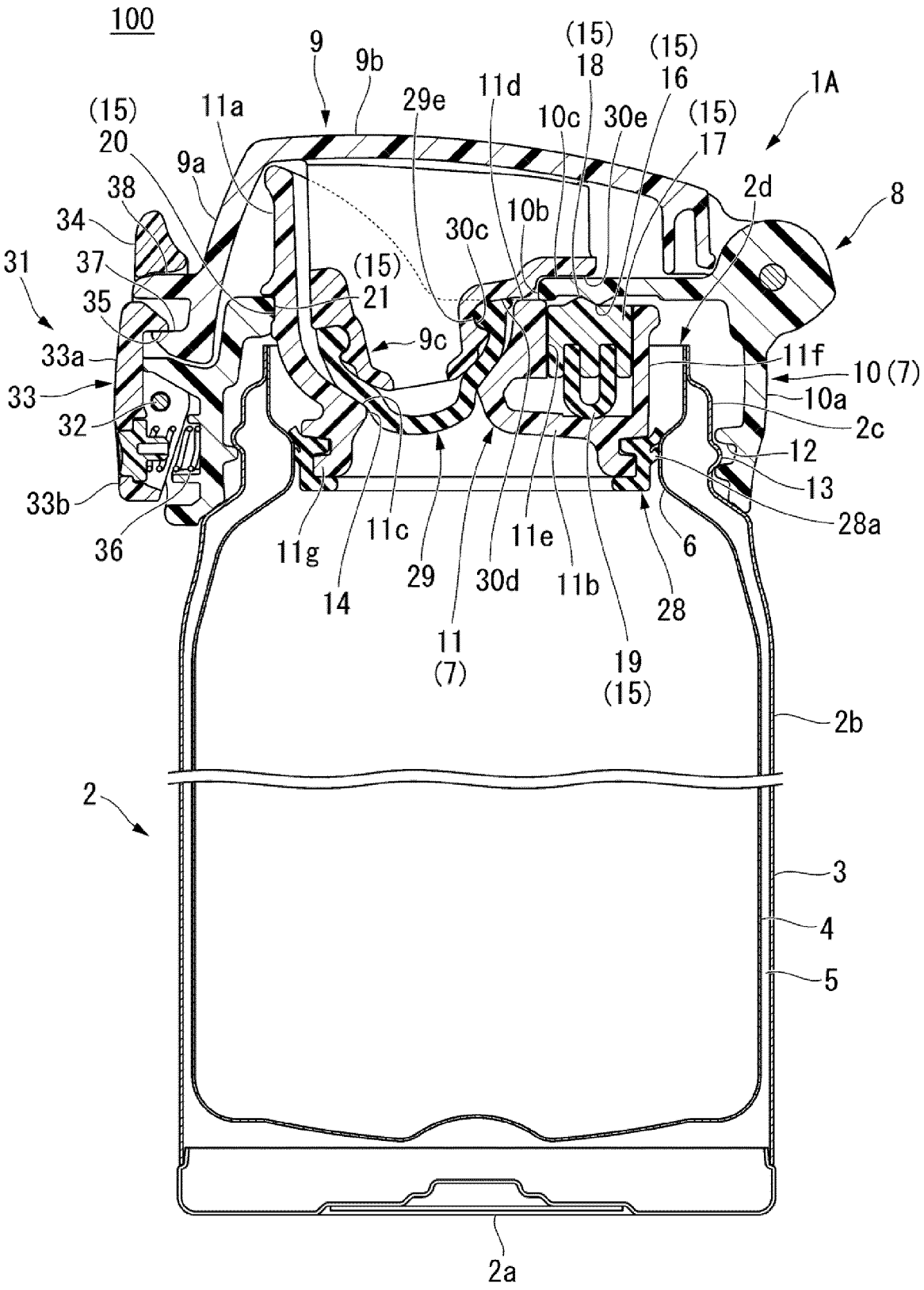

100
9
9b
(15)
18
(15)
16
1A
(15)
20
11a
29e
11d
10c
30e
(15)
17
9a
2d
8
38
10b
34
30c
31
37
(15)
21
35
9c
11f
10 (7)
33a
10a
33
2c
32
12
13
33b
28a
36
11g
11c
11e
6
29
30d
11b
14
28
11
(7)
19
(15)
2b
2
3
4
5
2a

FIG. 2

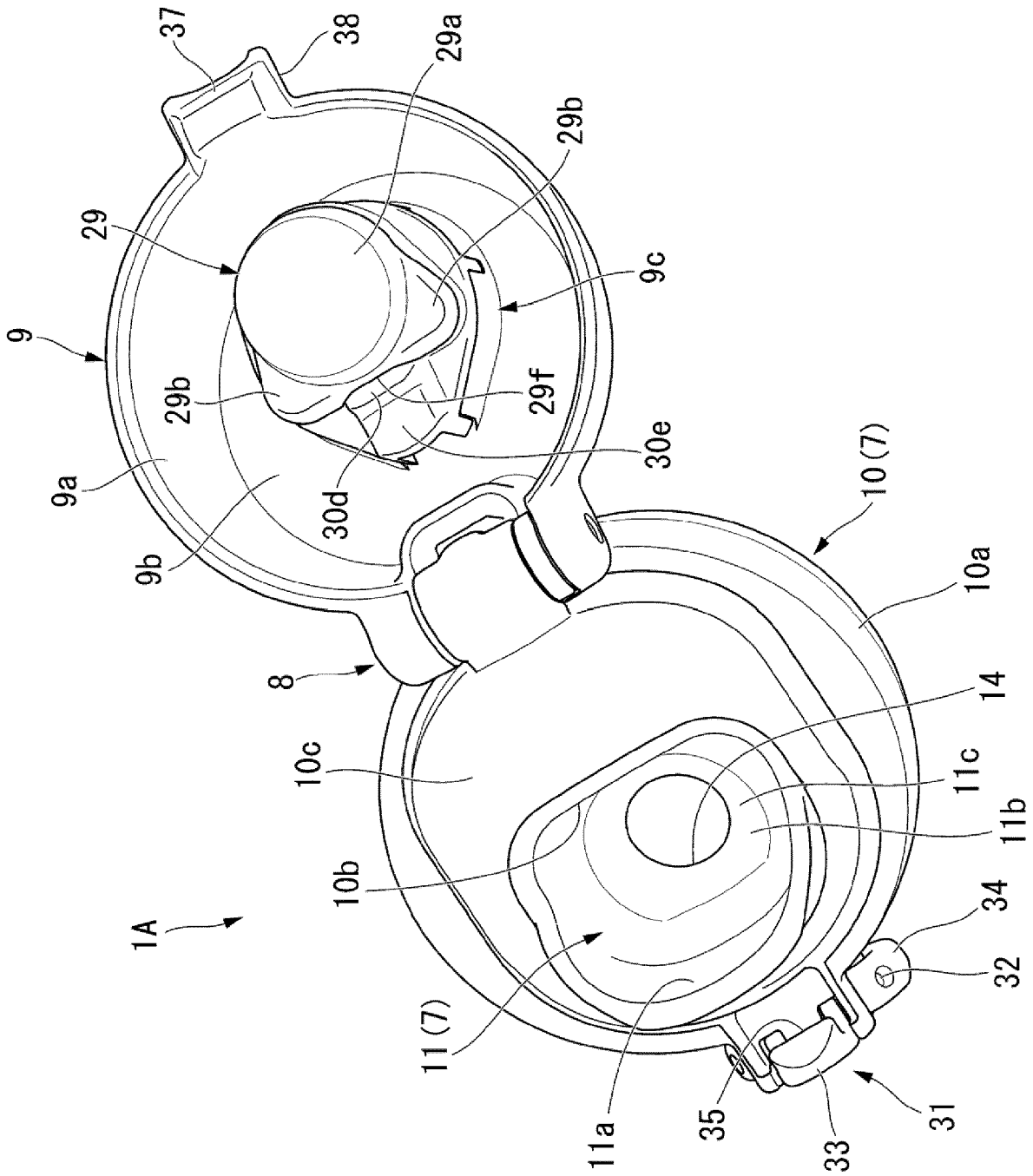

37
38
29a
29b
29
9c
9
29b
29f
30e
9a
30d
10 (7)
9b
10a
8
14
10c
11c
11b
10b
34
1A
32
11 (7)
11a
35
33
31

FIG. 3

FIG. 4

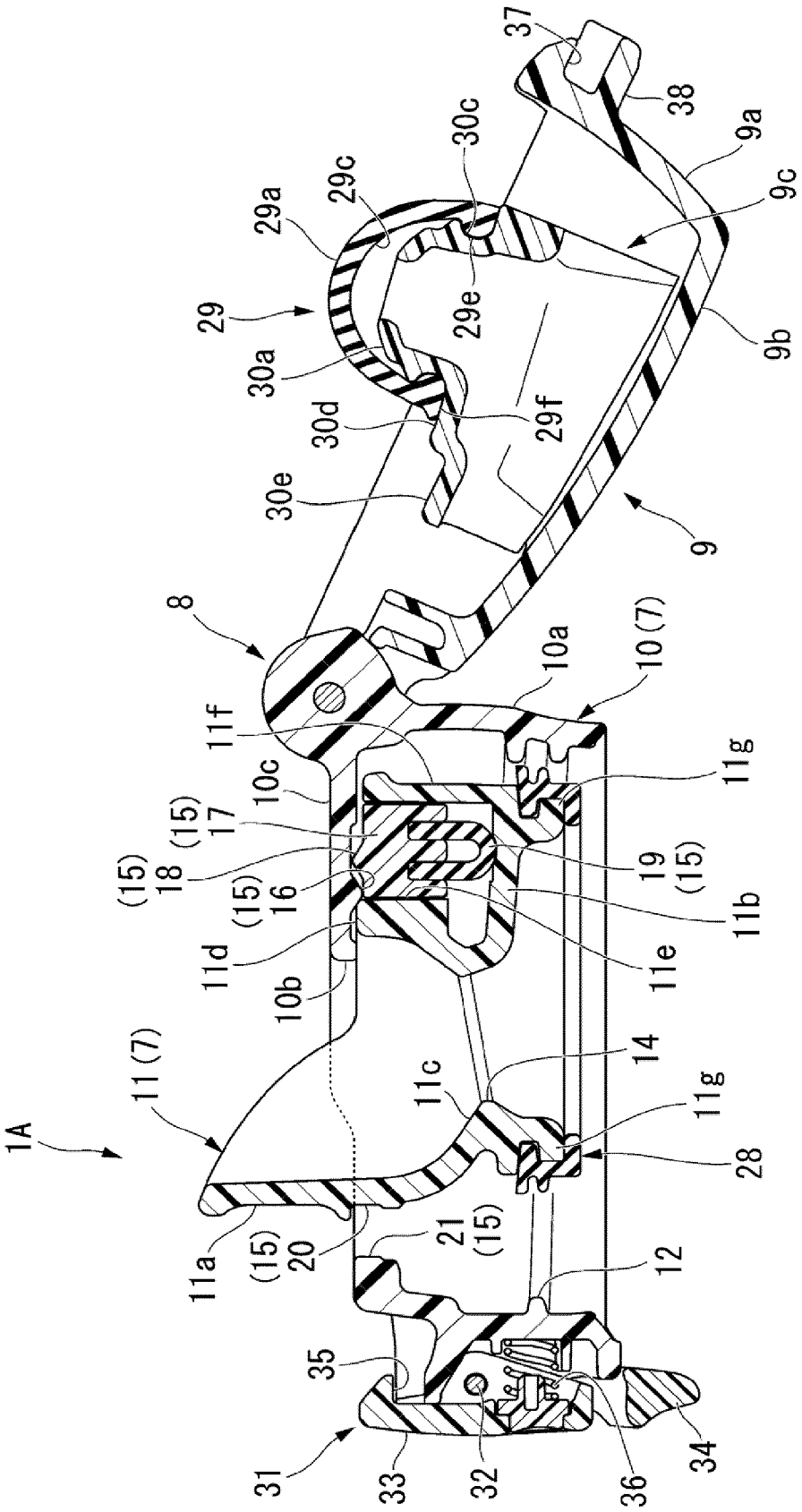

37
38
9a
9c
30c
29c
29a
29
29e
9b
30a
30d
29f
30e
9
8
10a
10 (7)
11f
11g
10c
(15)
17
(15)
18
(15)
16
19
(15)
11b
11d
11e
10b
1A
11 (7)
14
11c
11g
28
11a
(15)
20
21
(15)
12
35
31
33
32
36
34

FIG. 5

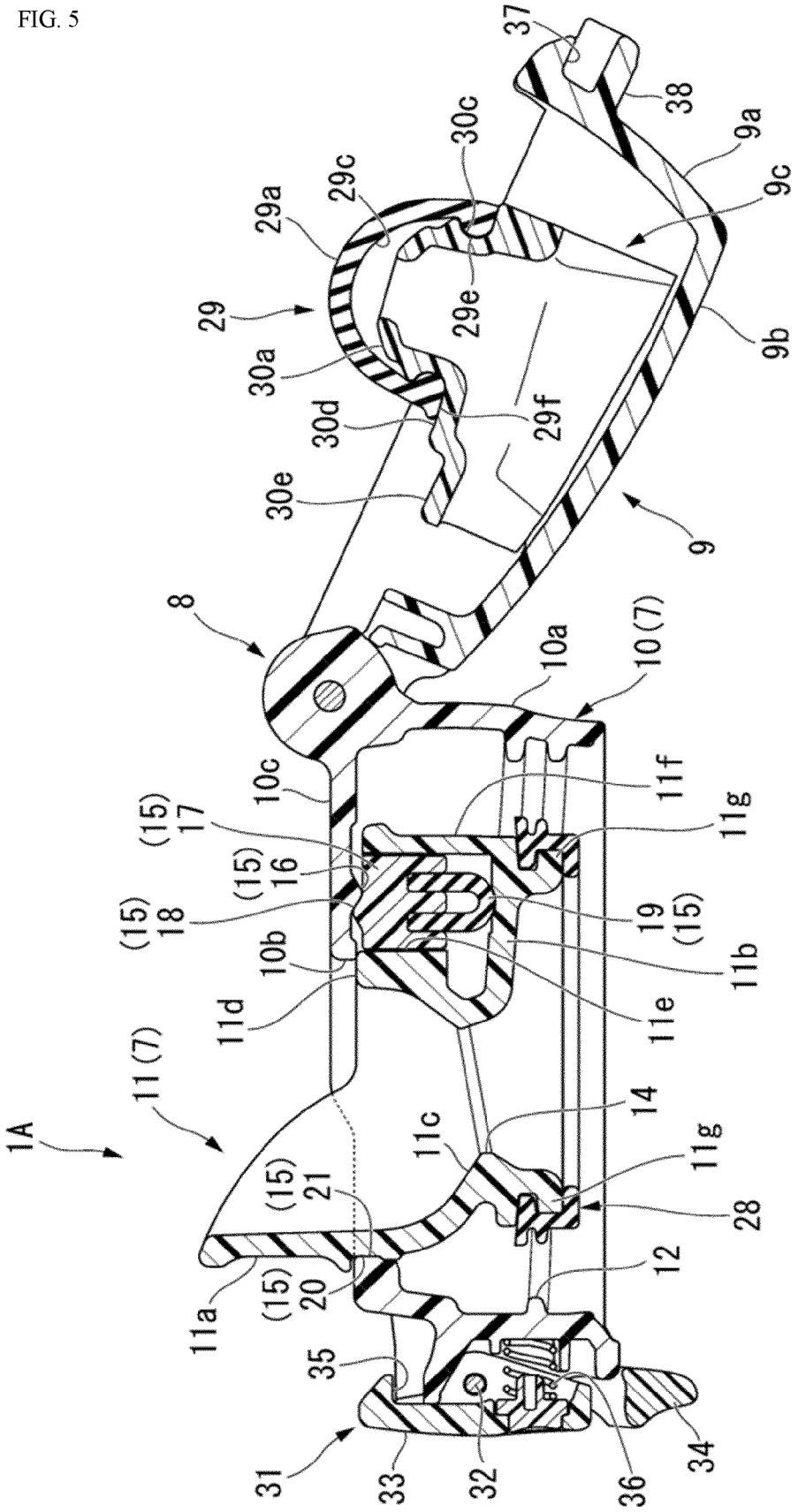
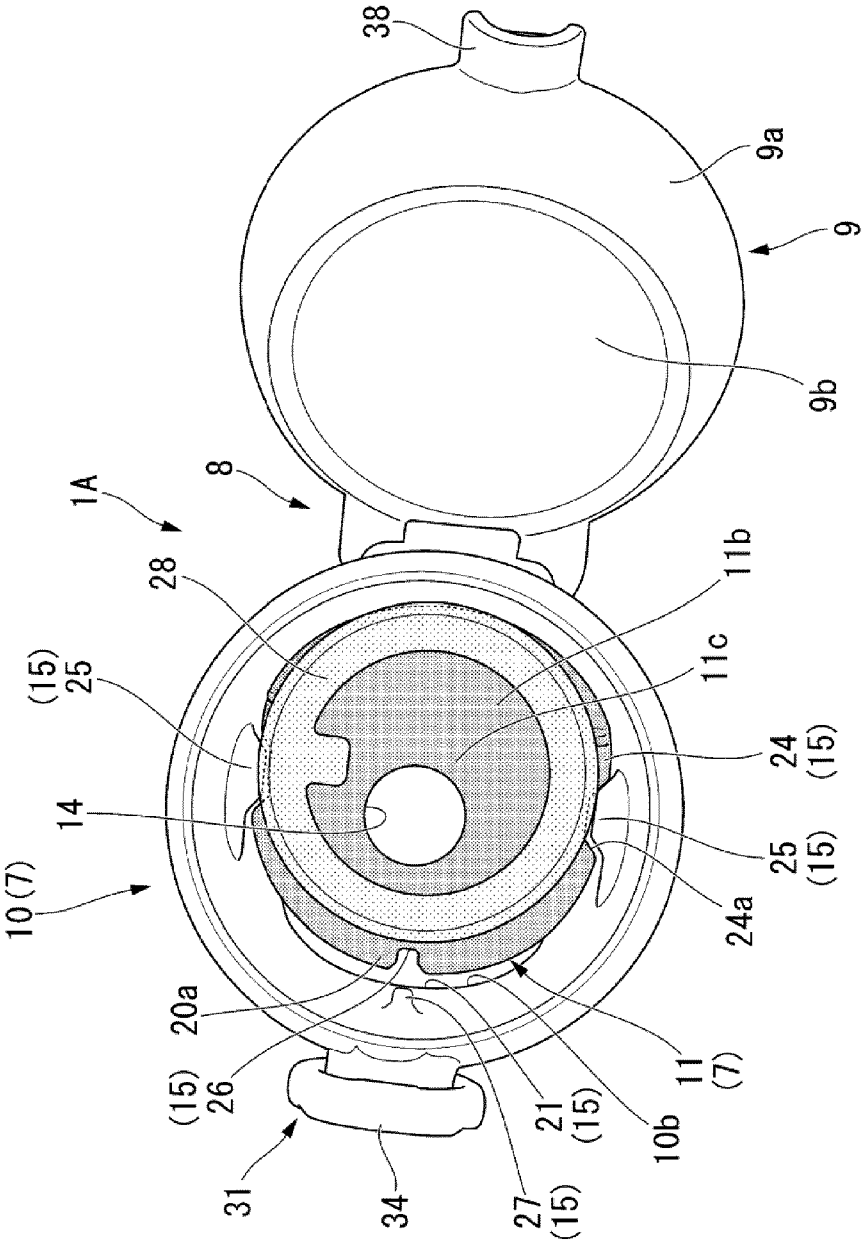

37
38
9a
9c
30c
29c
29a
29
29e
9b
30a
30d
29f
30e
9
8
10a
10(7)
10c
11f
11g
(15)
17
(15)
16
(15)
18
19
(15)
10b
11b
11d
11e
11(7)
1A
14
11c
11g
(15)
21
28
12
11a
(15)
20
35
31
33
32
36
34

FIG. 6


38
9a
9
9b
1A
8
28
11b
11c
(15)
25
24
(15)
14
25
(15)
10 (7)
24a
20a
11
(7)
(15)
26
21
(15)
10b
31
34
27
(15)

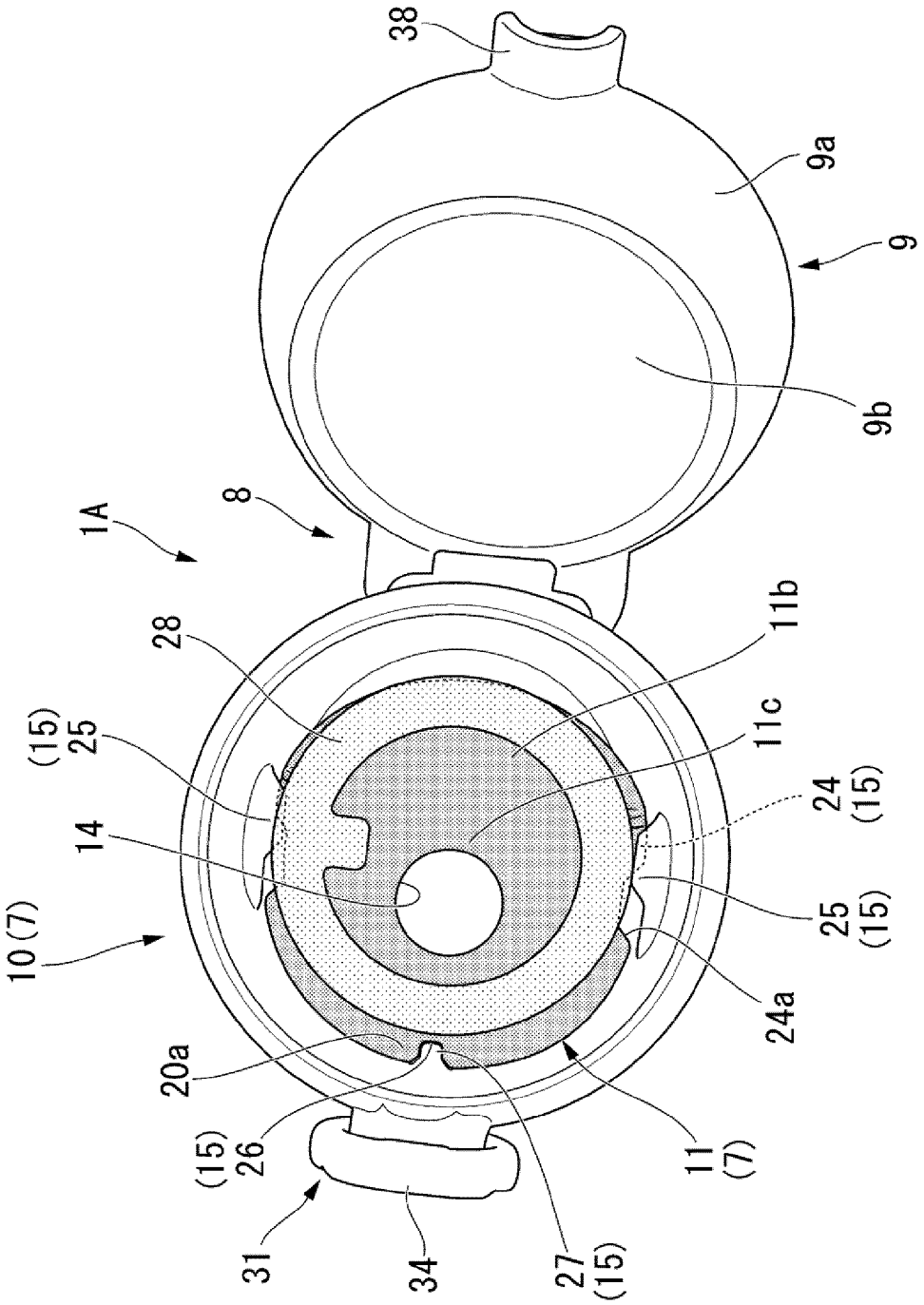

38
9a
9
9b
1A
8
28
11b
(15)
25
11c
24
(15)
14
25
(15)
10(7)
24a
20a
(15)
26
11
(7)
31
34
27
(15)

FIG. 7

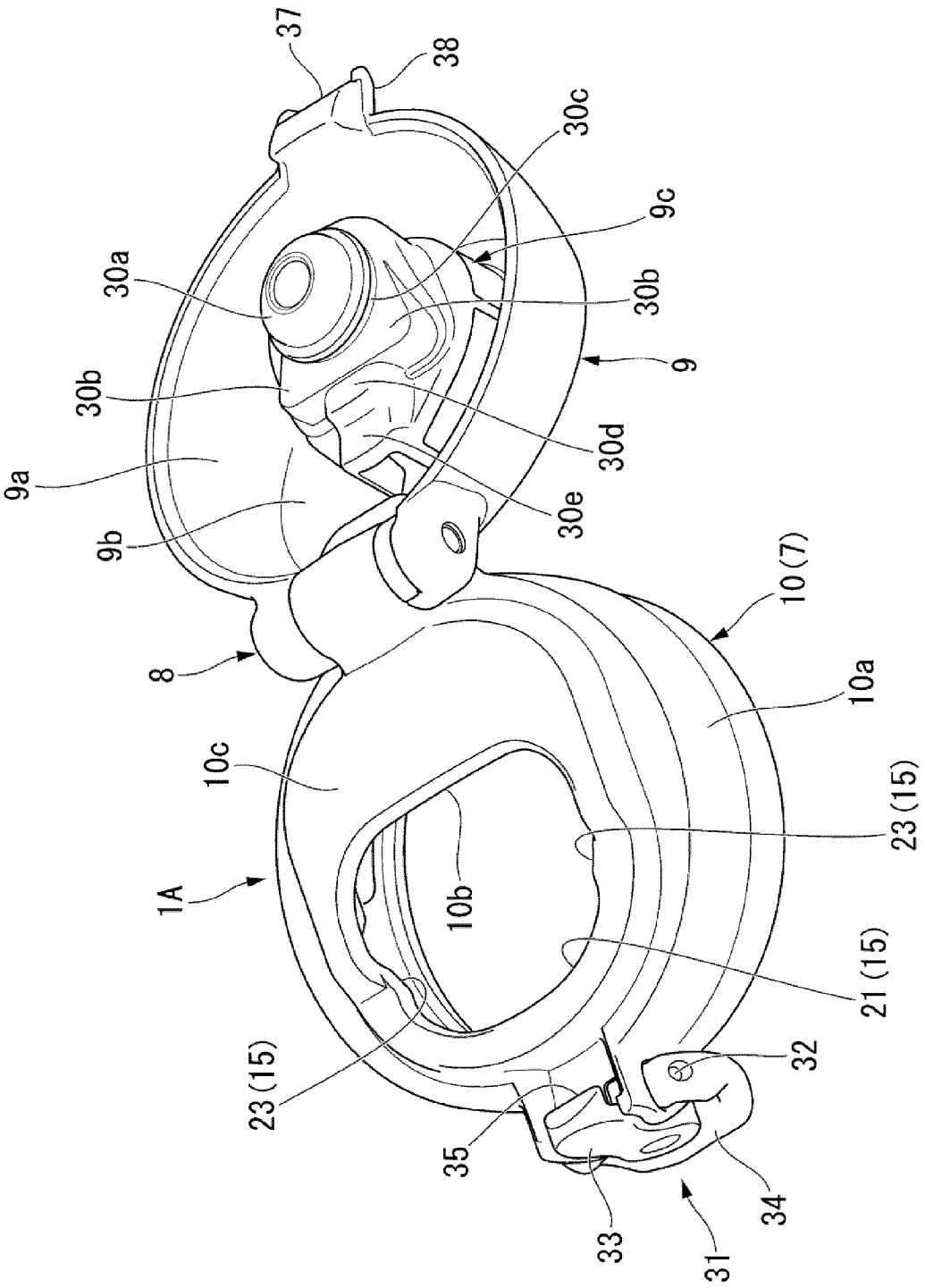

37
38
30c
9c
30a
30b
9
30b
30d
9a
30e
9b
10 (7)
8
10a
10c
23 (15)
1A
10b
21 (15)
32
23 (15)
35
34
33
31

FIG. 8

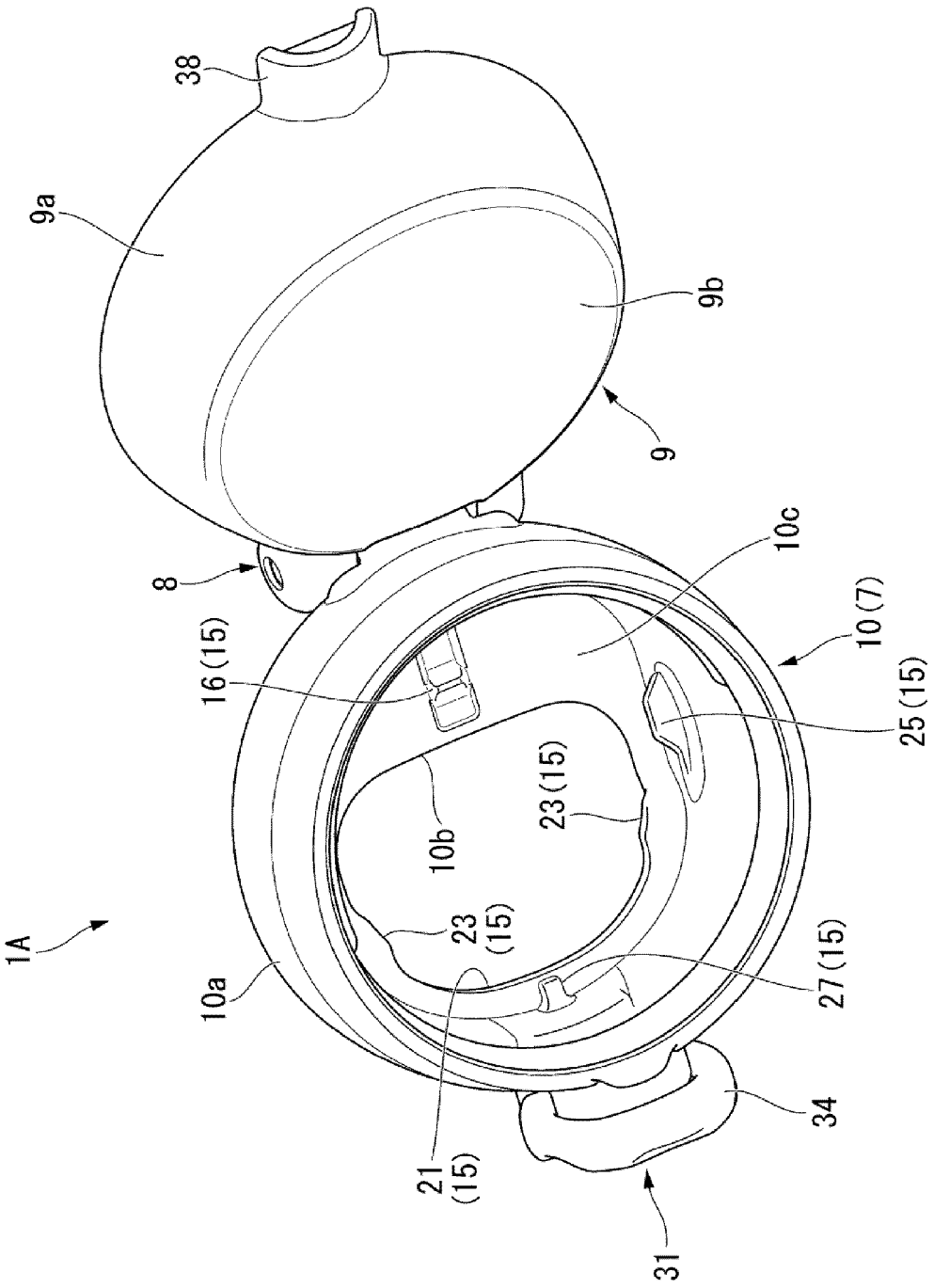

38
9a
9b
9
8
10c
10 (7)
16 (15)
25 (15)
10b
23 (15)
1A
23 (15)
10a
27 (15)
34
21 (15)
31

FIG. 9

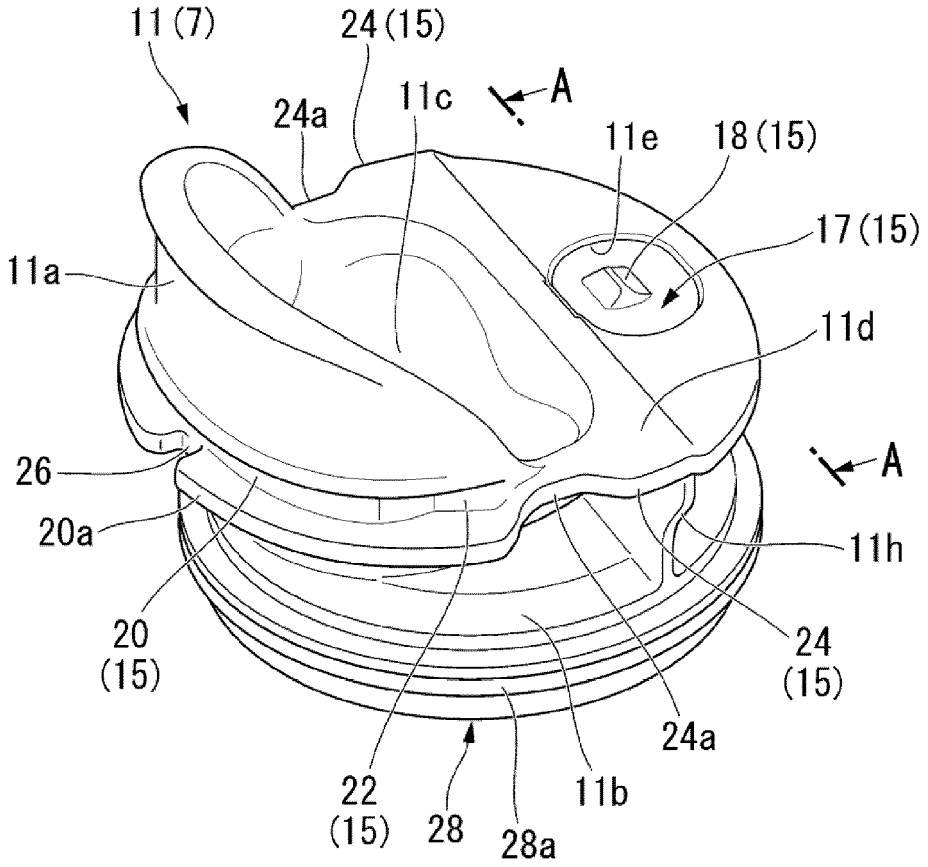

11 (7)
24 (15)
24a
11c
A
11e
18 (15)
17 (15)
11a
11d
26
A
20a
11h
20
(15)
24
(15)
24a
22
(15)
28
11b
28a

FIG. 10

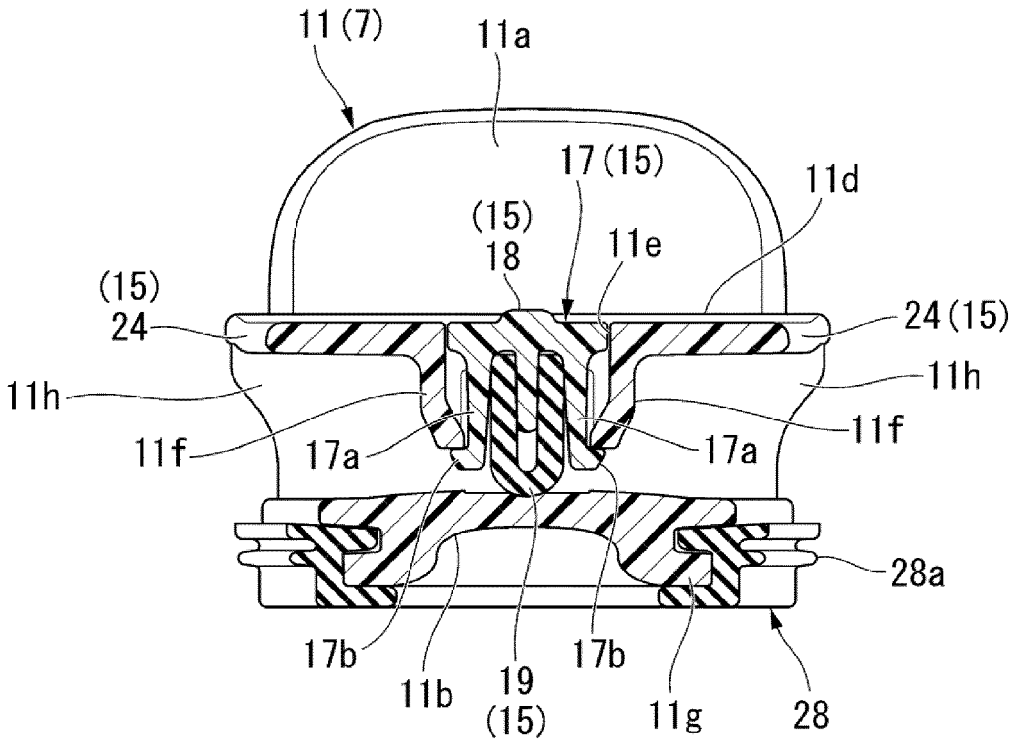

11 (7)
11a
17 (15)
11d
(15)
18
11e
(15)
24
24 (15)
11h
11h
11f
17a
17a
11f
28a
17b
11b
19
(15)
17b
11g
28

FIG. 11

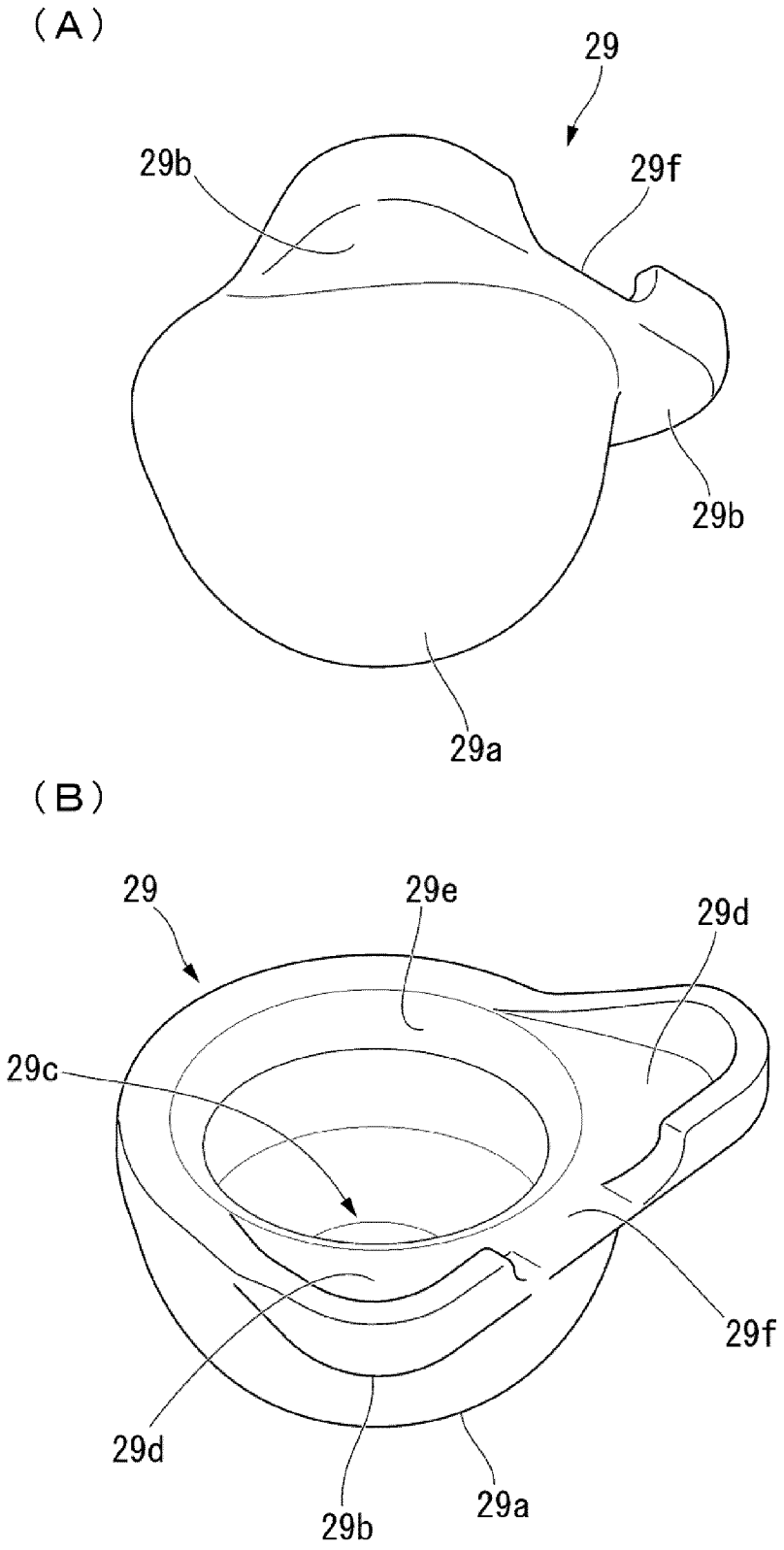


FIG. 12

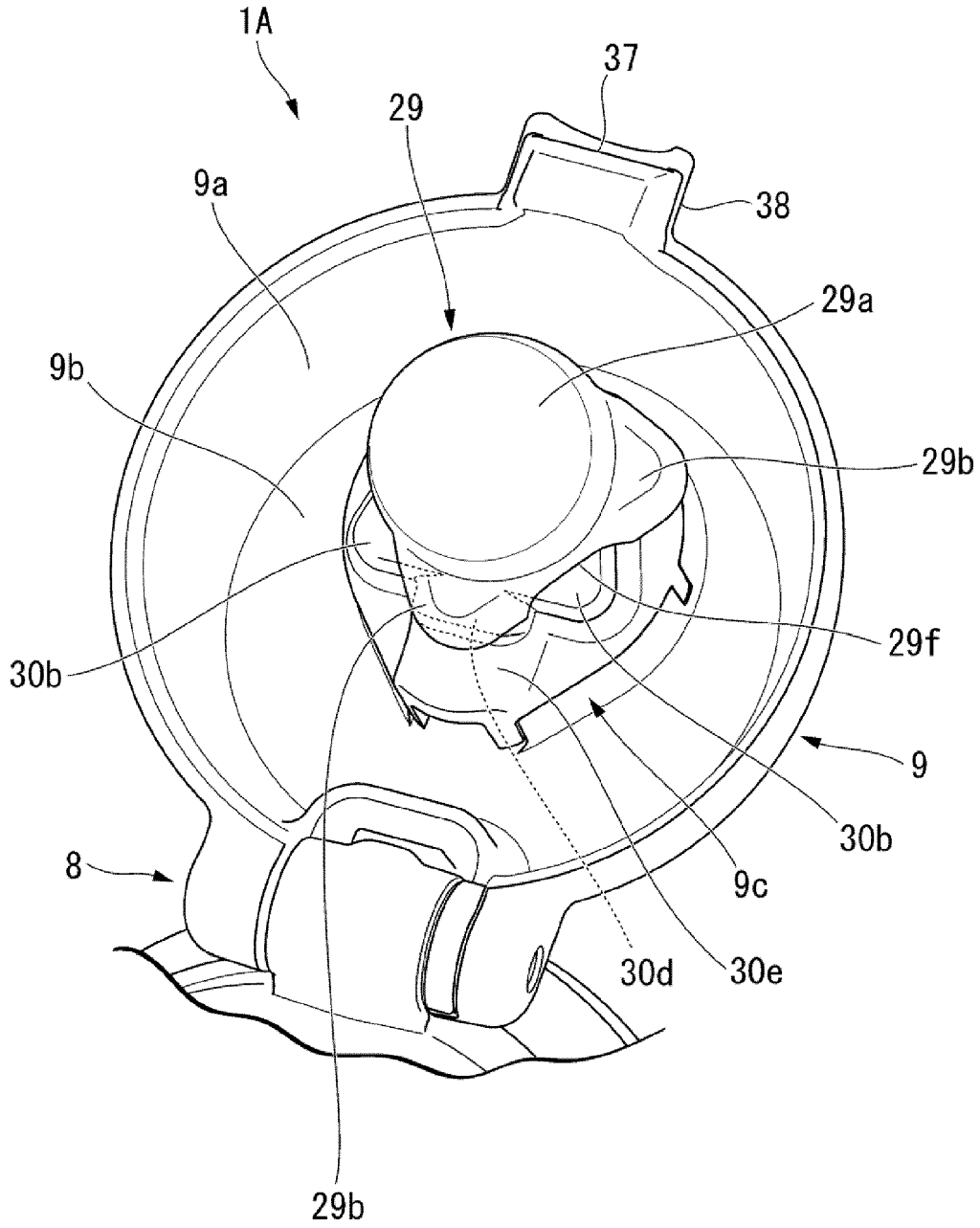


FIG. 13

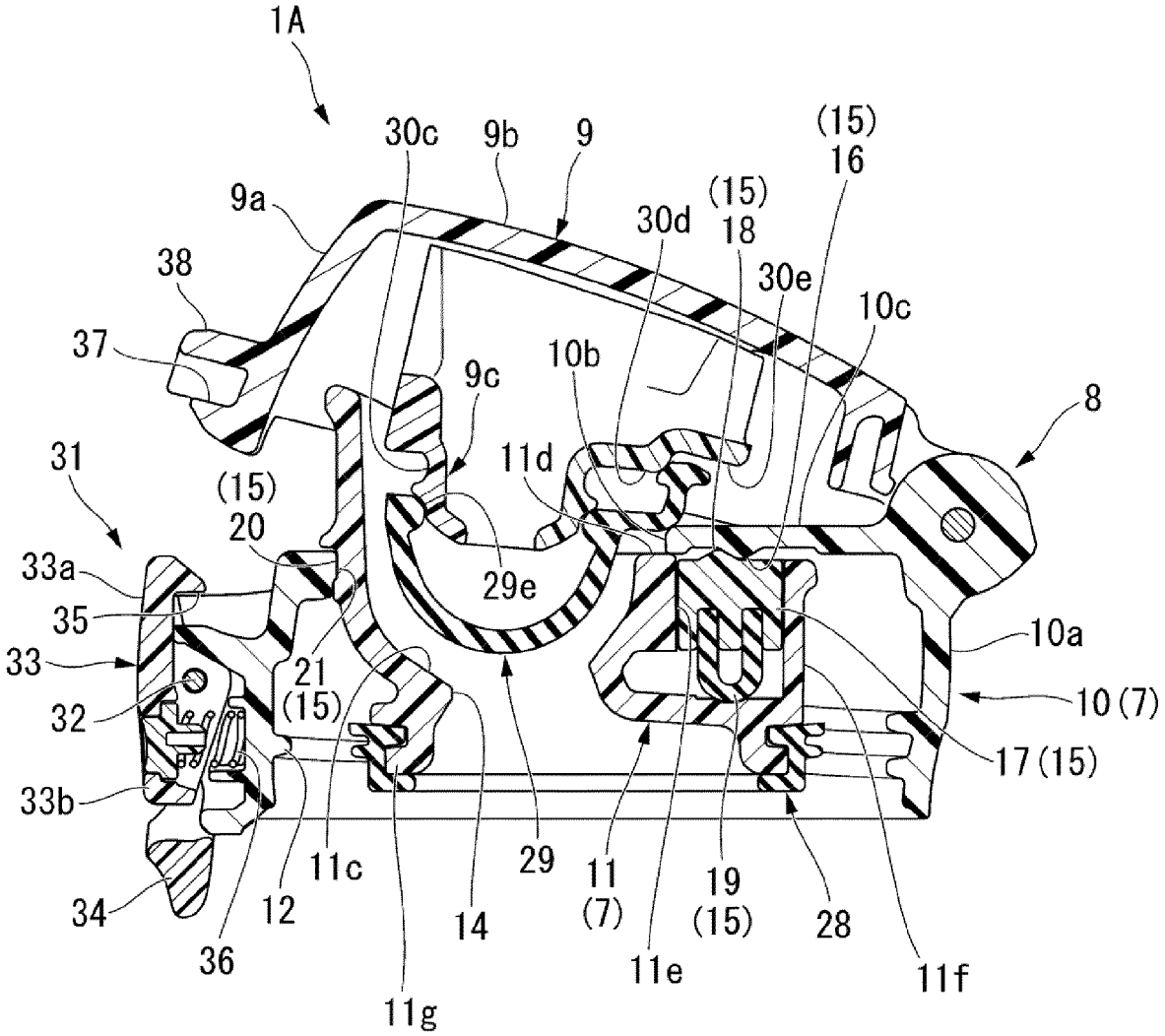

1A
30c
9b
9
(15)
16
9a
(15)
18
30d
38
30e
10c
37
9c
10b
8
31
11d
(15)
20
29e
33a
35
10a
33
21
(15)
10 (7)
32
17 (15)
33b
11c
29
11
(7)
19
(15)
28
34
12
14
36
11e
11f
11g

FIG. 14

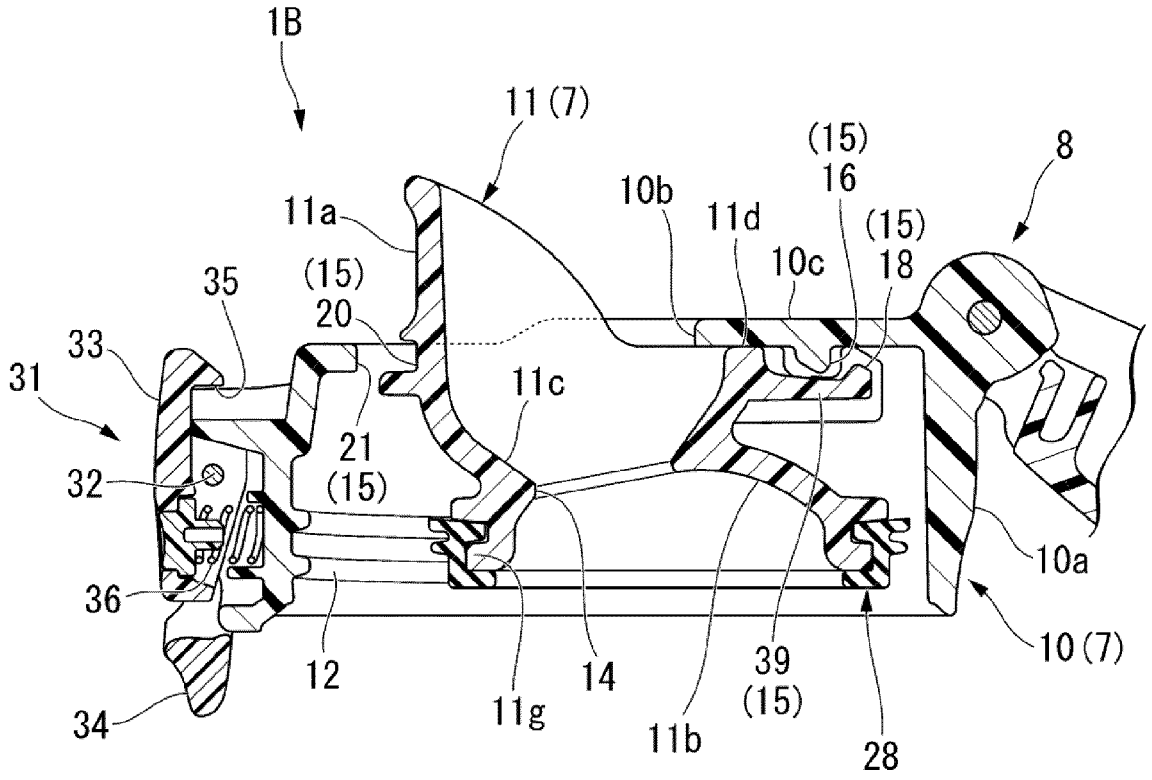

1B
11 (7)
11a
(15)
16
8
10b
11d
(15)
18
10c
35
(15)
20
33
31
11c
21
(15)
32
10a
36
10 (7)
12
14
39
(15)
11g
11b
34
28

FIG. 15

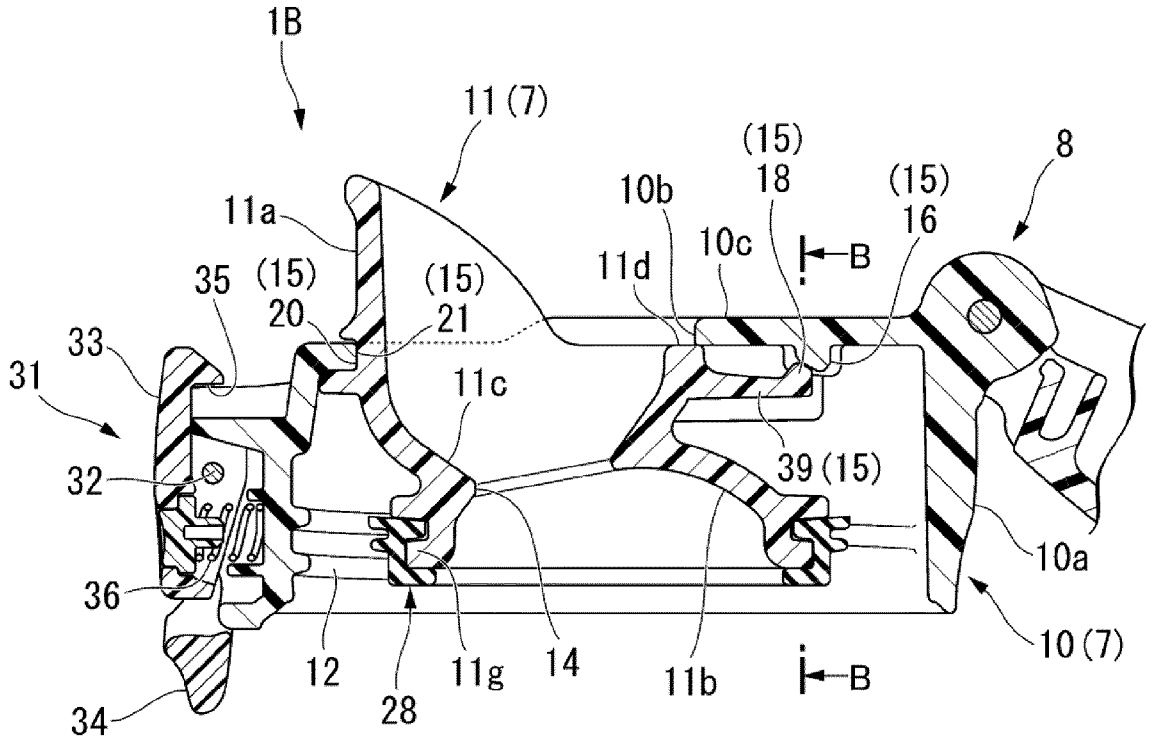

1B
11 (7)
(15)
18
8
11a
10b
(15)
16
10c
B
11d
35
(15)
(15)
20
21
33
31
11c
39 (15)
32
10a
36
10 (7)
12
28
11g
14
11b
B
34

FIG. 16

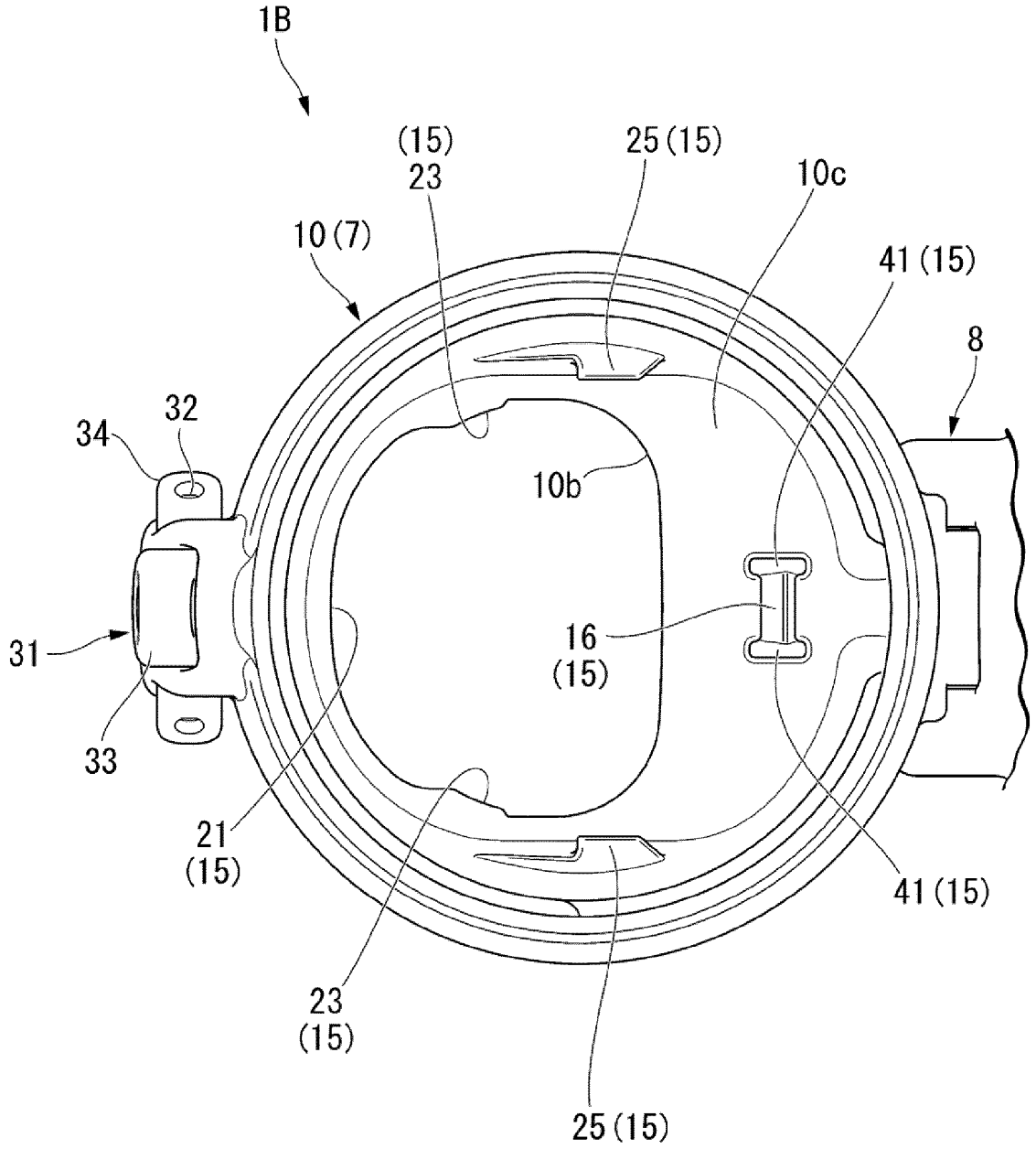

1B
(15)
23
25 (15)
10c
10 (7)
41 (15)
8
32
34
10b
16
(15)
31
33
21
(15)
41 (15)
23
(15)
25 (15)

FIG. 17 |

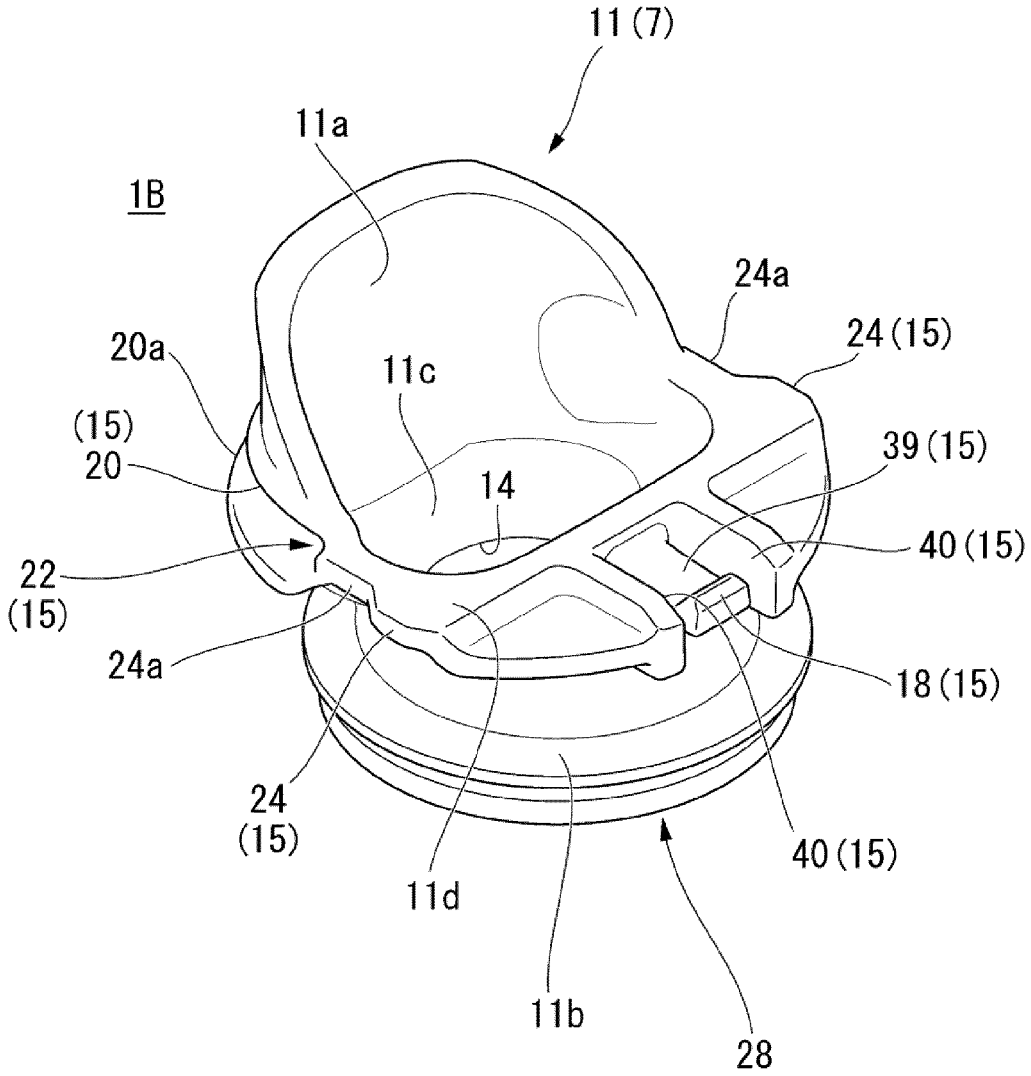

11 (7)
11a
1B
24a
24 (15)
20a
11c
(15)
20
39 (15)
14
40 (15)
22
(15)
24a
18 (15)
24
(15)
40 (15)
11d
11b
28

FIG. 18

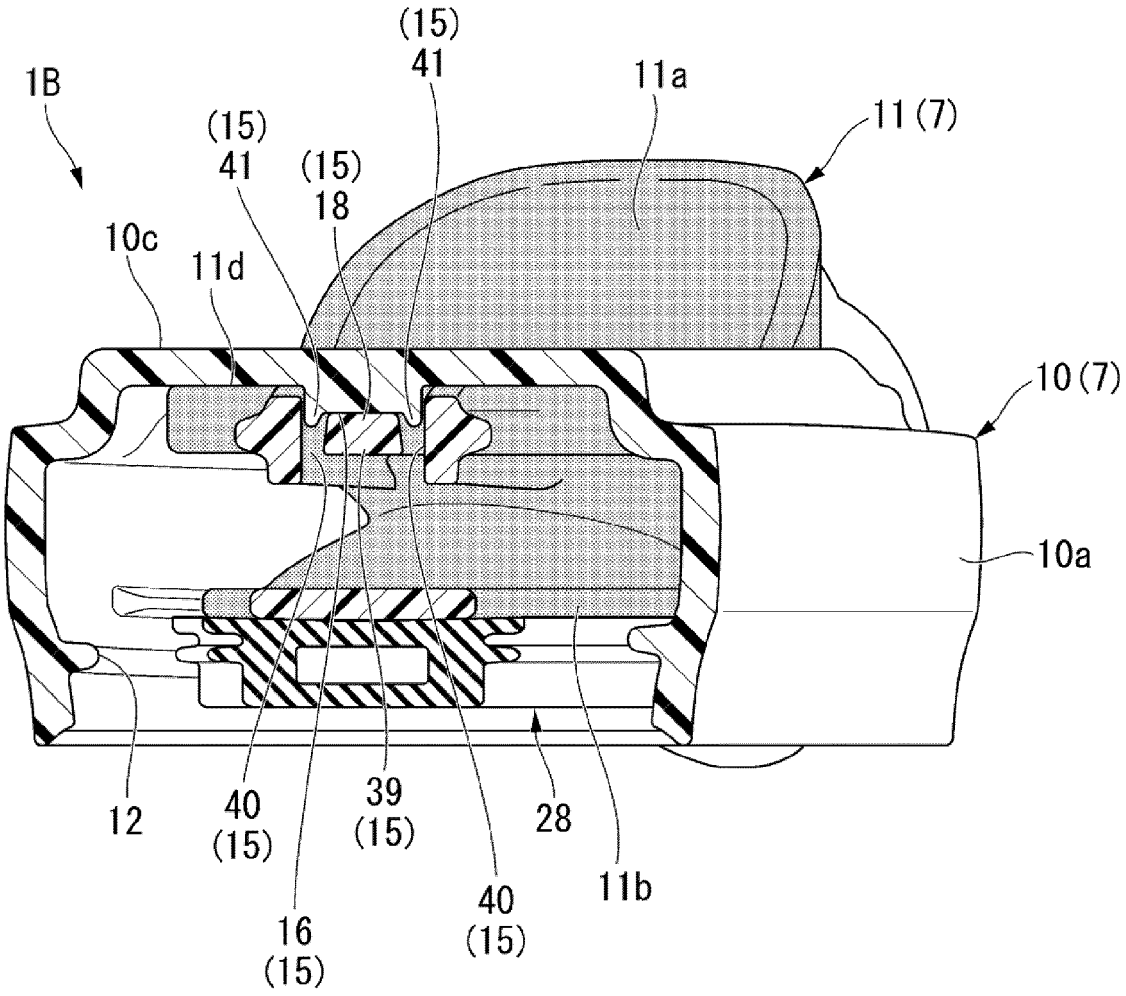

1B
(15)
41
11a
11 (7)
(15)
41
(15)
18
10c
11d
10 (7)
10a
12
40
(15)
39
(15)
28
11b
40
(15)
16
(15)

FIG. 19

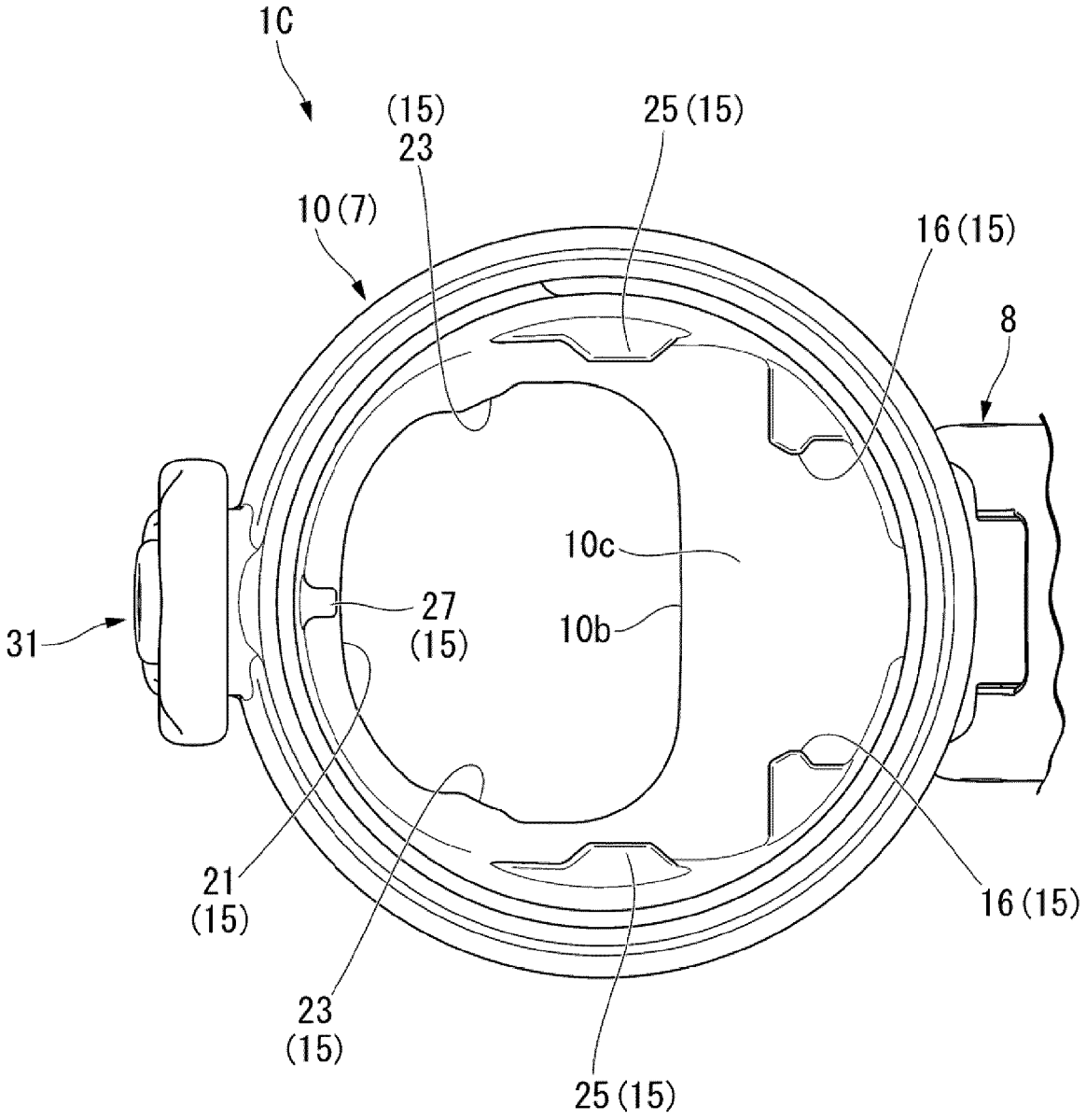


FIG. 20

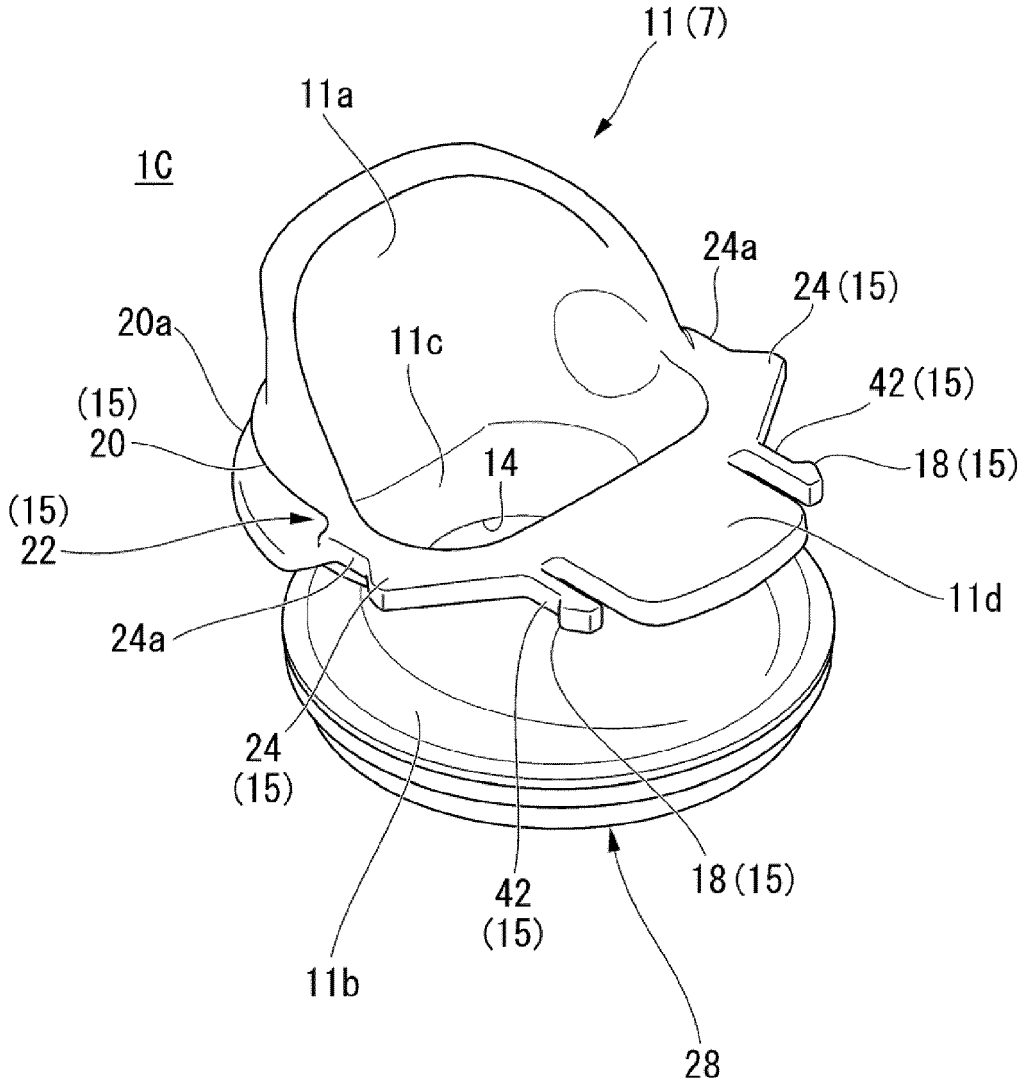

11 (7)
11a
1C
24a
24 (15)
20a
11c
42 (15)
(15)
20
14
18 (15)
(15)
22
11d
24a
24
(15)
18 (15)
42
(15)
11b
28

FIG. 21

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 24 21 0895

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	JP 2016 020241 A (ZOJIRUSHI CORP) 4 February 2016 (2016-02-04) * paragraph [0028] - paragraph [0086]; figures * -----	1-10	INV. A47G19/22

TECHNICAL FIELDS SEARCHED (IPC)

A47G
A47J
B65D
A45F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 April 2025	Vistisen, Lars

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons
.....
& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 21 0895

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

16-04-2025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2016020241 A	04-02-2016	JP 6133381 B2	24-05-2017
		JP 2016020241 A	04-02-2016

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 5312542 B **[0003]**