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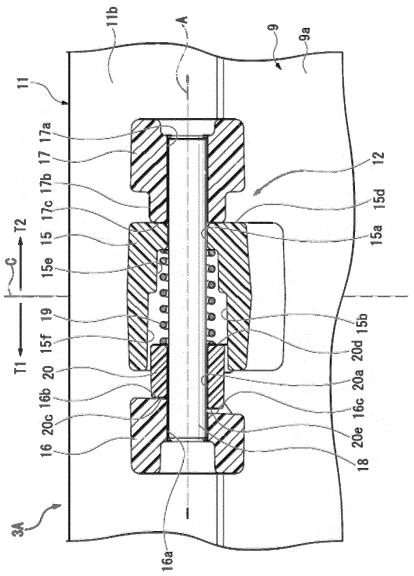
(54) CAP UNIT AND DRINK CONTAINER

(57) [Problem] To provide a cap unit capable of favourably maintaining a screwed-together state of the cap unit and a main container body while improving usability by allowing rotation of a ring member around a hinge, and a drink container.

[Solution] A cap unit 3A removably attached by screwing to a mouth-neck section of the main container body having an open top section, comprising a main cap body 9 which closes a top section opening of the main container body, an annular ring member 11 disposed on top of the main cap body 9, and a hinge 12 which rotatably couples the ring member 11 to the main cap body 9 around the hinge central axis A, wherein the hinge 12 has an elastically deformable biasing section 19, and the biasing section 19 biases the ring member 11 towards the main cap body 9 to one side in the hinge axis direction along which the hinge 12 central axis extends.

FIG. 6



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Description

[Technical Field]

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

[Background Art]

[0002] A cap unit serving as a stopper body which is mountably/removably attached by screwing onto the mouth-neck section of a main container body having an open upper section are conventionally known. An annular ring member (handle section) which can be hung on a hand, etc., is rotatably attached to the cap unit via a hinge (see for example Patent Literature 1). Furthermore, a configuration in which the ring member is affixed to a lid body of the cap unit and provided in an upright manner (integrated) is also publicly known (see for example Non-Patent Literature 1).

[0003] By providing this type of ring member, the drink container can be carried without grasping the drink container, by passing a finger through the ring member or attaching a carabiner thereto and letting the drink container hang, etc.

[Summary of the Invention]

[0004] [Patent Literature 1] JP 2020-83331 A; [Non-Patent Literature 1] "[Press Release] Tiger Custom Bottle - New Lineup - MCZ-type - On Sale July 6, 2021 (Tue)", [online] July 6, 2021, Tiger Corporation [retrieved July 6, 2021], Internet <URL:https://www.tiger.jp/news/press_release/pr_210706_01.html>

[0005] In the case of a configuration in which a ring member is affixed to a lid body and rises upwards, as in Non-Patent Literature 1, the vertical dimension becomes bulky and can become an impediment when placing the drink container in a bag and carrying it. In this regard, if the ring member can rotate freely around the hinge, as in Patent Literature 1, excessive bulkiness of the vertical direction dimension can be minimized with the ring member in a folded state, making it possible to achieve greater compactness and ease-of-use.

[0006] However, force is sometimes applied to the ring member in the circumferential direction (the unscrewing direction) when carrying the drink container with a finger through the ring member or when the drink container falls, and in such cases, the screwed-on state to the main container body risks becoming unstable when the cap unit rotates.

[0007] One object of the present invention is to provide a cap unit capable of favourably maintaining a screwed-together state of the cap unit and a main container body while improving usability by allowing rotation of a ring member around a hinge, and a drink container.

[0008] One aspect of the present invention is a cap unit removably attached by screwing to a mouth-neck section of a main container body having an open top section, comprising a main cap body which closes a top section opening of the main container body, an annular ring member disposed on top of the main cap body, and a hinge which rotatably couples the ring member to the main cap body around the hinge central axis, wherein the hinge has an elastically deformable biasing section, and the biasing section biases the ring member towards the main cap body to one side in the hinge axis direction along which the hinge central axis extends.

[0009] The cap unit may also comprise a hole forming member provided to the main cap body and having a liquid passage hole which communicates with the interior of the main container body, a lid body which is rotatably coupled to the main cap body via the hinge, disposed between the main cap body and the ring member in the vertical direction, covering the liquid passage hole, and biased in the opening direction around the hinge central axis, and a lid locking mechanism which immobilizes the lid body with respect to the main cap body in a closed position.

[0010] The cap unit may also be such that the one side in the hinge axis direction is equivalent to the tightening direction of the circumferential direction around which the cap unit and the main container body screw together, and the other side in the hinge axis direction is equivalent to the loosening side in the circumferential direction.

[0011] The cap unit may also be such that the hinge has a cap shaft bearing section provided to the main cap body, a ring shaft bearing section which is provided to the ring member and is disposed neighbouring the cap shaft bearing section in the hinge axis direction, and a hinge shaft which supports the cap shaft bearing section and the ring shaft bearing section in a manner allowing relative rotation around the hinge central axis.

[0012] The cap unit may also be such that the hinge has a cap shaft bearing section provided to the main cap unit, a lid shaft bearing section provided to the lid body, a ring shaft bearing section provided to the ring member and disposed alongside the cap shaft bearing section and the lid shaft bearing section in the hinge shaft direction, and a hinge shaft which supports the cap shaft bearing section, the lid shaft bearing section, and the ring shaft bearing section in a manner allowing relative rotation around the hinge central axis.

[0013] The cap unit may also be such that the hinge has a containing recess which is formed in either the cap shaft bearing section or the ring shaft bearing section, extends in the hinge shaft direction, and contains the biasing member, and a sealing section which seals the biasing section into the containing recess.

[0014] The cap unit may also be such that the hinge has a containing recess which is formed in either the lid shaft bearing section or the ring shaft bearing section, extends in the hinge shaft direction, and contains the biasing member, and a sealing section which seals the biasing member into the containing recess.

[0015] The cap unit may also be such that the hinge

has a clicking mechanism which provides a clicking sensation when the ring member turns in the opening direction or the closing direction around the hinge central axis.

[0016] The cap unit may also be such that a bottom surface of the ring member has a shape such that the bottom surface imitates the shape of an opposing top wall section of the main cap body.

[0017] The cap unit may also be such that a bottom surface of the ring member has a shape such that the bottom surface imitates the shape of an opposing lid top wall section of the lid body.

[0018] Furthermore, one aspect of a drink container of the present invention comprises the aforementioned cap unit, and the main container body to which the cap unit is attached.

[0019] With the cap unit and drink container which are one aspect of the present invention, a screwed-together state of the cap unit and a main container body can favourably be maintained while improving usability by allowing rotation of a ring member around a hinge.

[Brief Description of the Drawings]

[0020]

FIG. 1 is an oblique view showing a drink container according to a first embodiment of the present invention.

FIG. 2 is a cross-sectional view showing the drink container.

FIG. 3 is a cross-sectional view showing part of the drink container, representing a ring member in a contained state.

FIG. 4 is a cross-sectional view showing part of the drink container, representing the ring member in an open state.

FIG. 5 is an oblique view showing part of the drink container.

FIG. 6 is a partial cross-sectional view showing the drink container.

FIG. 7 is an exploded oblique view showing a cap unit.

FIG. 8 is an exploded oblique view showing a cap unit.

FIG. 9 is an oblique view showing part of a main cap body and a cap shaft bearing section.

FIG. 10 is an oblique view showing a drink container according to a second embodiment of the present invention.

FIG. 11 is a cross-sectional view showing part of the drink container, representing a lid body in a closed state (closed position) and a ring member in a contained state.

FIG. 12 is a cross-sectional view showing part of the drink container, representing the lid body in an open state (open position) and the ring member in an open state.

FIG. 13 is a lateral view showing part of the drink container, representing the lid body in a closed state (closed position) and the ring member in an open state.

FIG. 14 is an oblique view showing part of the drink container.

FIG. 15 is a partial cross-sectional view (vertical cross-sectional view) showing part of the drink container.

FIG. 16 is a partial cross-sectional view (horizontal cross-sectional view) showing part of the drink container.

FIG. 17 is an exploded oblique view showing the cap unit.

FIG. 18 is an exploded oblique view showing the cap unit.

FIG. 19 is an oblique view showing a shaft cover of a first hinge (the hinge).

FIG. 20 is an oblique view showing part of the main cap body and the cap shaft bearing section.

FIG. 21 is an oblique view showing part of the main cap body and the cap shaft bearing section.

FIG. 22 is an oblique view showing part of the ring member and a ring shaft bearing section.

[0021] <First Embodiment> A cap unit 3A according to the first embodiment of the present invention and a drink container 1A which is provided therewith are described with reference to FIG. 1 to FIG. 9. Note that in the following description, the cap unit 3A may sometimes simply be referred to as the cap and the drink container 1A may sometimes simply be referred to as the container.

[0022] As shown in FIG. 1 and FIG. 2, the drink container 1A according to the present embodiment is provided with the cap unit 3A and a cylindrical main container body 2A which is closed at one end and to which the cap unit 3A is attached. The cap unit 3A is removably attached by screwing to a mouth-neck section 2c which is an opening in the main container body 2A.

[0023] The cap unit 3A is provided with a cylindrical main cap body 9 which has a top wall (ceiling wall), a middle plug section 10 which is affixed to the main cap body 9, watertight packing 14 which seals the space between the main container body 2A and the main cap body 9, an annular ring member 11, and a hinge 12 which couples the ring member 11 to the main cap body 9 in a manner allowing rotation around a hinge central axis A. The cap unit 3A and the main container body 2A are disposed coaxially to each other around a central axis C.

[0024] In the present embodiment, the direction along which the central axis C extends is referred to as the vertical direction. Within the vertical direction, the direction from a bottom surface section 2a of the main container body 2A to a top wall section 9b of the main cap body 9 is referred to as up, and the direction from the top wall section 9b to the bottom surface section 2a is referred to as down. The direction intersecting the central axis C at a right angle is referred to as the radial direction. Within the radial direction, the direction approaching the

central axis C is referred to as radially inward or simply inward, and the direction moving away from the central axis C is referred to as radially outward or simply outward.

[0025] Furthermore, within the radial direction, the direction passing through the hinge 12 and the central axis C is referred to as the forward and back direction. Within the forward and back direction, the direction from the hinge 12 towards the central axis C is referred to as front, and the direction from the central axis C toward the hinge 12 is referred to as back. Furthermore, within the radial direction, the direction intersecting the forward and back direction is referred to as the left and right direction. When the drink container 1A which has been placed upright, with the top wall section 9b of the main cap body 9 pointing upward in the vertical direction as shown in FIG. 2, is viewed from the front, within the left and right direction, the direction towards the left is referred to as left and the direction towards the right is referred to as right.

[0026] The direction circumferentially around the central axis C is referred to as the circumferential direction. The circumferential direction is equivalent to the direction around which the cap unit 3A and the main container body 2A screw together (the screwing direction). As shown in FIG. 1, within the circumferential direction one direction T1 is equivalent to the tightening direction in the screwing direction, and another direction T2 in the circumferential direction is equivalent to the loosening direction in the screwing direction (the unscrewing direction). Therefore, in the present embodiment, the one direction T1 in the circumferential direction is sometimes referred to as the tightening direction T1 in the circumferential direction and the other direction T2 in the circumferential direction is sometimes referred to as the circumferential direction loosening side T2. More specifically, when the drink container 1A is viewed in a top plan view from above, the one direction (tightening direction) T1 in the circumferential direction is the clockwise direction around the central axis C, and the other direction (loosening direction) T2 in the circumferential direction is the counter clockwise direction around the central axis C.

[0027] Note that in order to distinguish the central axis C from the hinge central axis A, the central axis C may also be referred to as the cap central axis C or the container central axis C.

[0028] The hinge central axis A of the hinge 12 is disposed further back than the central axis C. The central axis C and the hinge central axis A are in positions twisted relative to each other. The direction along which the hinge central axis A extends is referred to as the hinge axis direction. The hinge axis direction is equivalent to the left and right direction. One side in the hinge axis direction is equivalent to the right side and the other side is equivalent to the left side. The hinge central axis A extends in the direction of a line which is tangent to a virtual circle, which is not shown in the drawings, around the central axis C. Therefore, one side in the hinge axis direction is equivalent to the tightening direction T1 in the circumferential direction, and another side in the hinge axis direction is equivalent to the circumferential direction loosening side T2 (see FIG. 6).

[0029] The direction which intersects the hinge central axis A at a right angle is referred to as the hinge radial direction. Within the hinge radial direction, the direction approaching the hinge central axis A is referred to as inward in the hinge radial direction, and the direction moving away from the hinge central axis A is referred to as outward in the hinge radial direction. The direction around the hinge central axis A is referred to as the hinge circumferential direction.

[0030] As shown in FIG. 2, the drink container 1A can keep a drink (liquid content, a liquid) contained in the main container body 2A warm or cool by means of the main container body 2A which has a vacuum insulation structure. The main container body 2A is a cylinder closed at one end and having an opening in the top section. Note that the main container body 2A may contain content other than a drink.

[0031] Specifically, the main container body 2A is configured by a double-layer structure container having an outer container 4 and an inner container 5 which are cylindrical and closed at one end and are made out of stainless steel, for example, the inner container 5 being contained inside the outer container 4, and the mouth sections being joined together.

[0032] Furthermore, a vacuum insulation layer 6 is provided between the outer container 4 and the inner container 5. The vacuum insulation layer 6 can be formed by blocking an air outlet hole provided to the middle of the bottom surface of the outer container 4 in a chamber which has been depressurized (evacuated) to a high vacuum, for example.

[0033] The main container body 2A has a substantially disc-shaped bottom surface section 2a, a trunk section 2b which is substantially cylindrical and in which a bottom end section is connected to an outer circumferential section of the bottom surface section 2a, and a mouth-neck section 2c which is disposed on top of the trunk section 2b and has a smaller diameter than the trunk section 2b.

[0034] An inner circumferential section of the mouth-neck section 2c has a smaller diameter than the inner circumferential surface of the trunk section 2b. The top end of the mouth-neck section 2c is open in a circle serving as a top opening section 2d of the main container body 2A. As shown in FIG. 3, the mouth-neck section 2c has a female screw section 7, a protruding section 8, and a shoulder section 2e.

[0035] The female screw section 7 is disposed in the inner circumferential section of the mouth-neck section 2c. The protruding section 8 is disposed in the inner circumferential section of the mouth-neck section 2c, located lower down than the female screw section 7. The protruding section 8 protrudes radially inward from the inner circumferential surface of the mouth-neck section 2c and extends around the entire circumference in the circumferential direction. The protruding section 8 is ring-

shaped around the central axis C and protrudes furthest inward in the mouth-neck section 2c.

[0036] The shoulder section 2e is disposed on the outer circumferential section of the mouth-neck section 2c. The shoulder section 2e is tapered so as to have a smaller diameter further up. The portion of the mouth-neck section 2c located further up than the shoulder section 2e has a substantially cylindrical shape extending in the vertical direction.

[0037] Note that the drink container 1A according to the present embodiment has a substantially cylindrical appearance shape overall, as shown in FIG. 1, but there is no particular limitation on the appearance shape of the drink container 1A, which can be modified as appropriate to match the size or design, etc. Moreover, it is also possible to apply coatings or printing, etc., to outer (external) surfaces of the main container body 2A, the main cap body 9, and the ring member 11.

[0038] As shown in FIG. 3 and FIG. 4, the cap unit 3A is attached to the mouth-neck section 2c of the main container body 2A, constituting a stopper body which closes the top opening section 2d of the main container body 2A. FIG. 3 is a cross-sectional view showing the ring member 11 of the cap unit 3A in a contained state, and FIG. 4 is a cross-sectional view showing the ring member 11 of the cap unit 3A in an open state. Both FIG. 3 and FIG. 4 show vertical cross-sectional views parallel to the central axis C (including the central axis C).

[0039] The main cap body 9 is a member which blocks the top opening section 2d of the main container body 2A and is made out of a heat resistant resin such as polypropylene (PP), etc., for example. The main cap body 9 has a circumferential wall section 9a and the top wall section 9b.

[0040] The circumferential wall section 9a is a cylinder extending in the vertical direction so as to be continuous with the trunk section 2b of the main container body 2A. Specifically, in the present embodiment the circumferential wall section 9a is a tapered cylinder which narrows upward. The circumferential wall section 9a completely covers the mouth-neck section 2c around the entire circumferential direction radially outward. The bottom end of the circumferential wall section 9a covers the shoulder section 2e from above.

[0041] The top wall section 9b connects to the top end section of the circumferential wall section 9a and covers the top opening section 2d of the main container body 2A from above. The top wall section 9b is substantially disc-shaped, extending in a direction perpendicular to the central axis C. A gap in the vertical direction is provided between the top wall section 9b and the top opening section 2d.

[0042] The top wall section 9b has an outer circumferential groove 9c. The outer circumferential groove 9c is disposed on the outer circumferential section of the top wall section 9b. The outer circumferential groove 9c extends in the circumferential direction, recessed further down in sections other than the outer circumferential groove 9c of the top wall section 9b. The outer circumferential groove 9c is ring-shaped around the central axis C. The outer circumferential groove 9c has a substantially polygonal shape when viewed from above, forming a substantially square shape in the present embodiment. The outer circumferential groove 9c is located in the outer circumferential section of the top end of the main cap body 9 and opens upward and radially outward.

[0043] As shown in FIG. 3 and FIG. 4, in a vertical cross-sectional view parallel to the central axis C, wall surfaces of the outer circumferential groove 9c (inner walls of the groove) extend further downward as they move radially outward. Specifically, in the present embodiment the outer circumferential groove 9c has a concave curve shape in vertical cross-section. In other words, the wall surface of the outer circumferential groove 9c is a concave curve.

[0044] A stopper section 10 is made out of a heat resistant resin such as polypropylene (PP), etc., for example. The stopper section 10 blocks the top opening section 2d, integrated with the main cap body 9. As shown in FIG. 3, the stopper section 10 is a cylinder with a closed end and is integrally attached via melting, etc., to the bottom surface of the top wall section 9b of the main cap body 9. The stopper section 10 is disposed inside the mouth-neck section 2c of the main container body 2A. Insulating material S is disposed inside the stopper section 10. Note that the interior of the stopper section 10 may be an air layer instead of the insulating material S.

[0045] The stopper section 10 has a male screw section 13 and a flange section 10a. The male screw section 13 is provided to the outer circumferential surface of the stopper section 10. In the drink container 1A according to the present embodiment, the stopper section 10 (the cap unit 3A) is removably attached to the main container body 2A by screwing the male screw section 13 and the female screw section 7 together.

[0046] The flange section 10a extends around the entire circumferential direction, protruding radially outward from the bottom end section of the stopper section 10. The flange section 10a is disposed inside the protruding section 8, facing the protruding section 8 in the radial direction.

[0047] The watertight packing 14 is provided to the outer circumferential section of the stopper section 10. The watertight packing 14 is a ring-shaped sealing member which seals the space between the main container body 2A and the stopper section 10, and comprises an elastic member made out of rubber or an elastomer, for example, having heat resistance such as silicone rubber, etc., for example. An inner circumferential recess 14a which is recessed radially outward is provided along the entire circumferential direction of the inner circumferential section of the water tight packing 14. The watertight packing 14 is attached to the stopper section 10 by the inner circumferential recess 14a being fitted into the flange section 10a.

[0048] Elastic flange sections 14b are provided pro-

truding radially outward to the outer circumferential surface of the water tight packing 14. The elastic flange sections 14b are disposed on the outer circumferential section of the water tight packing 14 and extend around the entire circumferential direction. Two of the elastic flange sections 14b are provided next to each other in the vertical direction. When the cap unit 3A is attached to the main container body 2A, the elastic flange sections 14b are tightly pressed around the entire protruding section 8 of the main container body 2A while undergoing elastic deformation. The watertight packing 14 can thus seal the space between the protruding section 8 (the main container body 2A) and the stopper section 10 (the cap unit 3A) in a watertight fashion.

[0049] The watertight packing 14 can be removed from the flange section 10a by pulling and extending it and causing it to undergo elastic deformation. The cap unit 3A and the watertight packing 14 can thus be washed separately, making it possible to ensure the space between the watertight packing 14 and the stopper section 10 is hygienic.

[0050] Note that the watertight packing 14 is not limited to the aforementioned shape. For example, the number of the elastic flange section 14b is not limited to two, and may be one or three or more. Furthermore, the watertight packing 14 is not limited to a configuration in which the aforementioned elastic flange sections 14b are provided, and may be modified as appropriate as regards shape, etc.

[0051] With the drink container 1A according to the present embodiment, the cap unit 3A can be attached to the main container body 2A by screwing the female screw section 7 and the male screw section 13 together, by turning the main cap body 9 (the cap unit 3A) to the one direction (tightening direction) T1 in the circumferential direction as shown in FIG. 1 and FIG. 5 relative to the main container body 2A from a state in which the stopper section 10 is fitted inside the main container body 2A through the top opening section 2d. Furthermore, the cap unit 3A can be removed from the main container body 2A by unscrewing the female screw section 7 from the male screw section 13 by turning the main cap body 9 (the cap unit 3A) to the other side (the loosening side) T2 in the circumferential direction relative to the main container body 2A from a state in which the cap unit 3A is attached to the main container body 2A.

[0052] The ring member 11 is made out of a heat resistant resin such as polypropylene (PP), etc., for example. The ring member 11 is ring-shaped around the central axis C. The ring member 11 has a substantially polygonal shape, having a substantially square shape in the present embodiment.

[0053] As shown in FIG. 3, the ring member 11 is disposed on top of the main cap body 9. Specifically, when the ring member 11 is in a contained state as shown in FIG. 3, the ring member 11 is disposed above the top wall section 9b, or more specifically disposed on the outer circumferential section of the top wall section 9b, i.e., on the outer circumferential groove 9c. At least the lower section of the ring member 11 is contained inside the outer circumferential groove 9c.

[0054] A bottom surface 11a of the ring member 11 is ring-shaped around the central axis C. The bottom surface 11a of the ring member 11 has a shape such that the bottom surface 11a imitates the shape of the opposing top wall section 9b of the main cap body 9. In other words, the bottom surface 11a of the ring member 11 has a shape imitating the group shape of the outer circumferential groove 9c. Specifically, in the vertical cross-sectional view shown in FIG. 3, the bottom surface 11a of the ring member 11 extends further upward as it moves inward in the radial direction. In the present embodiment, the bottom surface 11a of the ring member 11 forms a convex curved shape in this vertical cross-sectional view. In other words, the bottom surface 11a of the ring member 11 is a convex curved surface.

[0055] The inner circumferential section of the bottom surface 11a of the ring member 11 opposes the wall surface facing radially outward of the outer circumferential groove 9c. The inner circumferential section of the ring member 11 and this wall surface of the outer circumferential groove 9c fit together. Because the ring member 11 and the outer circumferential groove 9c are polygonal, the ring member 11 and the outer circumferential groove 9c cannot turn relative to each other in the circumferential direction.

[0056] An outer circumferential surface 11b of the ring member 11 extends further radially inward as it moves up. In other words, the outer circumferential surface 11b of the ring member 11 is a tapered surface having a smaller diameter as it moves up. In the present embodiment, the outer circumferential surface 11b of the ring member 11 is disposed substantially coplanarly with the circumferential wall section 9a so as to be continuous with the outer circumferential surface of the circumferential wall section 9a of the main cap body 9.

[0057] The ring member 11 has a flat surface section 11c and a concave surface section 11d on the top surface thereof. The flat surface section 11c is disposed on the outer circumferential section of the top surface of the ring member 11. The flat surface section 11c is ring-shaped around the central axis C. The flat surface section 11c is substantially flat, extending in a direction perpendicular to the central axis C.

[0058] The concave surface section 11d is disposed in a section of the top surface of the ring member 11 other than the outer circumferential section, i.e., in a section located further in than the flat surface section 11c. The concave surface section 11d is recessed further down than the flat surface section 11c. The concave surface section 11d is ring-shaped around the central axis C. In the vertical cross-sectional view shown in FIG. 3, the concave surface section 11d extends further upward as it moves radially outward. Specifically, the concave surface section 11d forms a concave curved shape in this vertical cross-sectional view. In other words, the concave

surface section 11d is a concave surface. The inner circumferential section of the concave surface section 11d is formed so as to smoothly connect to the section of the top wall section 9b located inside the outer circumferential groove 9c.

[0059] In the present embodiment, the bottom section of the ring member 11 is disposed inside the outer circumferential groove 9c, the outer circumferential surface 11b is formed so as to be continuous with the circumferential wall section 9a, and the concave surface section 11d is formed so as to be continuous with the inside section of the top wall section 9b, and therefore a pleasing appearance can be achieved while providing the ring member 11. Furthermore, because bumps are provided on the outer surface (external surface) of the ring member 11, when the ring member 11 is opened as shown in FIG. 4 and the user passes a finger through the ring member 11 to grip it, it does not slip and can be held stably.

[0060] A hinge 12 couples a rear section of the main cap body 9 and a rear section of the ring member 11 in a manner allowing relative rotation in the hinge circumferential direction. The hinge 12 is provided with a spring mechanism including a biasing section 19 and a sealing section 20 discussed below. The hinge 12 is configured around a hinge central axis A and extends in the hinge shaft direction.

[0061] As shown in FIG. 5 to FIG. 9, the hinge 12 has a cap shaft bearing section 15, ring shaft bearing sections 16, 17, the biasing section 19, the sealing section 20, and a hinge shaft 18. Note that FIG. 6 shows a cross-section (vertical cross-section) of the hinge 12 parallel to the central axis C of the cap unit 3A. Furthermore, in the exploded oblique views of the cap unit 3A shown in FIG. 7 and FIG. 8, the order of arrangement of the constituent members partially differs from the relationship of arrangement of the constituent members after assembly (in the assembled state).

[0062] Two of either the cap shaft bearing section 15 or the ring shaft bearing sections 16, 17 are provided separated by a gap in the hinge shaft direction, and one of the other of either the cap shaft bearing section 15 and the ring shaft bearing sections 16, 17 is disposed between the two others. In the present embodiment, of the cap shaft bearing section 15 and the ring shaft bearing sections 16, 17, two of the ring shaft bearing sections 16, 17 are provided separated by a gap in the hinge shaft direction, and one of the cap shaft bearing section 15 is disposed between the two ring shaft bearing sections 16, 17.

[0063] The cap shaft bearing section 15 is provided in a manner protruding back and up from the top end section of the circular wall section 9a of the main cap body 9. In other words, the cap bearing portion 15 is provided on the cap main body 9. The cap shaft bearing section 15 is formed as a single unit with the main cap body 9 from a single member. The cap shaft bearing section 15 is substantially cylindrical and extends in the hinge shaft direction. The cap shaft bearing section 15 is located in the middle in the left and right direction on the back of the main cap body 9. The cap shaft bearing section 15 is located in the middle in the hinge shaft direction of the hinge 12.

[0064] As shown in FIG. 6 and FIG. 9, the cap shaft bearing section 15 has a containment recess 15b, an arm receiving section 15c, a sliding surface 15d, and a shaft hole 15a. Specifically, the hinge 12 has the containment recess 15b.

[0065] In the present embodiment, the containment recess 15b extends is provided in a recessed manner to the cap shaft bearing section 15 and extends in the hinge shaft direction. Specifically, the containment recess 15b is a multi-step circular hole around the hinge central axis A, opens in one end face of the cap shaft bearing section 15 facing the one direction of the hinge shaft direction and extends from this end face on the other side in the hinge shaft direction.

[0066] The containment recess 15b has a large-diameter hole section 15f and a small-diameter hole section 15e. The large-diameter hole section 15f is a round hole and opens in the one end face of the cap shaft bearing section 15 facing the one direction of the hinge shaft direction. The large-diameter hole section 15f is disposed in a section of the containment recess 15b on the one side in the hinge shaft direction.

[0067] The small-diameter hole section 15e is disposed in the section of the containment recess 15b on the other side in the hinge shaft direction. The small-diameter hole section 15e is a round hole with a smaller inner diameter than the large-diameter hole section 15f and opens in a bottom surface of the large-diameter hole section 15f.

[0068] The arm receiving section 15c is disposed inside the containment recess 15b and is a groove extending in the hinge shaft direction. Specifically, the arm receiving section 15c extends in the hinge shaft direction and is recessed outward in the hinge radial direction from the inner circumferential surface of the large-diameter hole section 15f.

[0069] The sliding surface 15d is disposed in the end face of the cap shaft bearing section 15 facing the other direction of the hinge shaft direction. The sliding surface 15d is a flat surface extending in a direction perpendicular to the hinge central axis A.

[0070] The shaft hole 15a is a round hole extending in the hinge shaft direction. The shaft hole 15a has a smaller inner diameter than the containment recess 15b, specifically, a smaller inner diameter than the small-diameter hole section 15e. The end sections of the shaft hole 15a on the one side in the hinge shaft direction opens in the bottom surface of the small-diameter hole section 15e. The end section of the shaft hole 15a on the other side in the hinge shaft direction opens in the sliding surface 15d.

[0071] As shown in FIG. 6 to FIG. 8, the ring shaft bearing sections 16, 17 are provided to the ring member 11 and are disposed neighbouring the cap shaft bearing sec-

tion 15 in the hinge shaft direction. The ring shaft bearing sections 16, 17 are formed as a single unit with the ring member 11 from a single member. In the present embodiment, two of the ring shaft bearing sections 16, 17 are provided.

[0072] The two ring shaft bearing sections 16, 17 include a first ring shaft bearing section 16 and a second ring shaft bearing section 17. Of the two ring shaft bearing sections 16, 17, the first ring shaft bearing section 16 is disposed on the one side in the hinge shaft direction. Of the two ring shaft bearing sections 16, 17, the second ring shaft bearing section 17 is disposed on the other side in the hinge shaft direction.

[0073] The first ring shaft bearing section 16 is provided protruding back from the rear lower end of the outer circumferential surface 11b of the ring member 11. The first ring shaft bearing member 16 is disposed neighbouring the cap shaft bearing section 15 on the one side in the hinge shaft direction. The first ring shaft bearing section 16 is substantially cylindrical, extending in the hinge shaft direction.

[0074] The first ring shaft bearing section 16 has a shaft bearing sliding surface 16b and a shaft hole 16a. Specifically, the hinge 12 has the shaft bearing sliding surface 16b, and in the present embodiment the shaft bearing sliding surface 16b is disposed on the first ring shaft bearing section (ring shaft bearing section) 16.

[0075] The shaft bearing sliding surface 16b is disposed on the end face of the first ring shaft bearing section 16 facing the other side in the hinge shaft direction. The shaft bearing sliding surface 16b has a flat shape extending in a direction perpendicular to the hinge central axis A. In the present embodiment, the shaft bearing sliding surface 16b has step section 16c. The step section 16c is a recess on the one side in the hinge shaft direction from the shaft bearing sliding surface 16b. The step section 16c is disposed on one part of the shaft bearing sliding surface 16b in the hinge circumferential direction. Specifically, in the present embodiment, when the ring member 11 is in a contained state, the step section 16c is disposed on the bottom end of the shaft bearing sliding surface 16b.

[0076] The shaft hole 16a passes through the first ring shaft bearing section 16 in the hinge shaft direction. The end of the shaft hole 16a on the other side in the hinge shaft direction opens in the shaft bearing sliding surface 16b. The shaft hole 16a is a multi-step circular hole extending in the hinge shaft direction. Sections of the shaft hole 16a other than the end on the one side in the hinge shaft direction have a smaller inner diameter than the end on the one side in the hinge shaft direction.

[0077] The second ring shaft bearing section 17 is provided protruding back from the rear bottom end of the outer circumferential surface 11b of the ring member 11. The second ring shaft bearing section 17 is disposed neighbouring the cap shaft bearing section 15 on the other side in the hinge shaft direction. The second ring shaft bearing member 17 is substantially cylindrical, extending in the hinge shaft direction.

[0078] The second ring shaft bearing section 17 has a sliding contact convex section 17b, an abutting surface 17c, and a shaft hole 17a. The sliding contact convex section 17b is disposed on an end section of the second ring shaft bearing section 17 on the one side in the hinge shaft direction. The sliding contact convex section 17b is provided protruding to the one side in the hinge shaft direction from a section of the second ring shaft bearing section 17 other than the end section on the one side in the hinge shaft direction, i.e., a section other than the sliding contact convex section 17b. The sliding contact convex section 17b is a cylinder extending in the hinge shaft direction. The sliding contact convex section 17b has a smaller outer diameter than sections of the second ring shaft bearing section 17 other than the sliding contact convex section 17b.

[0079] The abutting surface 17c is disposed on the end face of the second ring shaft bearing section 17 facing to the one side in the hinge shaft direction. In the present embodiment, the abutting surface 17c is disposed on the end face of the sliding contact convex section 17b facing the one side in the hinge shaft direction. The abutting surface 17c is flat, extending in a direction perpendicular to the hinge central axis A. The abutting surface 17c is in sliding contact with the sliding contact surface 15d of the cap shaft bearing section 15.

[0080] The shaft hole 17a passes through the second ring shaft bearing section 17 in the hinge shaft direction. The end section of the shaft hole 17a on the one side in the hinge shaft direction opens in the abutting surface 17c. The shaft hole 17a is a multi-step circular hole extending in the hinge shaft direction. Sections of the shaft hole 17a other than the end section on the other side in the hinge shaft direction have a smaller inner diameter than the end section on the other side in the hinge shaft direction.

[0081] The biasing member 19 can elastically deform. Specifically, in the present embodiment the biasing member 19 is a metal compressed coil spring which has a spiral shape around the hinge central axis A and can elastically deform in the shaft direction. The biasing member 19 is contained in the containment recess 15b. The biasing member 19 is disposed across the small-diameter hole section 15e and the large-diameter hole section 15f of the containment recess 15b. The end section of the biasing member 19 on the other side in the hinge shaft direction is in contact with the bottom surface of the small-diameter hole section 15e. The end section of the biasing member 19 on the one side in the hinge shaft direction is in contact with the end face of the sealing section 20 facing the other side in the hinge shaft direction (a biasing member abutting surface 20d described below).

[0082] The biasing member 19 biases the first ring shaft bearing section 16 to the one side in the hinge shaft direction via the sealing section 20 with respect to the cap shaft bearing section 15. In other words, the biasing

section 19 biases the ring member 11 to the one side in the hinge shaft direction relative to the main cap body 9. Furthermore, the biasing member 19 allows the ring member 11 to displace to the other side in the hinge shaft direction relative to the main cap body 9 through elastic deformation.

[0083] The sealing section 20 is substantially cylindrical, extending in the hinge shaft direction. The sealing section 20 is disposed on the other side in the hinge shaft direction of the first ring shaft bearing section 16 and is disposed on the one side in the hinge shaft direction of the biasing member 19. The sealing section 20 is mounted between the first ring shaft bearing section 16 and the biasing member 19 in the hinge shaft direction. The sealing section 20 is at least partially inserted into the large-diameter hole section 15f of the containment recess 15b. The sealing section 20 thus inserts the biasing member 19 into the containment recess 15b. Sections of the sealing section 20 other than the section inserted into the containment recess 15b are exposed to the outside between the first ring shaft bearing section 16 and the cap shaft bearing section 15.

[0084] In the present embodiment, at least part of the sealing section 20 (the end section on the other side in the hinge shaft direction) is inserted into the containment recess 15b, and since the sealing section 20 cannot completely separate from the containment recess 15b, the biasing member 19 which is inserted into the interior of the containment recess 15b is never exposed to the outside. Therefore, the biasing member 19 can never be seen as part of the appearance, making it possible to achieve a beautiful appearance.

[0085] A material different from that of the first ring shaft bearing section 16 can favourably be used for the sealing section 20, e.g., polyacetal (POM) or acrylonitrile butadiene styrene (ABS), etc., having better wear-resistance than the first ring shaft bearing section 16. With the cap unit 3A according to the present embodiment, the sealing section 20, which has outstanding wear-resistance, is configured as a separate body from the first ring shaft bearing section 16, making it possible to improve the durability of the hinge 12.

[0086] The sealing section 20 has an arm section 20b, a sealing sliding surface 20c, a biasing member abutting surface 20d, and a shaft hole 20a. As shown in FIG. 8, the arm section 20b is a rib extending in the hinge shaft direction and protruding outward in the hinge radial direction from the outer circumferential surface of the sealing section 20. The arm section 20b is inserted into the arm receiving section 15c of the cap shaft bearing section 15 shown in FIG. 7 and FIG. 9. The arm section 20b fits with the arm receiving section 15c in a manner allowing sliding in the hinge shaft direction. By inserting the arm section 20b into the arm receiving section 15c, rotation of the ceiling section 20 in the hinge circumferential direction relative to the computer shaft bearing section 15 is restricted but sliding motion in the hinge shaft direction is allowed.

[0087] As shown in FIG. 6 and FIG. 7, the sealing sliding surface 20c is disposed on the end face of the sealing section 20 facing the one side in the hinge shaft direction. The sealing sliding surface 20c is flat, extending in a direction perpendicular to the hinge central axis A. The sealing sliding surface 20c is in sliding contact with the shaft bearing sliding surface 16b of the first ring shaft bearing section 16.

[0088] In the present embodiment, the sealing sliding surface 20c has a protruding section 20e. The protruding section 20e is a protrusion which protrudes from the sealing sliding surface 20c to the one side in the hinge shaft direction. The protruding section 20e is disposed on part of the sealing sliding surface 20c in the hinge circumferential direction. In the present embodiment, the protruding section 20e is disposed on the bottom end of the sealing sliding surface 20c. When the ring member 11 is in a contained state, the protruding section 20e faces the step section 16c in the hinge shaft direction and separably engages the interior of the step section 16c.

[0089] During the process of moving the ring member 11 to an open state from a contained state of the ring member 11, the protruding section 20e can overcome the step section 16c around the hinge central axis A against the biasing force of the biasing member 19. Specifically, during this process, the protruding section 20e comes in contact with a wall section of the step section 16c located on the end section in the hinge circumferential direction, creating sufficient force to displace the sealing section 20 to the other side in the hinge shaft direction, as a result of which the biasing member 19 undergoes elastic deformation. Due to the elastic deformation of the biasing member 19, the sealing section 20 displaces to the other side in the hinge shaft direction, and the protruding section 20e overcomes the wall section of the step section 16c in the hinge circumferential direction, and is separated from the step section 16c. Note that at this point the protruding section 20e is in sliding contact with sections of the shaft bearing sliding surface 16b other than the step section 16c.

[0090] Conversely to the above, during the process of returning the ring member 11 from the open state to the contained state, the step section 16c moves (turns) in the hinge circumferential direction relative to the protruding section 20e, and when these are in opposing positions in the hinge shaft direction, the biasing section 19 is deformed and restored, the sealing section 20 is displaced to the one side in the hinge shaft direction, and the protruding section 20e is once again inserted into (engages) the step section 16c.

[0091] In other words, in the present embodiment the hinge 12 has a clicking mechanism including the step section 16c and the protruding section 20e, and the clicking mechanism provides a clicking sensation when the ring member 11 rotates in the opening direction or the closing direction around the hinge central axis A.

[0092] As shown in FIG. 6 and FIG. 8, the biasing section abutting surface 20d is disposed on the end face of

the sealing section 20 facing the other side in the hinge shaft direction. The biasing section abutting surface 20d is flat, extending in a direction perpendicular to the hinge central axis A. The biasing section abutting surface 20d abuts the end section of the biasing member 19 on the one side in the hinge shaft direction.

[0093] The shaft hole 20a passes through the sealing section 20 in the hinge shaft direction. The end section of the shaft hole 20a on the one side in the hinge shaft direction opens in the sealing sliding surface 20c. The end section of the shaft hole 20a on the other side in the hinge shaft direction opens in the biasing section abutting surface 20d. The shaft hole 20a is a circular hole extending the hinge shaft direction.

[0094] The hinge shaft 18 is a circular rod around the hinge central axis A and extends in the hinge shaft direction. The hinge shaft 18 is metal and is inserted into the cap shaft bearing section 15, the pair of ring shaft bearing sections 16, 17, the biasing section 19, and the sealing section 20. The hinge shaft 18 supports the cap shaft bearing section 15 and the ring shaft bearing sections 16, 17 in a manner allowing relative pivoting rotation around the hinge central axis A.

[0095] With the cap unit 3A and the drink container 1A according to the present embodiment described above, the ring member 11 is coupled to the main cap body 9 via the hinge 12, i.e., the ring member 11 can rotate around the hinge central axis A. Therefore, depending on the usage state, etc., the attitude of the ring member 11 can be selected as appropriate, for example by putting the ring member 11 in an open state or a contained state, which is convenient. In particular, when the ring member 11 is in an open state, the user can easily carry the drink container by passing a finger through the ring member 11, and when the ring member 11 is in a contained state, bulkiness of the cap top section (the top of the container) is minimized, allowing storage in a bag, etc.

[0096] The biasing section 19 of the hinge 12 biases the ring member 11 to the one side in the hinge shaft direction. Therefore, even if force to the other side in the hinge shaft direction is applied to the ring member 11 due to the user passing a finger through the ring member 11 for carrying or the drink container 1A falling, etc., for example, this force is absorbed by the elastic deformation of the biasing member 19 and can be prevented from being easily communicated to the main cap body 9. Thus, the cap unit 3A can be limited from turning in the circumferential direction (the unscrewing direction) by the aforementioned force, making it possible to favourably maintain the screwed-together state of the cap unit 3A and the main container body 2A.

[0097] Specifically, in the present embodiment the one side in the hinge shaft direction is equivalent to the tightening direction T1 in the circumferential direction around which the cap unit 3A and the main container body 2A screw together, and the other side in the hinge shaft direction is equivalent to the loosening direction T2 in the circumferential direction. In this case, when a force (rotating force) in the loosening direction T2 (the other side in the hinge shaft direction) of the circumferential direction around which the cap unit 3A and the main container body 2A screw together is applied to the ring member 11, the biasing member 19 absorbs this force, making it possible to minimize loosening of the screwed-together state. Therefore, leaking of the drink out of the main container body 2A due to such loosening can be minimized.

[0098] Furthermore, in the present embodiment, of the cap shaft bearing section 15 and the ring shaft bearing sections 16, 17, two of the ring shaft bearing sections 16, 17 are provided with a gap therebetween in the hinge shaft direction, and one of the cap shaft bearing section 15 is disposed between the two ring shaft bearing sections 16, 17. In other words, two of either the cap shaft bearing section 15 or the ring shaft bearing sections 16, 17 are provided with a gap there between in the hinge shaft direction, and one of the other of the cap shaft bearing section 15 and the ring shaft bearing sections 16, 17 is disposed between the other two. In this case, the strength of the hinge 12 can be increased in a stable manner while providing the aforementioned effect with the biasing section 19 of the hinge 12.

[0099] Furthermore, in the present embodiment, the hinge 12 has the containment recess 15b and the sealing section 20 which seals the biasing section 19 in the containment recess 15b. In this case, because the biasing section 19 can be sealed inside the containment recess 15b by the sealing section 20, the biasing section 19 can be minimized from being exposed to the exterior, making it possible to achieve a pleasing external design of the cap unit 3A and the drink container 1A. Furthermore, by sealing the biasing section 19, deterioration or instability of the functionality of the biasing section 19 due to grime, for example, can be minimized.

[0100] Furthermore, in the present embodiment, as the clicking mechanism of the hinge 12, the shaft bearing sliding surface 16b has the step section 16c, and the sealing sliding surface 20c has the protruding section 20e which can overcome the step section 16c against the biasing force of the biasing section 19 around the hinge central axis A. In this case, when the user rotates the ring member 11 around the hinge central axis A, the protruding section 20e overcomes the step section 16c against the biasing force of the biasing section 19, thereby making it possible for the user to obtain a clicking sensation. The user can be made aware in a tactile manner of what state the rotational operation of the ring member 11 is in by obtaining this clicking sensation.

[0101] Specifically, in the present embodiment when the ring member 11 is in a contained state, by rotating the ring member 11 in the opening direction, the protruding section 20e overcomes the step section 16c in a relative manner around the hinge circumferential direction, making it possible to obtain a clicking sensation and making it possible to be aware in a tactile manner that the rotation operation has started. When the ring member 11, which is in a contained state, is rotated in the opening

direction, resistance is created by the biasing force when the protruding section 20e overcomes the step section 16c, thereby minimizing rotation of the ring member 11 unintentionally in the opening direction.

[0102] Note that in the present embodiment, a mechanism is used in which the step section 16c overcomes the protruding section 20e (i.e., the step section 16c and the protruding section 20e become engaged) immediately before the ring member 11 enters the contained state, but this overcoming position (engagement position) can be freely set by adjusting the positions of the step section 16c and the protruding section 20e. For example, it is also possible for the step section 16c to overcome the protruding section 20e immediately prior to the ring member 11 rotating to the limit backwards in an open state.

[0103] Furthermore, in the present embodiment, the bottom surface 11a of the ring member 11 has a shape in which the bottom surface 11a imitates the shape of the opposing top wall section 9b of the main cap body 9. Specifically, in the present embodiment the outer circumferential groove 9c of the top wall section 9b opposing the bottom surface 11a of the ring member 11 is a concave curved surface, and the bottom surface 11a of the ring member 11 is a convex curved surface imitating the concave curved surface of the outer circumferential groove 9c. In this case, the bottom surface 11a of the ring member 11 can be disposed so as to closely fit the outer circumferential groove 9c of the top wall section 9b of the main cap body 9. In other words, the fit inside the outer circumferential groove 9c is good when the ring member 11 is in a contained state. This makes it possible to ensure stability of the attitude of the ring member 11 in the contained state. Moreover, bulkiness in the vertical direction of the cap unit 3A overall can be minimized by making the ring member 11 fit closely to the outer circumferential groove 9c of the top wall section 9b, making it possible to achieve even greater compactness.

[0104] Furthermore, in the present embodiment the outer circumferential groove 9c of the main cap body 9 is polygonal and the ring member 11 is polygonal, and therefore the inner circumferential section of the ring member 11 fits the inner circumferential section of the outer circumferential groove 9c. In this case, when the ring member 11 is in a contained state, the ring member 11 is restricted from rotating in the circumferential direction relative to the main cap body 9. Therefore, when the ring member 11 is in a contained state, if the user removes the cap unit 3A from the main container body 2A by turning the cap unit 3A in the loosening direction T2 in the circumferential direction, an excessive burden is restricted from being applied to the biasing section 19, etc., of the hinge 12 even if the entire ring member 11 is grasped with the hand and turned. Accordingly, the aforementioned functionality of the hinge 12 can be maintained favourably for an extended period of time.

[0105] <Second Embodiment> Next, a cap unit 3B according to the second embodiment of the present invention and a drink container 1B provided therewith are described with reference to FIG. 10 through FIG. 22. Note that in the present embodiment the same names and reference numerals, etc., are given to configurations which are the same as in the previous embodiment, and descriptions thereof may be omitted.

[0106] As shown in FIG. 10 and FIG. 11, the drink container 1B according to the present embodiment is provided with the cap unit 3B and a main container body 2B which is a cylinder having a closed end and to which the cap unit 3B is attached. The cap unit 3B is removably attached by screwing onto a mouth-neck section 2c of the main container body 2B which is open at the top. The cap unit 3B constitutes a stopper body which blocks the top open section 2d of the main container body 2B.

[0107] The main container body 2B according to the present embodiment is such that the mouth-neck section 2c has a male screw section 35. The male screw section 35 is disposed on the outer circumferential section of the mouth-neck section 2c.

[0108] The cap unit 3B has a main cap body 30 which is a cylinder with a closed end and blocks the top open section 2d of the main container body 2B, a hole forming member 36 which has a liquid passage hole 37 which communicates with the interior of the main container body 2B and is attached to the main cap body 30, a hole attachment mechanism 38 for attaching the hole forming member 36 to the main cap body 30 in a removable manner, watertight packing 39 for sealing the space between the main container body 2B and the hole forming member 36, a lid body 31 which is a cylinder with a closed end, covers the liquid passage hole 37 and is disposed on top of the main cap body 30 and the hole forming member 36, an annular ring member 33 which is disposed on top of the lid member 31, a first hinge (the hinge) 32 which couples the lid member 31 and the ring member 33 to the main cap body 30 in a manner allowing rotation around the hinge central axis A, and a lid locking mechanism 43 which immobilizes the lid body 31 in a blocking position relative to the main cap body 30.

[0109] In the present embodiment, the vertical cross-sectional view of the cap unit 3B shown in FIG. 11 represents the closed state of the lid body 31 (blocking position) and the contained state of the ring member 33. The vertical cross-sectional view of the cap unit 3B shown in FIG. 12 represents the open state (open position) of the lid body 31 and the open state of the ring member 33. The lateral view of the cap unit 3B shown in FIG. 13 represents the closed state (blocking position) of the lid body 31 and the open state of the ring member 33.

[0110] As shown in FIG. 10 and FIG. 15, in the present embodiment as well one side in a hinge shaft direction is equivalent to the tightening side T1 in the circumferential direction around which the cap unit 3B and the main container body 2B are screwed together, and another side in the hinge shaft direction is equivalent to the loosening direction T2 in the circumferential direction.

[0111] The main cap body 30 is made out of a heat resistant resin such as polypropylene (PP), etc., for ex-

ample. As shown in FIG. 11, the main cap body 30 has a circumferential wall section 30a which is formed substantially as a cylinder continuous with a trunk section 2b of the main container body 2B, and a top wall section 30c which connects to the top end section of the circumferential wall section 30a. The top wall section 30c has an open section 30b which passes vertically through the top wall section 30c.

[0112] A female screw section 34 is provided to the inner circumferential surface of the circumferential wall section 30a. The female screw section 34 meshes with the male screw section 35 of the mouth-neck section 2c. The main cap body 30 is thus removably attached by screwing to the mouth-neck section 2c of the main container body 2B.

[0113] As shown in FIG. 11 and FIG. 12, the hole forming member 36 which forms a drinking hole or pouring hole (a drinking hole in the present embodiment) is removably attached to the opening section 30b of the main cap body 30. In other words, the main cap body 30 is provided with the hole forming member 36. The hole forming member 36 is made out of a heat resistant resin such as polypropylene (PP), etc., for example.

[0114] The hole forming member 36 has a bottom wall section 36a in which the liquid passage hole 37 is formed, a cylindrical circumferential wall section 36b which rises upward from around the bottom wall section 36a, a bottom flange section 36c which extends from the bottom end of the bottom wall section 36a radially outward, a pair of top flange sections (not shown in the drawings) which extend forward and back and protrude left and right from the outer circumferential surface of the circumferential wall section 36b, and a diagonally cut drinking hole section 36e which is provided to the top end hole edge of the circumferential wall section 36b and extends downward as it moves backward from the front end section of the top end hole edge.

[0115] The hole attachment mechanism 38 for removably attaching the hole forming member 36 to the opening section 30b of the main cap body 30 is provided between the main cap body 30 and the hole forming member 36. The configuration described in Patent No. 5312542, for example, can be used as the hole attachment mechanism 38, and a detailed description thereof is omitted in the present embodiment. Note that the hole forming number 36 may be removable from the main cap body 30 or may be formed as a single unit with the main cap body 30.

[0116] The watertight packing 39 is removably attached to the bottom flange section 36c of the hole forming member 36. The watertight packing 39 is a ring-shaped sealing member for sealing the space between the hole forming member 36 and a protruding section 8 (the main container body 2B). The watertight packing 39 is made out of an elastic member such as rubber or an elastomer, etc., having heat resistance properties such as silicone rubber, etc., for example. The watertight packing 39 is fitted on the outer circumferential section of the bottom flange section 36c.

[0117] The watertight packing 39 completely seals the entire circumference of the protruding section 8 of the main container body 2B while elastically deforming when fitted into the inside of the top opening section 2d of the main container body 2B. The space between the protruding section 8 and the hole forming member 36 can thus be sealed.

[0118] The lid member 31 is made out of a heat resistant resin such as polypropylene (PP), etc., for example. The lid member 31 opens and closes the liquid passage hole 37 which is the drinking hole or pouring hole of the hole forming member 36. As shown in FIG. 11, the lid member 31 is disposed between the main cap body 30 and the ring member 33 in the vertical direction.

[0119] The lid member 31 is biased in the direction of opening the liquid passage hole 37 of the hole forming member 36, i.e., the opening direction, by a torsion spring (lid body biasing section) 42 which is described below and is provided to the first hinge 32. The lid body 31 is rotatably coupled to the main cap body 30 by the first hinge 32, biased in the opening direction around the hinge central axis A.

[0120] The lid member 31 has a lid circumferential wall section 31a which is formed substantially as a cylinder so as to be continuous with the circumferential wall section 30a of the main cap body 30, a lid top wall section 31b which is connected to the top end of the lid circumferential wall section 31a, and a cylindrical inner wall section 31c which protrudes down from the lid top wall section 31b.

[0121] A lid packing 40 which blocks the liquid passage hole 37 of the hole forming member 36 is provided inside the lid body 31. Specifically, the lid body 31 has the lid packing 40. The lid packing 40 is a stopper-like sealing member which blocks the liquid passage hole 37. The lid packing 40 comprises an elastic member, and the same material as the water tight packing 39 can be used.

[0122] The lid packing 40 is substantially a cylinder with a closed end which is removably attached to the inner wall section 31c with the inner wall section 31c fitted in the interior thereof. The bottom surface (lower surface) of the lid packing 40 is formed as a convex dome facing downward.

[0123] With the cap unit 3B, when the top of the main cap body 30 is blocked by the lid body 31, the lid packing 40 undergoes elastic deformation and is pressed closely around the liquid passage hole 37. The liquid passage hole 37 of the hole forming member 36 can thus be blocked.

[0124] The lid packing 40, when attached to the inner wall section 31c, undergoes elastic deformation so as to have a greater diameter, thereby making the inner wall section 31c fit tightly in the interior thereof, immobilizing the lid packing 40 on the inner wall section 31c. Therefore, negative pressure is produced inside the main container body 2B when the lid body 31 is in the closed position, so even if tensile force is applied to the lid packing

40 in a direction into the main container body 2B, the lid packing 40 is minimized from coming off of the inner wall section 31c when the lid body 31 is opened. Accordingly, the liquid passage hole 37 can be unstopped in a stable manner when the lid body 31 is opened.

[0125] The lid top wall section 31b has a recess 31d downward from the top surface of the lid top wall section 31b. A cover member 41 which covers the inner wall section 31c from above is attached inside the recess 31d. In other words, the lid body 31 has the cover member 41. The cover member 41 is formed substantially disc-shaped using the same material as the lid body 31.

[0126] The cover member 41 may be of a different material or colour, etc., than the lid body 31, and is not limited to the same material. The cover member 41 may also use a transparent material. It is also possible to arrange vertical structures on the top of the cover member 41 or to imprint on the top surface. The cap unit 3B can thus be made to have outstanding design characteristics.

[0127] As shown in FIG. 11 and FIG. 13, the lid top wall section 31b has a tapered surface 31e. The tapered surface 31e is disposed on the outer circumferential section of the top surface of the lid top wall section 31b. The tapered surface 31e is a tapered surface which tilts downward the further it moves radially outward. The tapered surface 31e extends in the circumferential direction so as to surround the recess 31d from radially outward, and substantially forms a C-shape which opens towards the back when viewed from above.

[0128] As shown in FIG. 11, the lid locking mechanism 43 immobilizes the lid body 31 relative to the main cap body 30 against the biasing force of the torsion spring 42 which is discussed below in a position where the lid body 31 blocks the liquid passage hole 37, i.e. the blocking position of the lid body 31.

[0129] Specifically, the lid locking mechanism 43 has a locking member 45 which is rotatably attached to the main cap body 30 via a second hinge 44, and a ring stopper 46 which is rotatably attached to the main cap body 30 via the second hinge 44. The hinge central axis (not shown in the drawings) of the second hinge 44 extends in the left and right direction.

[0130] A lock member 45 is rotatably supported by the second hinge 44 provided to the front end of the circumferential wall section 30a of the main cap body 30. The lock member 45 has a first extension section 45a which extends up from the second hinge 44, and a second extension section 45b which extends down from the second hinge 44.

[0131] A hook section 47 is provided protruding towards the back to a tip section of the first extension section 45a (the top end of the lock member 45). An elastic member (a spring member) 48 is provided in a state compressed in the front and back direction between the second extension section 45b and the circumferential wall section 30a. The elastic member 48 biases the second extension section 45b to the front.

[0132] As shown in FIG. 10, the ring stopper 46 is a member which extends curved substantially in a semi-circle, both ends thereof being rotatably supported by the second hinge 44. The ring stopper 46 can thus rotate in the vertical direction around the second hinge 44.

[0133] Furthermore, as seen in FIG. 11, the lid locking mechanism 43 has a lock receiving section 49 which is engaged by the hook 47 of the lock member 45, and a stopper receiving section 50 onto which the ring stopper 46 is engaged. The lock receiving section 49 is a claw section protruding forward from the bottom section of the front end of the lid circumferential wall section 31a of the lid body 31. The stopper receiving section 50 comprises a wall section which has a shape which fits the inner circumferential section of the ring stopper 46 and is provided protruding forward from a position on the front end of the lid circumferential wall section 31a surrounding the lock receiving section (claw section) 49.

[0134] With the lid locking mechanism 43, when the lid body 31 has blocked the top section of the main cap body 30, the lock section 47 of the lock member 45 is engaged by the lock receiving section 49, thereby maintaining the state in which the lid body 31 blocks the top section of the main cap body 30. When the user presses the second extension section 45b of the lock member 45 towards the back against the biasing force of the elastic member 48 from this state, the lock member 45 rotates around the second hinge 44, the first extension section 45a is displaced forward, and the hook section 47 becomes disengaged from the lock receiving section 49. The lid body 31 can thus be rotated in the opening direction as shown in FIG. 12 by the biasing force of the torsion spring 42 inside the first hinge 32.

[0135] Furthermore, as shown in FIG. 11, with the lid locking mechanism 43, when the lid body 31 has blocked the top section of the main cap body 30, rotation of the lid body 31 in the opening direction is inhibited by the ring stopper 46 being hooked onto the stopper receiving section 50. Thus, with the lid locking mechanism 43, the lid body 31 can be prevented from opening due to an unnecessary (unintentional) operation of the lock member 45, etc.

[0136] The ring member 33 comprises a heat resistant resin such as polypropylene (PP), etc., for example. As shown in FIG. 14, the ring member 33 is a substantially annular disk shape in the present embodiment. As shown in FIG. 11, the ring member 33 is disposed on top of the main cap body 30 and the lid body 31. Specifically, in the contained state of the ring member 33 shown in FIG. 11, the ring member 33 is disposed above the lid top wall section 31b, or more specifically on the outer circumferential section of the lid top wall section 31b, i.e., on the tapered surface 31e.

[0137] A bottom surface 33a of the ring member 33 has a shape such that the bottom surface 33a imitates the shape of the opposing lid top wall section 31b of the lid body 31. In other words, the bottom surface 33a of the ring member 33 has a tapered shape imitating the tapered shape of the tapered surface 31e, i.e. a reverse

tapered surface shape which matches the tapered surface 31e. Specifically, the bottom surface 33a of the ring member 33 is a tapered surface which is tilted further downwards the further it moves radially outward.

[0138] A top surface 33b of the ring member 33 is a tapered surface which tilts further downward the further radially outward it moves. Therefore, if the user turns the cap unit 3B in the circumferential direction to attach it or remove it from the main container body 2B with the ring member 33 contained, the entire cap unit 3B can easily be grasped by the hand together with the ring member 11 for rotation.

[0139] The first hinge (hinge) 32 couples the rear section of the main cap body 30 and the rear section of the lid body 31 in a manner allowing relative rotation in the hinge circumferential direction. Furthermore, the first hinge 32 couples the rear section of the main cap body 30 and the rear section of the ring member 33 in a manner allowing relative rotation around the hinge circumferential direction. In other words, the first hinge 32 couples the main cap body 30 with the lid body 31 and the ring member 33 in a manner allowing relative rotation around the hinge central axis A. The first hinge 32 is provided with a spring mechanism including a biasing section 60 and a sealing section 61 which are discussed below. The first hinge 32 is configured around the hinge central axis A and extends in the hinge shaft direction.

[0140] As shown in FIG. 14 to FIG. 22, the first hinge 32 has cap shaft bearing sections 52, 53, lid shaft bearing sections 54, 55, a ring shaft bearing section 56, a biasing section (ring member biasing section) 60, a sealing section 61, a shaft cover 58, an opposing surface member 59, a torsion spring (lid body biasing section) 42, and a hinge shaft 57. Note that FIG. 15 shows a cross-section (vertical cross-section) of the first hinge 32 parallel to the central axis C of the cap unit 3B, specifically showing a vertical cross-section view of the first hinge 32 including the hinge central axis A. FIG. 16 shows a cross-section (lateral cross-section) of the first hinge 32 perpendicular to the central axis C of the cap unit 3B, specifically showing a lateral cross-sectional view of the first hinge 32 including the hinge central axis A. Furthermore, in the exploded oblique views of the cap unit 3B shown in FIG. 17 and FIG. 18, the arrangement order of constituent members partially differs from the arrangement relationship of the constituent members after assembly (in an assembled state).

[0141] Two of either the cap shaft bearing sections 52, 53 and the ring shaft bearing section 56 are provided with a gap therebetween and the hinge shaft direction, and one of the other of either the cap shaft bearing sections 52, 53 and the ring shaft bearing section 56 is provided between the first two. In the present embodiment, of the cap shaft bearing sections 52, 53 and the ring shaft bearing section 56, two of the cap shaft bearing sections 52, 53 are provided with a gap therebetween in the hinge shaft direction, and one of the ring shaft bearing section 56 is provided between the two cap shaft bearing sections 52, 53.

[0142] As shown in FIG. 17, 18,20, and 21, the cap shaft bearing sections 52, 53 are provided protruding up and back from the rear end of the top circumferential section 30c of the main cap body 30. Specifically, the cap shaft bearing sections 52, 53 are provided to the main cap body 30. The cap shaft bearing sections 52, 53 are formed integrally with the main cap body 30 from a single member. In the present embodiment, two of the cap shaft bearing sections 52, 53 are provided.

[0143] The two cap shaft bearing sections 52, 53 include the first cap shaft bearing section 52 and the second cap shaft bearing section 53. Of the two cap shaft bearing sections 52, 53, the first cap shaft bearing section 52 is disposed on one side in the hinge shaft direction. Of the two cap shaft bearing sections 52, 53, the second cap shaft bearing section 53 is disposed on the other side in the hinge shaft direction.

[0144] The first cap shaft bearing section 52 is substantially cylindrical, extending in the hinge shaft direction. As shown in FIG. 15, FIG. 16, FIG. 20, and FIG. 21, the first cap shaft bearing section 52 has a containment hole section 52b, a cap end face 52e, a shaft hole 52a, a groove section 52c, and a shaft protruding section engagement section 52d.

[0145] The containment hole section 52b is a circular hole closed at one end around the hinge central axis A. The containment hole section 52b opens in an end face of the first cap shaft bearing section 52 facing the one side in the hinge shaft direction, and extends to the other side in the hinge shaft direction from this end face.

[0146] The cap end face 52e is an end face of the first cap shaft bearing section 52 facing the other side in the hinge shaft direction. The cap end face 52e is a flat surface extending in a direction perpendicular to the hinge central axis A.

[0147] The shaft hole 52a is a circular hole extending in the hinge shaft direction. The shaft hole 52a has a smaller inner diameter than the containment hole section 52b. The end section of the shaft hole 52a on the one side in the hinge shaft direction opens in a bottom surface of the containment hole section 52b. The end section of the shaft hole 52a on the other side in the hinge shaft direction opens in the cap end face 52e.

[0148] The groove section 52c is a groove shape extending in the hinge shaft direction and recessed outward in the hinge radial direction from the inner circumferential surface of the containment hole section 52b. The groove section 52c is disposed along the entire length of the containment hole section 52b in the hinge shaft direction. In the present embodiment, the width dimension of the groove section 52c in the hinge circumferential direction get smaller as it moves outward in the hinge radial direction.

[0149] The shaft protruding section engagement section 52d is a groove shape extending in the hinge shaft direction and recessed outward in the hinge radial direction from the inner circumferential surface of the shaft

hole 52a. The shaft protruding section engagement section 52d is disposed along the entire length of the shaft hole 52a in the hinge shaft direction. The end section of the shaft protruding section engagement section 52d on the one side in the hinge shaft direction opens in the bottom surface of the containment hole section 52b. The end section of the shaft protruding section engagement section 52d on the other side in the hinge shaft direction opens in the cap end face 52e. In the present embodiment, the width dimension of the shaft protruding section engagement section 52d in the hinge circumferential direction gets larger as it moves outward in the hinge radial direction.

[0150] As shown in FIG. 15 to FIG. 18, the second cap shaft bearing section 53 is a substantially annular disk shape around the hinge central axis A. The second cap shaft bearing section 53 has in inner surface 53b, an outer sliding contact surface 53c, and a shaft hole 53a.

[0151] The inner surface 53b is disposed on the end face of the second cap shaft bearing section 53 on the one side in the hinge shaft direction. The inner surface 53b is a flat surface extending in a direction perpendicular to the hinge central axis A.

[0152] The outer sliding contact surface 53c is disposed on the end face of the second cap shaft bearing section 53 on the other side in the hinge shaft direction. The outer sliding contact surface 53c is a flat surface extending in a direction perpendicular to the hinge central axis A.

[0153] The shaft hole 53a passes through the second cap shaft bearing section 53 in the hinge shaft direction. The shaft hole 53a is a circular hole around the hinge central axis A. The end section of the shaft hole 53a on the one side in the hinge shaft direction opens in the inner surface 53b. The end section of the shaft hole 53a on the other side in the hinge shaft direction opens in the outer sliding contact surface 53c.

[0154] The lid shaft bearing sections 54, 55 are provided protruding back from the lid circumferential wall section 31a of the lid body 31. In other words, the lid shaft bearing sections 54, 55 are provided to the lid body 31. The lid shaft bearing sections 54, 55 are formed integrally with the lid body 31 from a single member. In the present embodiment, two of the lid shaft bearing sections 54, 55 are provided with a gap therebetween in the hinge shaft direction.

[0155] The two lid shaft bearing sections 54, 55 include the first lid shaft bearing section 54 and the second lid shaft bearing section 55. Of the two lid shaft bearing sections 54, 55, the first lid shaft bearing section 54 is disposed on the one side in the hinge shaft direction. The first lid shaft bearing section 54 is disposed neighbouring the first cap shaft bearing section 52 on the one side in the hinge shaft direction. Of the two lid shaft bearing sections 54, 55, the second lid shaft bearing section 55 is disposed on the other side in the hinge shaft direction. The second lid shaft bearing section 55 is disposed neighbouring the second cap shaft bearing section 53 on the other side in the hinge shaft direction.

[0156] The first lid shaft bearing section 54 is substantially cylindrical, extending in the hinge shaft direction. As shown in FIG. 15 and FIG. 18, the first lid shaft bearing section 54 has an attachment recess 54b, a rotation abutting section 54c, and a shaft hole 54a.

[0157] The attachment recess 54b is a recess or cutout which is recessed to the one side in the hinge shaft direction from the end face of the first lid shaft bearing section 54 facing the other side in the hinge shaft direction. A bottom surface of the attachment recess 54b faces the other side in the hinge shaft direction. The bottom surface of the attachment recess 54b is a flat surface extending in a direction perpendicular to the hinge central axis A.

[0158] The rotation abutting section 54c protrudes further to the other side in the hinge shaft direction than the bottom surface of the attachment recess 54b. The rotation abutting section 54c is a rib extending in the forward and back direction, disposed on top of the attachment recess 54b. The rotation abutting section 54c is disposed so as to cover the attachment recess 54b from above. The rotation abutting section 54c has a curved section which extends in the hinge circumferential direction, and a straight section which extends in the forward and back direction.

[0159] The shaft hole 54a is a substantially circular hole extending the hinge shaft direction. The end section of the shaft hole 54a on the one side in the hinge shaft direction opens in the end face of the first lid shaft bearing section 54 facing the one side in the hinge shaft direction. The end section of the shaft hole 54a on the other side in the hinge shaft direction opens in the bottom surface of the attachment recess 54b.

[0160] The second lid shaft bearing section 55 is substantially cylindrical, extending in the hinge shaft direction. As shown in FIG. 15 to FIG. 17, the second lid shaft bearing section 55 has an inner surface 55b and a shaft hole 55a.

[0161] The inner surface 55b is disposed on the end face of the second lid shaft bearing section 55 facing the one side in the hinge shaft direction. The inner surface 55b is a flat surface extending in a direction perpendicular to the hinge central axis A. The inner surface 55b is in sliding contact with the outer sliding contact surface 53c of the second cap shaft bearing section 53.

[0162] The shaft hole 55a is a substantially circular hole which passes through the second lid shaft bearing section 55 in the hinge shaft direction. The end section of the shaft hole 55a on the one side in the hinge shaft direction opens in the inner surface 55b. The end section of the shaft hole 55a on the other side in the hinge shaft direction opens in the end face of the second lid shaft bearing section 55 facing the other side in the hinge shaft direction.

[0163] As shown in FIG. 11, the ring shaft bearing section 56 is provided protruding down and back from the back end of the ring member 33. In other words, the ring

shaft bearing section 56 is provided to the ring member 33. The ring shaft bearing section 56 is formed integrally with the ring member 33 from a single member.

[0164] As shown in FIG. 14 to FIG. 16, the ring shaft bearing section 56 is substantially cylindrical, extending in the hinge shaft direction. The ring shaft bearing section 56 is located substantially in the middle of the left and right direction of the back end section of the ring member 33. The ring shaft bearing section 56 is located substantially in the middle of the first hinge 32 in the hinge shaft direction.

[0165] The ring shaft bearing section 56 is disposed neighbouring the cap shaft bearing sections 52, 53 in the hinge shaft direction. Specifically, the ring shaft bearing section 56 is disposed neighbouring the first cap shaft bearing section 52 on the other side in the hinge shaft direction, and disposed neighbouring the second cap shaft bearing section 53 on the one side in the hinge shaft direction. Specifically, the ring shaft bearing section 56 is disposed between the pair of cap shaft bearing sections 52, 53 in the hinge shaft direction. In other words, in the present embodiment the first hinge (hinge) 32 has the cap shaft bearing sections 52, 53 which are provided to the main cap body 30, the lid shaft bearing sections 54, 55 which are provided to the lid body 31, the ring shaft bearing section 56 which is provided to the ring number 33 and is disposed alongside the cap shaft bearing sections 52, 53 and the lid shaft bearing sections 54, 55 in the hinge shaft direction, and the hinge shaft 57 which supports the cap shaft bearing sections 52, 53, the lid shaft bearing sections 54, 55, and the ring shaft bearing section 56 in a manner allowing relative rotation around the hinge central axis A.

[0166] As shown in FIG. 15, FIG. 16, and FIG. 22, the ring shaft bearing section 56 has a containment recess 56b, a ring end face 56c, and a shaft hole 56a. In other words, the first hinge 32 has the containment recess 56b.

[0167] In the present embodiment, the containment recess 56b is provided recessed into the ring shaft bearing section 56 and extends in the hinge shaft direction. Specifically, the containment recess 56b is a circular hole which is closed at one end around the hinge central axis A, opens in an end face of the ring shaft bearing section 56 facing the other side in the hinge shaft direction, and extends to the one side in the hinge shaft direction from this end face.

[0168] The ring end face 56c is an end face of the ring shaft bearing section 56 facing the one side in the hinge shaft direction. Of the ring end face 56c, an outer circumferential section is a flat surface extending in a direction perpendicular to the hinge central axis A. The cap end face 52e of the first cap shaft bearing section (the cap shaft bearing section) 52 facing the other side in the hinge shaft direction is in sliding contact with (the outer circumferential section of) the ring end face 56c of the ring shaft bearing section 56 facing the other side in the hinge shaft direction.

[0169] Furthermore, the ring end face 56c has a concave surface 56d which is disposed further inward in the hinge radial direction than the outer circumferential section of the ring end face 56c. The concave surface 56d is formed recessed further towards the other side in the hinge shaft direction than the outer circumferential section of the ring end face 56c.

[0170] The shaft hole 56a is a circular hole extending in the hinge shaft direction. The shaft hole 56a has a smaller inner diameter than the containment recess 56b. The end section of the shaft hole 56a on the one side in the hinge shaft direction opens in the concave surface 56d of the ring end face 56c. The end section of the shaft hole 56a on the other side in the hinge shaft direction opens in the bottom surface of the containment recess 56b.

[0171] The biasing section 60 is capable of elastic deformation. As shown in FIG. 15 to FIG. 18, the biasing section 60 according to the present embodiment is a metal compressed coil spring capable of elastic deformation in the hinge shaft direction. The biasing section 60 is contained in the containment recess 56b. The end section of the biasing section 60 on the one side in the hinge shaft direction is in contact with the bottom surface of the containment recess 56b facing the other side in the hinge shaft direction. The end section of the biasing section 60 on the other side in the hinge shaft direction is in contact with the end face of the sealing section 61 facing the one side the hinge shaft direction (the biasing section abutting surface 61b discussed below).

[0172] The biasing section 60 biases the ring shaft bearing section 56 to the one side in the hinge shaft direction relative to the second cap shaft bearing section (cap shaft bearing section) 53 via the sealing section 61. In other words, the biasing section 60 biases the ring member 33 to the one side in the hinge shaft direction relative to the main cap body 30. Furthermore, the biasing section 60 allows the ring member 33 to be displaced to the other side in the hinge shaft direction relative to the main cap body 30 through elastic deformation.

[0173] The sealing section 61 is a cylinder around the hinge central axis A and extends in the hinge shaft direction. The sealing section 61 is disposed on the one side in the hinge shaft direction of the second cap shaft bearing section 53 and is disposed on the other side in the hinge shaft direction of the biasing section 60. The sealing section 61 is interposed between the second cap shaft bearing section 53 and the biasing section 60 in the hinge shaft direction. The sealing section 61 is at least partially inserted into the containment recess 56b. The sealing section 61 thus seals the biasing section 60 in the containment recess 56b. Of the sealing section 61, the section other than the section inserted into the containment recess 56b is exposed to the outside between the second cap shaft bearing section 53 and the ring shaft bearing section 56.

[0174] In the present embodiment, at least part of the sealing section 61 (the end section on the one side in the hinge shaft direction) is inserted inside the containment

recess 56b, and the sealing section 61 never completely separates from the containment recess 56b, and therefore the biasing section 60 which is sealed into the interior of the containment recess 56 is never exposed to the outside. Therefore, the biasing section 60 is not visible from the outside, making it possible to achieve a beautiful appearance.

[0175] A material different than the second cap shaft bearing section 53 may be used for the sealing section 61, e.g. polyacetal (POM) or acrylonitrile butadiene styrene (ABS), etc., a material which has better wear-resistance than the second cap shaft bearing section 53 being preferable.

[0176] The sealing section 61 has a biasing section abutting surface 61b, an outer abutting surface 61c, and shaft hole 61a. The biasing section abutting surface 61b is disposed on the end face of the sealing section 61 facing the one side in the hinge shaft direction. The biasing section abutting surface 61 abuts the end section of the biasing section 60 on the other side in the hinge shaft direction.

[0177] The outer abutting surface 61c is disposed on the end face of the sealing section 61 facing the other side in the hinge shaft direction. The outer abutting surface 61c is in sliding contact with the inner surface 53b of the second cap shaft bearing section 53.

[0178] The shaft hole 61a passes through the sealing section 61 in the hinge shaft direction. The end section of the shaft hole 61a on the one side in the hinge shaft direction opens in the biasing section abutting surface 61b. The end section of the shaft hole 61a on the other side in the hinge shaft direction opens in the outer abutting surface 61c. The shaft hole 61 is a circular hole extending in the hidden shaft direction.

[0179] With the cap unit 3B according to the present embodiment, improved durability of the first hinge 32 can be achieved since the sealing section 61, which has outstanding wear-resistance, is configured as a separate body from the second cap shaft bearing section 53. Furthermore, moulding characteristics of the main cap body 30 can be improved and dimensional control, etc., can be made easier by configuring the sealing section 61 as a separate body from the second cap shaft bearing section 53. Note that if no consideration is to be given to the effects on moulding characteristics or dimensions, the second cap shaft bearing section 53 need not be configured as a separate body from the sealing section 61. In other words, it is also possible to configure the second cap shaft bearing section 53 and the sealing section 61 as a single unit, for example.

[0180] As shown in FIG. 15, FIG. 16, and FIG. 19, the shaft cover 58 is a substantially multi-step cylinder which extends in the hinge shaft direction. The shaft cover 58 is inserted from the one side in the hinge shaft direction into the first cap shaft bearing section 52, the ring shaft bearing section 56, the biasing section 60, the sealing section 61, and the second cap shaft bearing section 53.

[0181] A material different than the cap shaft bearing sections 52, 53 may be used for the shaft cover 58, e.g. polyacetal (POM) or acrylonitrile butadiene styrene (ABS), etc., a material which has better wear-resistance than the second cap shaft bearing sections 52, 53 being preferable.

[0182] The shaft cover 58 has a small-diameter cylindrical section 58b, a large-diameter cylindrical section 58c, a shaft hole 58a, a protruding section 58d, and a shaft protruding section 58e.

[0183] The small-diameter cylindrical section 58b is cylindrical around the hinge central axis A and extends in the hinge shaft direction. The small-diameter cylindrical section 58b is inserted into the interiors of the shaft hole 52a of the first cap shaft bearing section 52, the shaft hole 56a and the containment recess 56b of the ring shaft bearing section 56, the biasing section 60, the shaft hole 61a of the sealing section 61, and the shaft hole 53a of the second cap shaft bearing section 53. Furthermore, the end face of the small-diameter cylindrical section 58b facing to the other side in the hinge shaft direction is in sliding contact with the inner surface 55b of the second lid shaft bearing section 55.

[0184] The large-diameter cylindrical section 58c is disposed on the one side in the hinge shaft direction of the small-diameter cylindrical section 58b. The large-diameter cylindrical section 58c is substantially cylindrical and has a larger diameter than the small-diameter cylindrical section 58b, and is connected to the end section of the small-diameter cylindrical section 58b on the one side in the hinge shaft direction. Specifically, the large-diameter cylindrical section 58c is substantially cylindrical with a closed end and has an opening in the end face of the shaft cover 58 facing the one side in the hinge shaft direction. The large-diameter cylindrical section 58c is disposed inside the containment hole section 52b of the first cap shaft bearing section 52.

[0185] The shaft hole 58a passes through the shaft cover 58 in the hinge shaft direction. The shaft hole 58a is a circular hole around the hinge central axis A. The end section of the shaft hole 58a on the one side in the hinge shaft direction opens in a bottom wall section of the large-diameter cylindrical section 58c. The end section of the shaft hole 58a on the other side in the hinge shaft direction opens in the end face of the small-diameter cylindrical section 58b facing the other side in the hinge shaft direction.

[0186] The protruding section 58d is a rib which protrudes outward in the hinge radial direction from the outer circumferential surface of the large-diameter cylindrical section 58c and extends in the hinge shaft direction. In the present embodiment, the width dimension of the protruding section 58d in the hinge circumferential direction gets smaller as it moves outward in the hinge radial direction. The protruding section 58d is engaged by the groove section 52c of the first cap shaft bearing section 52.

[0187] The shaft protruding section 58e is a rib which protrudes outward in the hinge radial direction from the

outer circumferential surface of the small-diameter cylindrical section 58b and extends in the hinge shaft direction. The shaft protruding section 58e is disposed on the end section of the small-diameter cylindrical section 58b on the one side in the hinge shaft direction and is connected to the end section of the protruding section 58d on the other side in the hinge shaft direction. In the present embodiment, the width dimension in the hinge circumferential direction of the shaft protruding section 58e gets smaller as it moves outward in the hinge radial direction. The shaft protruding section 58e is engaged by the shaft protruding section engagement section 52d of the first cap shaft bearing section 52.

[0188] When the protruding section 58d and the groove section 52c, on the one hand, and the shaft protruding section 58e and the shaft protruding section engagement section 52d, on the other hand, engage each other, the shaft cover 58 becomes unable to turn in the hinge circumferential direction relative to the first cap shaft bearing section 52. In other words, the shaft cover 58 is attached to the main cap body 30 in a manner such that rotation in the hinge circumferential direction is restricted.

[0189] As shown in FIG. 15 to FIG. 18, the opposing surface member 59 is a substantially cylindrical member around the hinge central axis A. Specifically, the opposing surface member 59 is substantially cylindrical with a closed end and having an opening in an end section on the other side in the hinge shaft direction. The opposing surface member 59 is disposed neighbouring the shaft cover 58 on the one side in the hinge shaft direction. The opposing surface member 59 is disposed in the interiors of the containment hole section 52b of the first cap shaft bearing section 52 and the attachment recess 54b of the first lid shaft bearing section 54. The bottom wall section of the opposing surface member 59 is in contact with the bottom surface of the attachment recess 54b. The opposing surface member 59 and the large-diameter cylindrical section 58c of the shaft cover 58 are disposed next to each other and in a manner such that openings of each face each other in the hinge shaft direction.

[0190] A material different than the first lid shaft bearing section 54 may be used for the opposing surface member 59, e.g. polyacetal (POM) or acrylonitrile butadiene styrene (ABS), etc., a material which has better wear-resistance than the first lid shaft bearing section 54 being preferable.

[0191] With the cap unit 3B according to the present embodiment, durability of the first hinge 32 can be improved by configuring the opposing surface member 59 which has outstanding wear resistance as a separate body from the first lid shaft bearing section 54. Note that the first lid shaft bearing section 54 is not limited to a configuration as a separate body from the opposing surface member 59 and may also be configured as a single unit with the opposing surface member 59, for example, or with an anti-wear coating applied to the surface thereof.

[0192] The opposing surface member 59 has a flange section 59b, a lid pressing section 59c, and a shaft hole 59a. The flange section 59b is a flange which is disposed on the end section of the opposing surface member 59 on the one side in the hinge shaft direction and protrudes outward in the hinge radial direction from the outer circumferential surface of the opposing surface member 59. The surface of the flange section 59b facing the one side in the hinge shaft direction is in contact with the bottom surface of the attachment recess 54b. The surface of the flange section 59b facing the other side in the hinge shaft direction is in sliding contact with the end face of the first cap shaft bearing section 52 facing the one side in the hinge shaft direction.

[0193] The lid pressing section 59c is disposed on the end section of the opposing surface member 59 on the one side in the hinge shaft direction. The lid pressing section 59c is formed as a flat surface such that part of the flange section 59b in the hinge circumferential direction is cut out. The lid pressing section 59c presses against the rotation abutting section 54c of the first lid shaft bearing section 54 from below.

[0194] The shaft hole 59a passes through the bottom wall section of the opposing surface member 59 in the hinge shaft direction. The shaft hole 59a is a circular hole around the hinge central axis A.

[0195] The torsion spring 42 is disposed along the interiors of the large-diameter cylindrical section 58c of the shaft cover 58 and the opposing surface member 59. The torsion spring 42 is a metal coil spring around the hinge central axis A. As shown in FIG. 18, the torsion spring 42 has a wound section 42a which is wound in a coil, one projecting end 42b which extends from an end section of the wound section 42a on the one side in the hinge shaft direction, and another projecting end 42c which extends from the end section of the wound section 42a on the other side in the hinge shaft direction.

[0196] While not shown in the drawings, the torsion spring 42 is disposed inside the first hinge 32 in a manner such that the one projecting end 42b engages the circumferential wall section of the opposing surface member 59, and the other projecting end 42c engages the circumferential wall section of the large-diameter cylindrical section 58c.

[0197] With this configuration, when the user turns the lid body 31 in the direction opposite the opening direction from the open position, i.e., in the closing direction, the lid pressing section 59c abuts the rotation abutting section 54c of the first lid shaft bearing section 54, and therefore the opposing surface member 59 also rotates in the closing direction together with the lid body 31. Elastic deformation is thus caused in a direction such that the angle of opening between the one protruding end 42b and the other protruding end 42c of the torsion spring 42 becomes smaller, making it possible to use the reaction force (restoration deformation force) to bias the lid body 31 in the opening direction relative to the main cap body 30. Because the lid body 31 is biased in the opening direction, the ring member 33 is also biased in the open-

ing direction indirectly via the lid body 31.

[0198] When the lid body 31 is turned in the opening direction and in the closing direction, the lid body 31 and the opposing surface member 59 rotate in the hinge circumferential direction, whereas the main cap body 30 and the shaft cover 58 do not turn in the hinge circumferential direction. Therefore, the first lid shaft bearing section 54 slides relative to the first cap shaft bearing section 52, the opposing surface member 59 slides relative to the first cap shaft bearing section 52 and the shaft cover 58, and the second lid shaft bearing section 55 slides relative to the second cap shaft bearing section 53 and the shaft cover 58.

[0199] As shown in FIG. 15 and FIG. 16, the hinge shaft 57 is a circular rod around the hinge central axis A and extends in the hinge shaft direction. The hinge shaft 57 is made out of metal. The hinge shaft 57 is provided passing through the first lid shaft bearing section 54, the opposing surface member 59, the torsion spring 42, the first cap shaft bearing section 52, the shaft cover 58, the ring shaft bearing section 56, the biasing section 60, the sealing section 61, the second cap shaft bearing section 53, and the second lid shaft bearing section 55 in the hinge shaft direction. Furthermore, the hinge shaft 57 supports the cap shaft bearing sections 52, 53 and the ring shaft bearing section 56 by means of the shaft cover 58 in a manner allowing relative rotation around the hinge central axis A.

[0200] Furthermore, as shown in FIG. 16, FIG. 21, and FIG. 22, in the present embodiment, as a clicking mechanism of the first hinge 32 one of either the cap end face 52e or the ring end face 56c has a step section 63 and the other of either the cap end face 52e or the ring end face 56c has a protrusion section 62 which can overcome the step section 63 around the hinge central axis A against the biasing force of the biasing section 60.

[0201] Specifically, in the present embodiment, the cap end face 52e has the protruding step section 63 which protrudes to the other side in the hinge shaft direction from the cap end face 52e. Furthermore, the ring end face 56c has the protruding protrusion section 62 which protrudes to the one side in the hinge shaft direction from the concave surface 56d.

[0202] During the process of moving the ring member 33 to the opened state from the contained state of the ring member 33, the protrusion section 62 can overcome the step section 63 in the hinge circumferential direction against the biasing force of the biasing section 60. Specifically, when the protrusion section 62 comes into contact with the step section 63 during this process, force causing the ring shaft bearing section 56 (the ring member 33) to be displaced to the other side in the hinge shaft direction is created, thereby causing the biasing section 60 to undergo elastic deformation. When the biasing section 60 undergoes elastic deformation, the ring shaft bearing section 56 is displaced to the other side in the hinge shaft direction, and the protrusion section 62 overcomes the step section 63 in the hinge circumferential direction.

[0203] Conversely to the above, during the process of returning the ring member 33 from the opened state to the contained state, the ring member 33 is rotated forward and, immediately before entering the contained state, the protrusion section 62 overcomes the step section 63, providing the user with the clicking sensation and making it possible to feel that the operation has been completed.

[0204] Note that when rotating the ring member 33, which is in the contained state, backward (in the opening direction), operational resistance is created when the protrusion section 62 overcomes the step section 63 to the opposite side in the hinge circumferential direction, making it possible to prevent unintentional rotation backwards. Furthermore, when the user rotates to the back, the user can obtain a clicking sensation due to the operational resistance of this overcoming, making it possible to create the sensation that the rotation operation has started.

[0205] In the present embodiment, a configuration is used in which the protrusion section 62 overcomes the step section 63 immediately prior to the ring member 33 entering the contained state, but this is not a limitation, and it is also possible to freely set the overcoming position by appropriately adjusting the positions of the protrusion section 62 and the step section 63. For example, it is also possible to use a configuration in which the protrusion section 62 overcomes the step section 63 immediately prior to the ring member 33 rotating as far as the limit to the back as the opening state.

[0206] Specifically, in the present embodiment the first hinge 32 has a clicking mechanism including the step section 63 and the protrusion section 62. The clicking mechanism provides a clicking sensation when the ring member 33 is rotated in the opening direction or the closing direction around the hinge central axis A.

[0207] With the cap unit 3B and the drink container 1B according to the present embodiment as described above, the same effects can be obtained as in the previous embodiment. Specifically, even with the configuration as in the present embodiment in which the lid body 31 which opens and closes the liquid passage hole 37 of the hole forming member 36, and the lid lock mechanism 43 which immobilizes the lid body 31 in the blocking position are provided, the screwed-together state of the cap unit 3B and the main container body 2B can be favourably maintained, as in the first embodiment.

[0208] Specifically, in the first hinge 32 according to the present embodiment, the direction in which the ring shaft bearing section 56 (the ring member 33) is biased by the biasing section 60 is the one side in the hinge shaft direction, i.e., the ring member 33 is biased generally in the tightening direction T1 of the circumferential direction. Furthermore, when the ring member 33 is pressed against the biasing force of the biasing section 60, the ring shaft bearing section 56 slides to the other side in the hinge shaft direction. The direction of this sliding motion is generally the loosening direction T2 in the circum-

ferential direction. In other words, the rotational force in the loosening direction T2 of the circumferential direction applied to the ring member 33 can be absorbed by the elastic deformation of the biasing section 60, making it possible to prevent this rotational force from being transmitted to the main cap body 30.

[0209] In greater detail, conventionally, when the user carries the drink container with a finger passed through the ring member, there existed the risk of the cap unit rotating in the loosening direction of the circumferential direction due to the weight of the main container body depending on the manner of carrying, for example. Furthermore, similarly, if the drink container were placed upside down (with the cap unit facing vertically downward) and fell, there existed the risk of the cap unit turning in the rotating direction of the circumferential direction depending on how it hit the floor. In these cases, if the cap unit turns in the loosening direction of the circumferential direction, the seal between the hole forming member and the protruding member created by the watertight packing is lost, and the drink (contents) contained in the main container body leak out of the container.

[0210] On the other hand, in the present embodiment, because the rotational force of the ring member 33 in the loosening direction T2 of the circumferential direction is absorbed by the elastic deformation of the biasing section 60, the main cap body 30 does not rotate. Therefore, the screwed-together state of the cap unit 3B and the main container body 2B does not become loose, and the drink contained in the main container body 2B does not leak out. Note that when putting a drink into the main container body 2B or when disassembling and washing the main container body 2B and the cap unit 3B, etc., the user can remove the cap unit 3B irrespective of the biasing by the biasing section 60 by grasping the entire cap unit 3B or the circumferential wall section 30a of the main cap body 30 and turning the cap unit 3B in the loosening direction T2 of the circumferential direction. Moreover, it goes without saying that the cap unit 3B can be turned in the tightening direction T1 of the circumferential direction without any problem as well, by grasping the entire cap unit 3B or the circumferential wall section 30a of the main cap body 30.

[0211] Note that in the present embodiment a configuration is used in which the main cap body 30 is provided with the two cap shaft bearing sections 52, 53, the lid body 31 is provided with the two lid shaft bearing sections 54, 55, and the ring member 33 is provided with the one ring shaft bearing section 56, but the same effect can be obtained by switching the numbers and arrangements thereof. Specifically, it is also possible to provide one cap shaft bearing section to the main cap body 30 and two ring shaft bearing sections to the ring member 33 so as to sandwich the one cap shaft bearing section from either side in the hinge shaft direction, for example. Alternately, it is also possible to provide one cap shaft bearing section to the main cap body 30, two lid shaft bearing sections to the lid body 31 so as to sandwich the one cap shaft bearing section from either side in the hinge shaft direction, and two ring shaft bearing sections to the ring member 33 so as to sandwich the above from either outer side. Alternately, it is also possible to provide one lid shaft bearing section to the lid body 31, two ring shaft bearing sections to the ring number 33 so as to sandwich the one lid shaft bearing section from either side in the hinge shaft direction, and two cap shaft bearing sections to the main cap body 30 so as to sandwich the above from either outer side. Alternately, it is also possible to provide one ring shaft bearing section to the ring member 33, two lid shaft bearing sections to the lid body 31 so as to sandwich the one ring shaft bearing section from either side in the hinge shaft direction, and two cap shaft bearing sections to the main cap body 30 so as to sandwich the above from either outer side. In other words, it is important that the ring shaft bearing section be biased in the tightening direction T1, which is the one side in the hinge shaft direction relative to the cap shaft bearing section and the lid shaft bearing section.

[0212] Furthermore, in the present embodiment, because the first hinge 32 has a clicking mechanism, if the ring member 33 is turned in the opening direction when the ring member 33 is in the contained state, a clicking sensation can be obtained when the protrusion section 62 overcomes the step section 63, making it possible for the user to be aware that the rotation operation has started in a tactile manner. Furthermore, when turning the ring member 33, which is in a contained state, in the opening direction, resistance due to the biasing force is created when the protrusion section 62 overcomes the step section 63, minimizing unintentional rotation of the ring member 33 in the opening direction.

[0213] Furthermore, with the present embodiment, the bottom surface 33a of the ring member 33 has a shape such that the bottom surface 33a imitates the shape of the opposing lid top wall section 31b of the lid body 31. Specifically, in the present embodiment, the outer circumferential section of the lid top wall section 31b which opposes the bottom surface 33a of the ring member 33 is the tapered surface 31e, and the bottom surface 33a of the ring member 33 is an inverse tapered surface imitating the tapered surface 31e.

[0214] In this case, the bottom surface 33a of the ring member 33 can be disposed so as to be in close contact with the outer circumferential section of the lid top wall section 31b of the lid body 31. In other words, the fit on the lid body 31 is good when the ring member 33 is put into the contained state. Therefore, the contained attitude of the ring member 33 is easy to make stable. Furthermore, by closely pressing the ring member 33 against the outer circumferential section of the lid top wall section 31b, dimensional bulkiness in the vertical direction of the cap unit 3B overall can be minimized, making it possible to achieve a more compact shape. Furthermore in this case putting the ring member 33 into the contained state endows the cap unit 3B with a beautiful appearance.

[0215] Note that the present invention is not limited to

the aforementioned embodiments and may be modified without departing from the gist of the invention as described below, for example.

[0216] In the first and second embodiments, the one side in the hinge shaft direction is equivalent to the tightening direction T1 in the circumferential direction, and the other side in the hinge shaft direction is equivalent to the loosening direction T2 of the circumferential direction, but this is not a limitation. It is also possible for the one side in the hinge shaft direction to be equivalent to the loosening direction T2 in the circumferential direction, and for the other side in the hinge shaft direction to be equivalent to the tightening direction T1 in the circumferential direction. In this case, in the circumferential direction around which the cap unit 3A, 3B and the main container body 2A, 2B, when force in the tightening direction T1 (the other side in the hinge shaft direction) is applied to the ring member 11, 33, this force is absorbed by the elastic deformation of the biasing section 19, 60, making it possible to minimize over-tightening of the screwed-together state. Therefore, when the cap unit 3A, 3B is next removed from the main container body 2A, 2B, problems such as the screwed-together state being too tight and affecting ease-of-use (inability to remove), etc., can be minimized.

[0217] Furthermore, it is also possible for the biasing section 19, 60 to bias the ring member 11, 33 with respect to the main cap body 9, 30 to the one side in the hinge shaft direction or to the other side in the hinge shaft direction.

[0218] Furthermore, the biasing section 19, 60 need only be a member which is capable of elastic deformation, making it possible to use an elastic member such as silicone rubber or an elastomer, etc., for example.

[0219] In the first embodiment, if no consideration is to be given to the effect of the biasing section 19 on the appearance, a configuration may be used in which the first ring shaft bearing section 16 and the sealing section 20 are a single unit and not separate bodies. Furthermore, it is also possible to apply an anti-wear coating to the surface of the first ring shaft bearing section 16 (at least to the end face facing to the other side in the hinge shaft direction) and have the first ring shaft bearing section 16 and the biasing section 19 abut each other directly.

[0220] Furthermore, in the present embodiment, an example was given in which the containment recess 15b is provided recessed in either the cap shaft bearing section 15 or the first ring shaft bearing section (ring shaft bearing section) 16 (the cap shaft bearing section 15) and the shaft bearing sliding surface 16b is disposed on the other (the first ring shaft bearing section 16), but a configuration may also be used in which these are reversed. Specifically, it is also possible for the one to be the first ring shaft bearing section 16 and the other to be the cap shaft bearing section 15.

[0221] Furthermore, in the first embodiment an example was given in which either the shaft bearing sliding surface 16b or the sealing sliding surface 20c (the shaft bearing sliding surface 16b) has the recessed step section 16c, and the other of the shaft bearing sliding surface 16b or the sealing sliding surface 20c (the sealing sliding surface 20c) has the protruding section 20e, but a configuration may also be used in which these are reversed. Specifically, it is also possible for the one to be the sealing sliding surface 20c and for the other to be the shaft bearing sliding surface 16b.

[0222] Furthermore, in the second embodiment an example was given in which the lock member 45 of the lid lock mechanism 43 is configured so as to be able to rotate around the second hinge 44, but this is not a limitation. Although not shown in the drawings, the lock member may also be configured so as to slide forward and back.

[0223] Furthermore, in the second embodiment, although not shown in the drawings, it is also possible, when using a configuration in which the lid shaft bearing section and the ring shaft bearing section of the first hinge (hinge) 32 are disposed next to each other in the hinge shaft direction, for the first hinge 32 to have a containment recess which contains the biasing section and extends in the hinge shaft direction, being provided as a recess in the lid shaft bearing section or the ring shaft bearing section, and the sealing section which seals the biasing section inside the containment recess. In this case, the biasing section can be sealed in the containment recess by the sealing section, and therefore the biasing section is minimized from being exposed to the outside, making it possible to achieve a beautiful external design of the cap unit 3B and the drink container 1B. Moreover, because the biasing section is sealed in, it is possible to minimize a drop in functionality of the biasing section or instability due to grime, for example.

[0224] In the first and second embodiments above, an example was given in which the present invention was applied to the drink container 1A, 1B provided with functionality for keeping a liquid warm or cool using the main container body 2A, 2B having a vacuum insulated structure, but this is not a limitation. Specifically, the present invention can be widely applied to cap-equipped containers in which the cap unit is removably attached to the mouth-neck section of the main container body.

[0225] In the present invention, the configurations described in the foregoing embodiments and variations, etc., may be combined and configurations may be added, omitted, substituted, or otherwise modified without departing from the gist of the invention. Moreover, the present invention is not limited to the foregoing embodiments, etc., and is delimited solely by the claims.

[Reference Numerals]

[0226]

1A, 1B	drink container;
2c	mouth-neck section;
2d	top opening section;

2A, 2B	main container body;
3A, 3B	cap unit;
9, 30	main cap body;
9b, 30c	top wall section;
11,33	ring member;
11a,33a	bottom surface;
12	hinge;
15, 52, 53	cap shaft bearing section;
15b, 56b	containment recess;
16, 17, 56	ring shaft bearing section;
16b	shaft bearing sliding surface;
16c, 63	step section (clicking mechanism);
18, 57	hinge shaft;
19, 60	biasing section;
20, 61	seal section;
20c	seal sliding surface;
20e, 62	protrusion section (clicking mechanism);
31	lid body;
31b	lid top wall section;
32	first hinge (hinge);
36	hole forming member;
37	liquid passage hole;
43	lid lock mechanism;
52e	cap end face;
54, 55	lid shaft bearing section;
56c	ring end face;
A	hinge central axis;
T1	one side (tightening direction) in the circumferential direction;
T2	other side (loosening direction) in the circumferential direction

Claims

1. A cap unit removably attached by screwing to a mouth-neck section of a main container body having an open top section, comprising

a main cap body which closes a top section opening of the main container body,
an annular ring member disposed on top of the main cap body, and
a hinge which rotatably couples the ring member to the main cap body around the hinge central axis, wherein
the hinge comprises an elastically deformable biasing section, and
the biasing section biases the ring member towards the main cap body to one side in the hinge axis direction along which the hinge central axis extends.

2. The cap unit as claimed in claim 1, comprising

a hole forming member provided to the main cap body and having a liquid passage hole which communicates with the interior of the main container body,
a lid body which is rotatably coupled to the main cap body via the hinge, disposed between the main cap body and the ring member in the vertical direction, covering the liquid passage hole, and biased in the opening direction around the hinge central axis, and
a lid locking mechanism which immobilizes the lid body with respect to the main cap body in a closed position.

3. The cap unit as claimed in claim 1 or 2, wherein the one direction of the hinge axis direction is equivalent to the closing side of the circumferential direction around which the cap unit and the main container body screw together, and the other direction of the hinge axis direction is equivalent to the loosening side in the circumferential direction.

4. The cap unit as claimed in any one of claims 1 to 3, wherein the hinge comprises

a cap shaft bearing section provided to the main cap body,
a ring shaft bearing section which is provided to the ring member and is disposed neighbouring the cap shaft bearing section in the hinge axis direction, and
a hinge shaft which supports the cap shaft bearing section and the ring shaft bearing section in a manner allowing relative rotation around the hinge central axis.

5. The cap unit as claimed in claim 2, wherein the hinge comprises

a cap shaft bearing section provided to the main cap unit,
a lid shaft bearing section provided to the lid body,
a ring shaft bearing section provided to the ring member and disposed alongside the cap shaft bearing section and the lid shaft bearing section in the hinge shaft direction, and
a hinge shaft which supports the cap shaft bearing section, the lid shaft bearing section, and the ring shaft bearing section in a manner allowing relative rotation around the hinge central axis.

6. The cap unit as claimed in claim 4, wherein the hinge comprises

a containing recess which is formed in either the cap shaft bearing section or the ring shaft bearing section, extends in the hinge shaft direction, and contains the biasing member, and
a sealing section which seals the biasing section into the containing recess.

7. The cap unit as claimed in claim 5, wherein the hinge comprises

a containing recess which is formed in either the lid shaft bearing section or the ring shaft bearing section, extends in the hinge shaft direction, and contains the biasing member, and
a sealing section which seals the biasing member into the containing recess.

8. The cap unit as claimed in any one of claims 1 to 7, wherein
the hinge comprises a clicking mechanism which provides a clicking sensation when the ring member turns in the opening direction or the closing direction around the hinge central axis.

9. The cap unit as claimed in claim 1, wherein
a bottom surface of the ring member has a shape such that the bottom surface imitates the shape of an opposing top wall section of the main cap body.

10. The cap unit as claimed in claim 2, wherein
a bottom surface of the ring member has a shape such that the bottom surface imitates the shape of an opposing lid top wall section of the lid body.

11. A drink container, comprising

the cap unit as claimed in any one of claims 1 to 10, and
a main container body to which the cap unit is attached.

FIG. 1

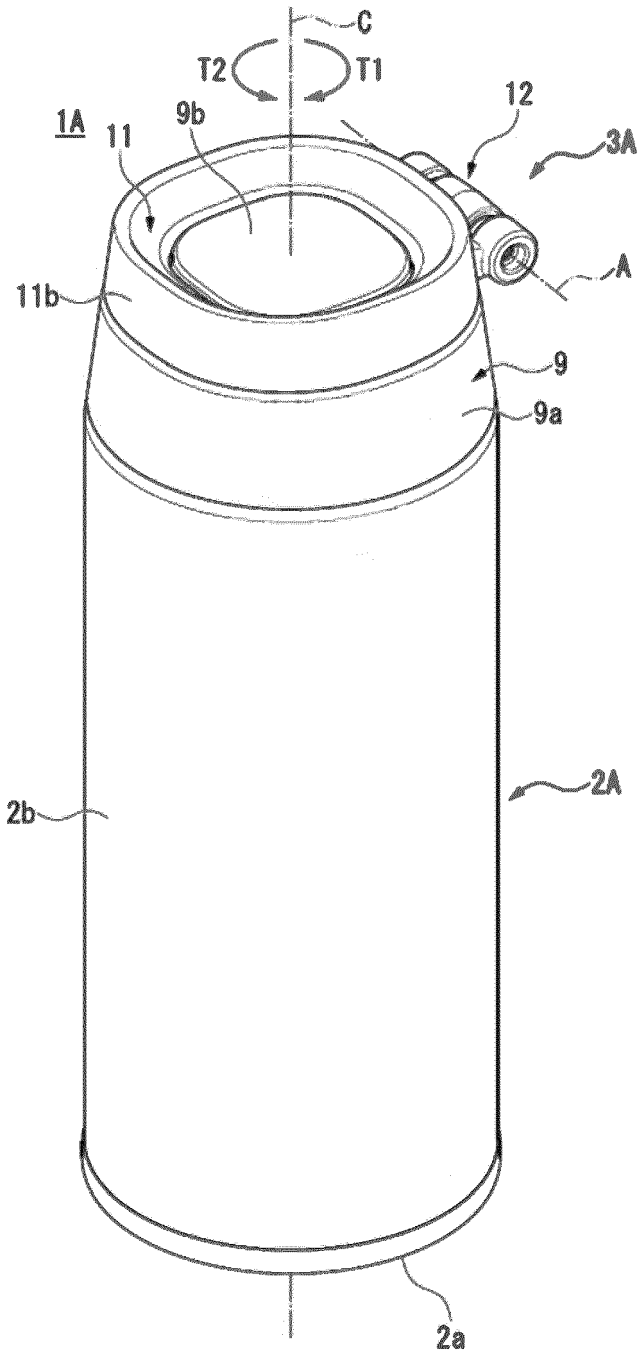


FIG. 2

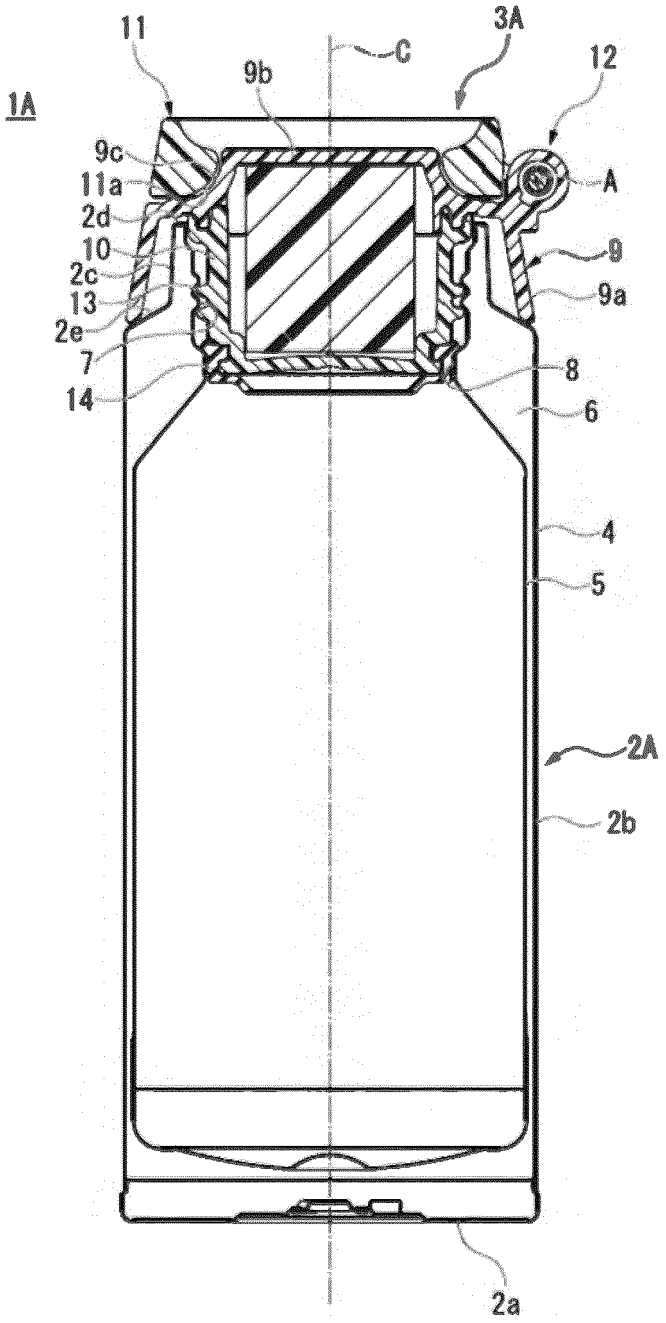


FIG. 3

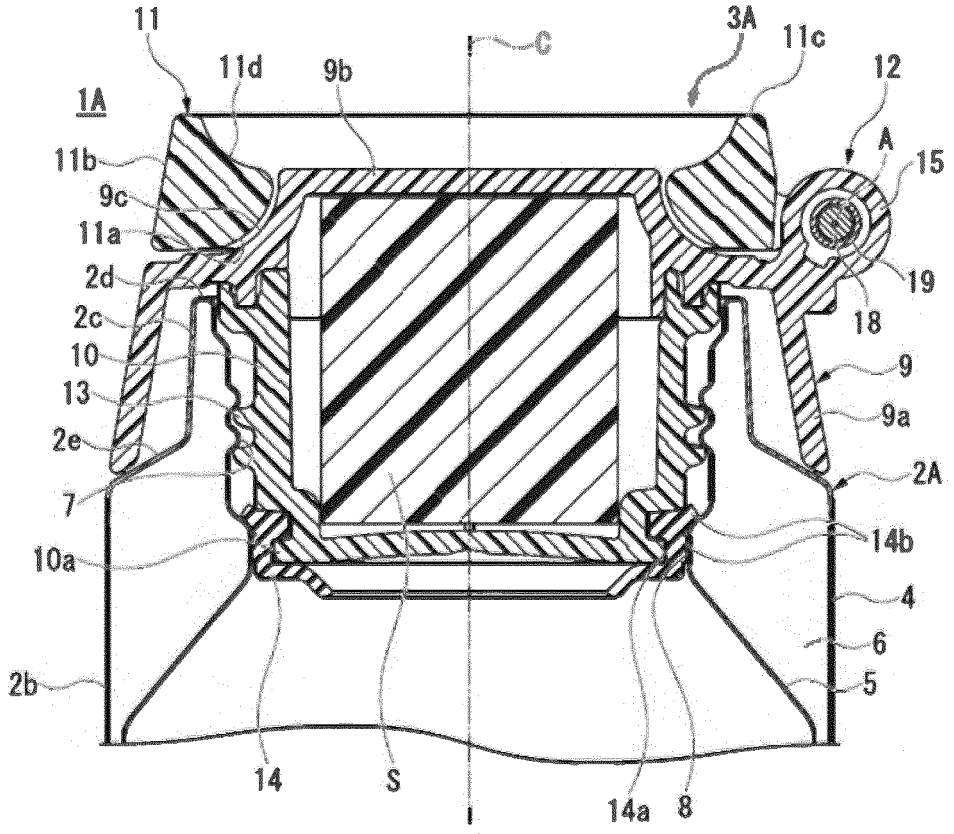

11
11d
9b
C
3A
11c
12
1A
A
15
11b
9c
11a
2d
19
18
2c
10
9
13
9a
2e
2A
7
14b
10a
4
6
2b
5
14
S
14a
8

FIG. 4

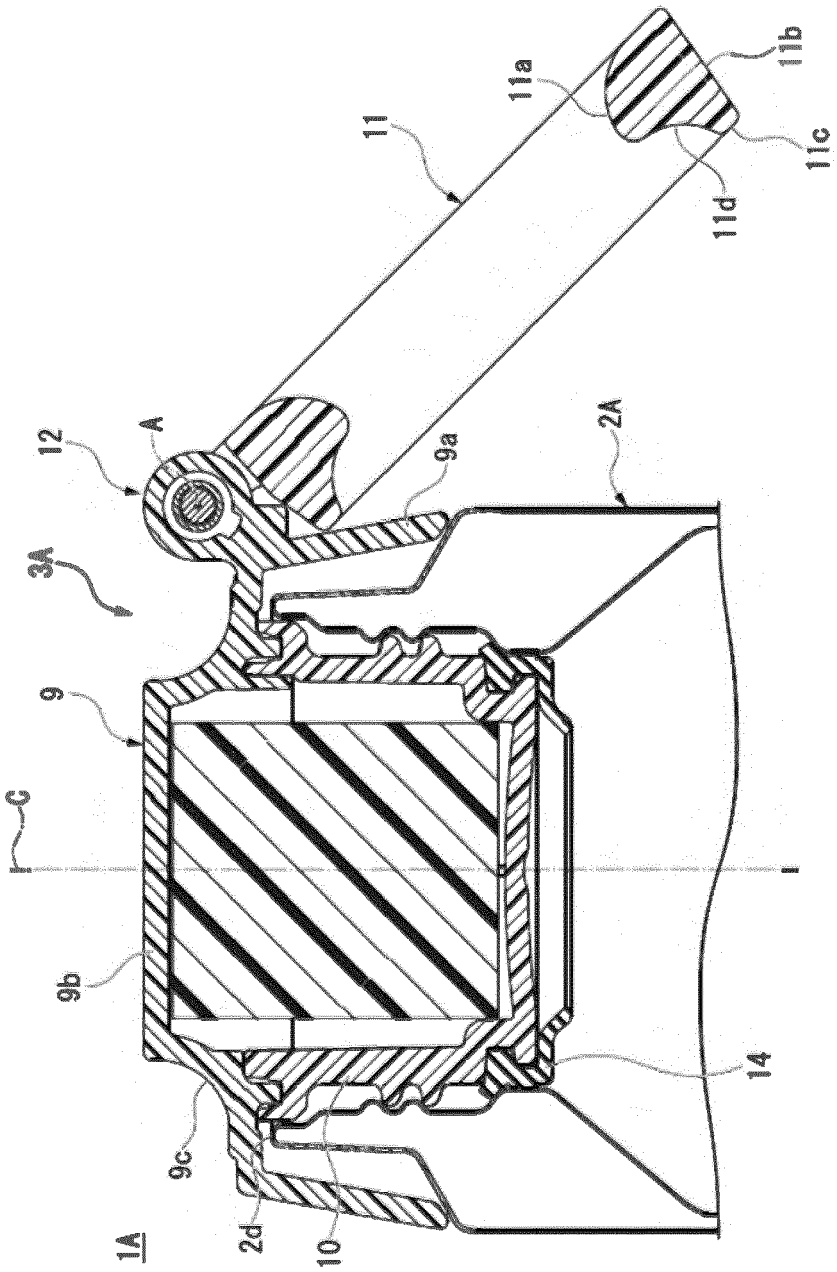


FIG. 5

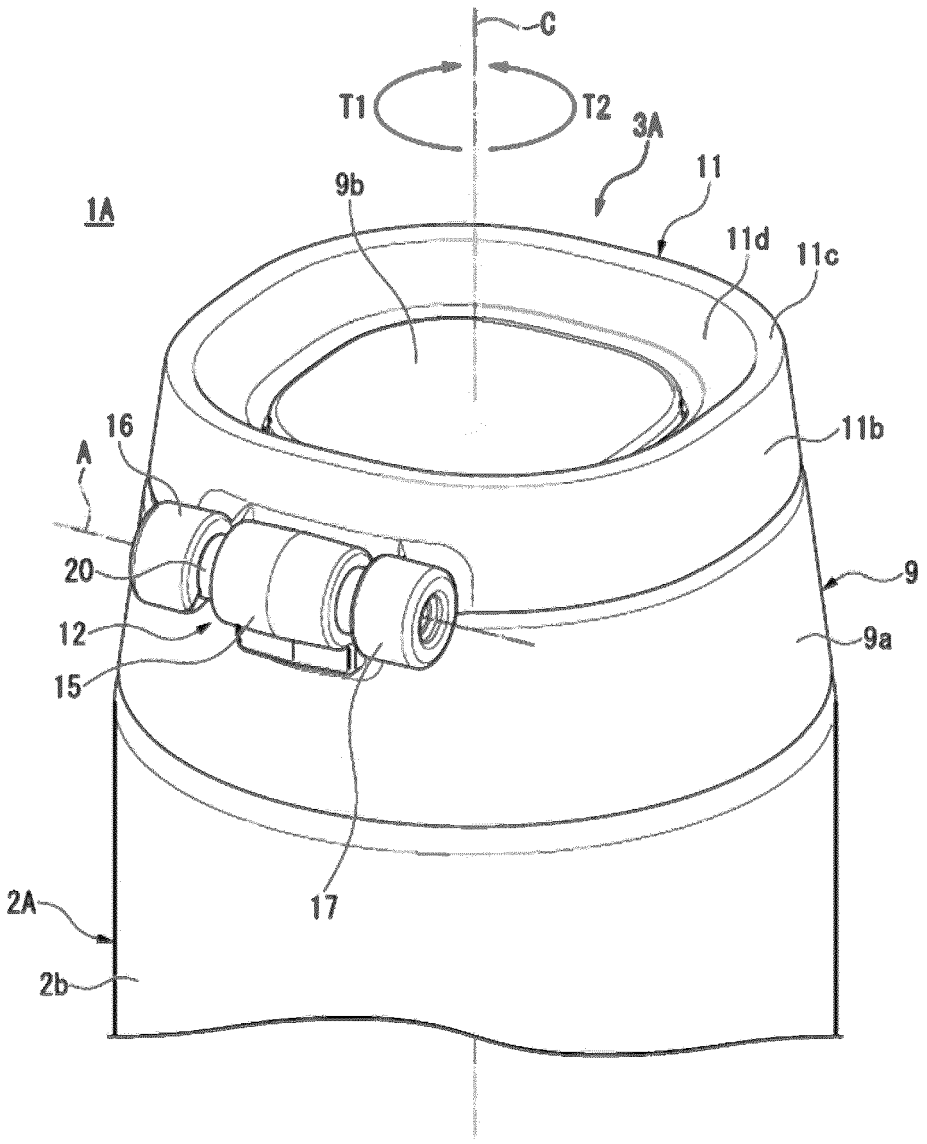


FIG. 6

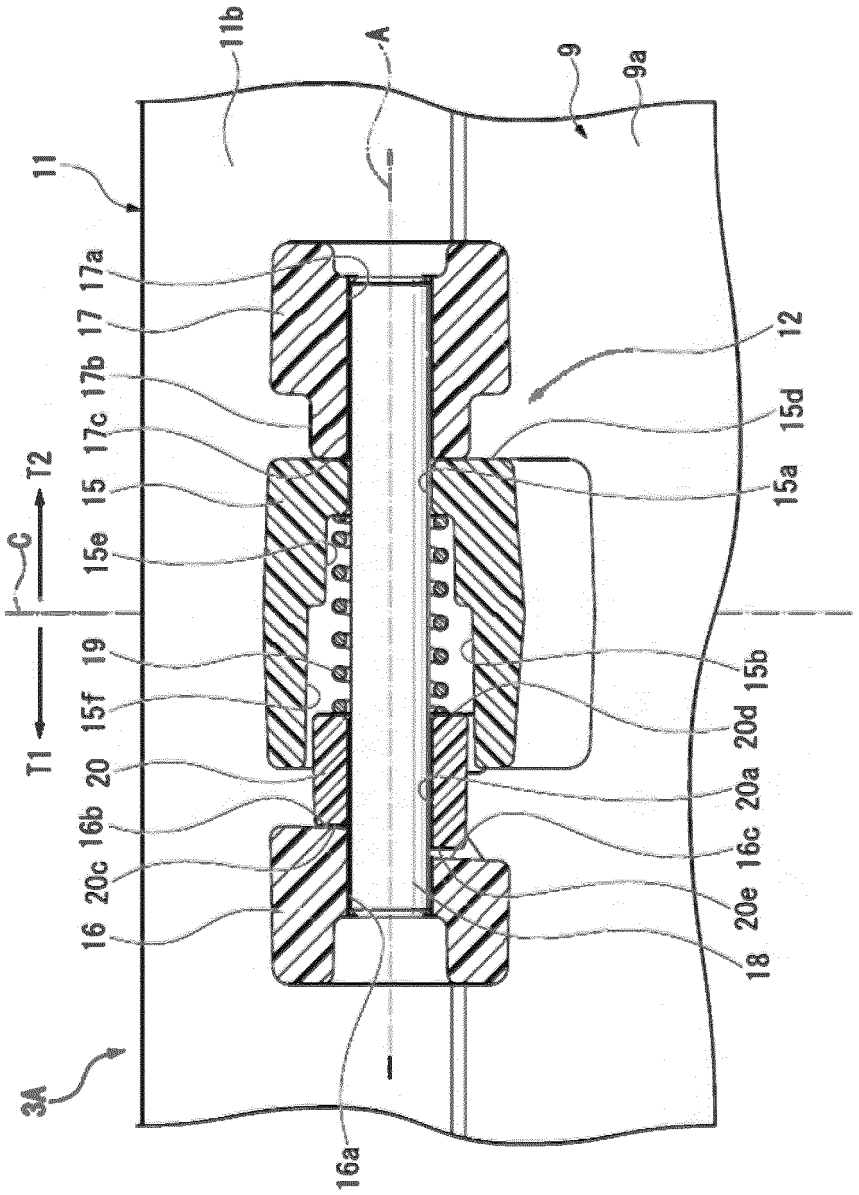

11b
A
9
9a
11
17a
17
17b
17c
15
15e
C
T2
T1
19
15f
20
16b
20c
16
3A
16a
12
15d
15a
15b
20d
20a
16c
20e
18

FIG. 7

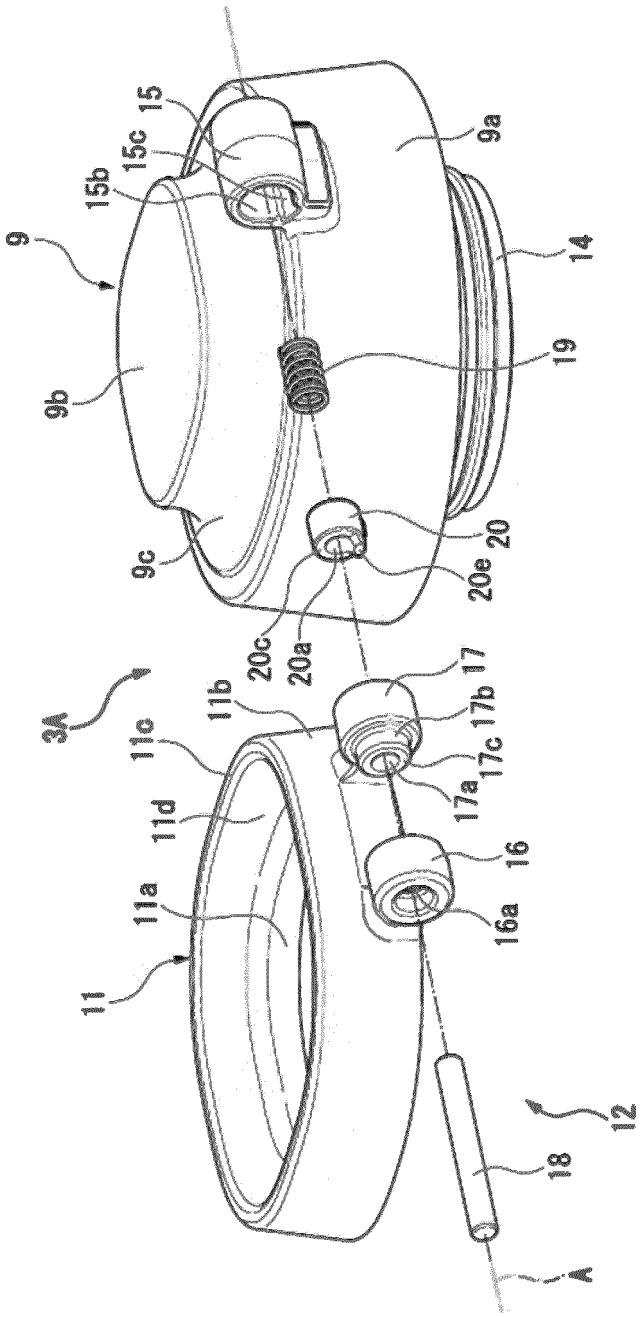

15
15c
15b
9
9a
14
19
9b
20
9c
20e
20c
20a
17
3A
11b
17b
11c
17c
17a
11d
16
11a
16a
11
12
18
A

FIG. 8

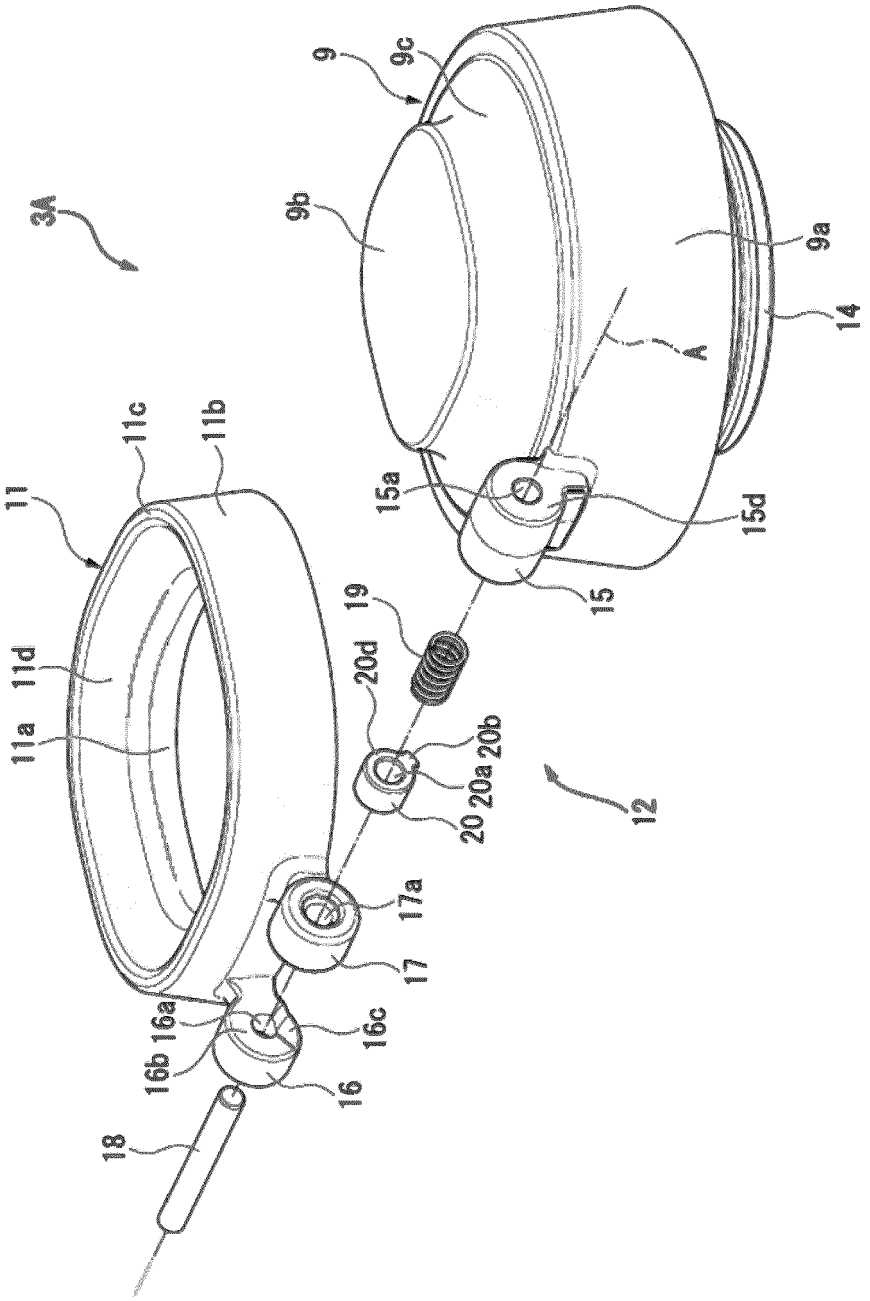

3A
9
9c
9b
9a
14
A
11
11c
11b
11d
11a
15a
15d
15
19
20d
20b
20a
20
12
17a
17
16a
16b
16c
16
18

FIG. 9

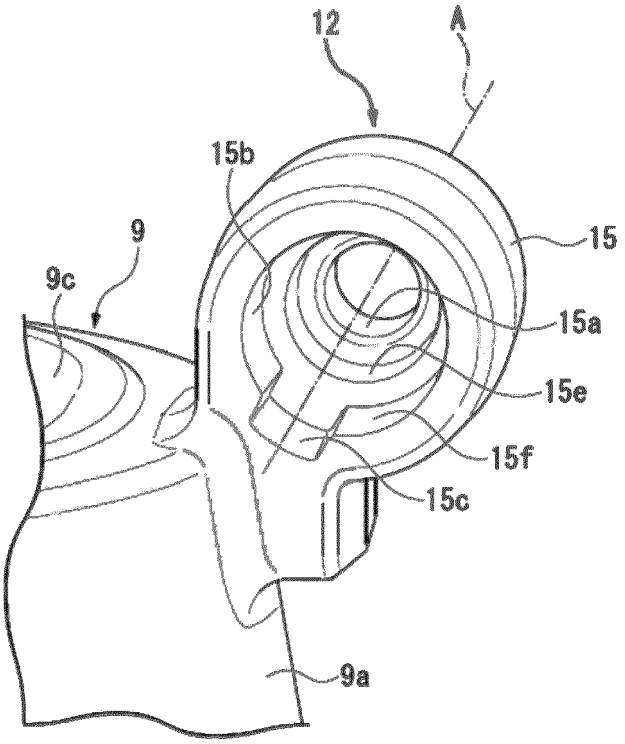


FIG. 10

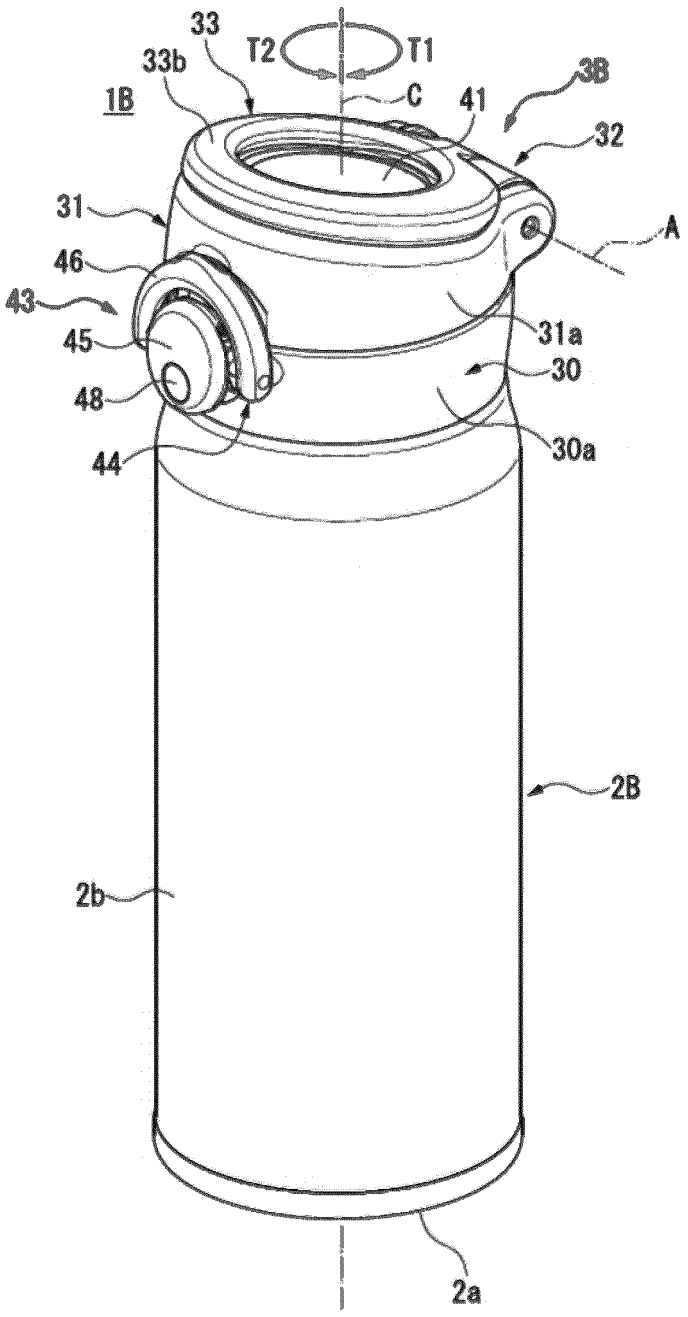


FIG. 11

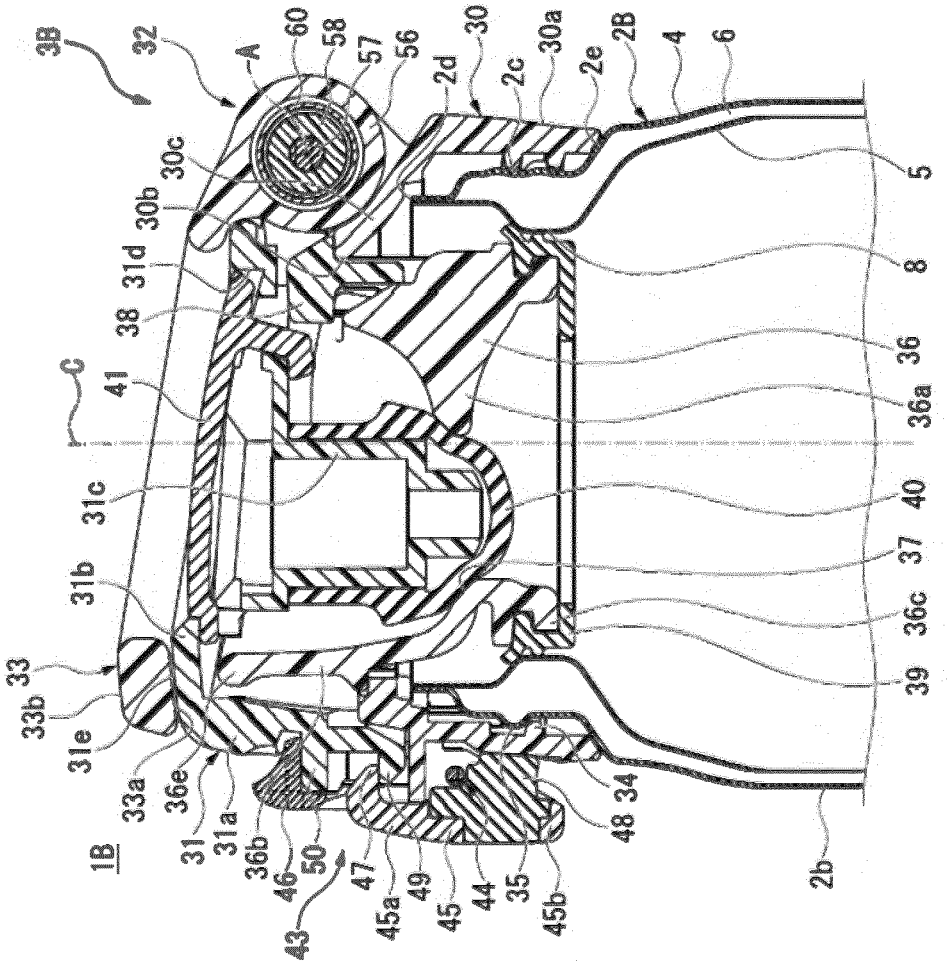

3B
32
A
60
58
57
56
2d
30
2c
30a
2e
2B
4
6
5
30c
30b
31d
38
8
36
36a
C
41
31c
40
37
31b
36c
33
39
33b
31e
33a
36e
31
31a
1B
36b
46
50
47
43
45a
49
45
44
35
45b
48
34
2b

FIG. 12

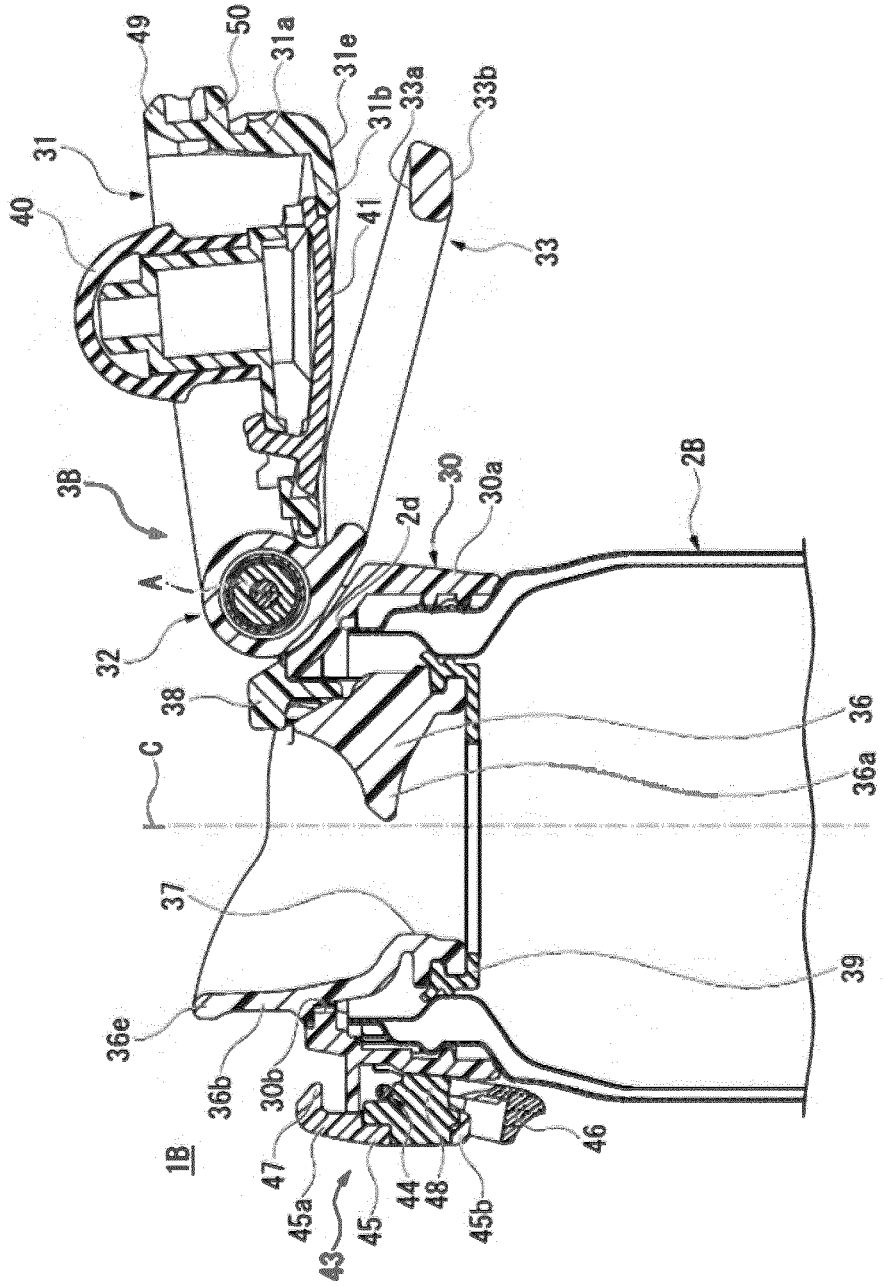

49
50
31a
31e
31b
33a
33b
31
40
41
33
3B
A
32
2d
30
30a
2B
38
36
36a
C
37
39
36e
36b
30b
1B
47
45a
43
45
44
48
45b
46

FIG. 13

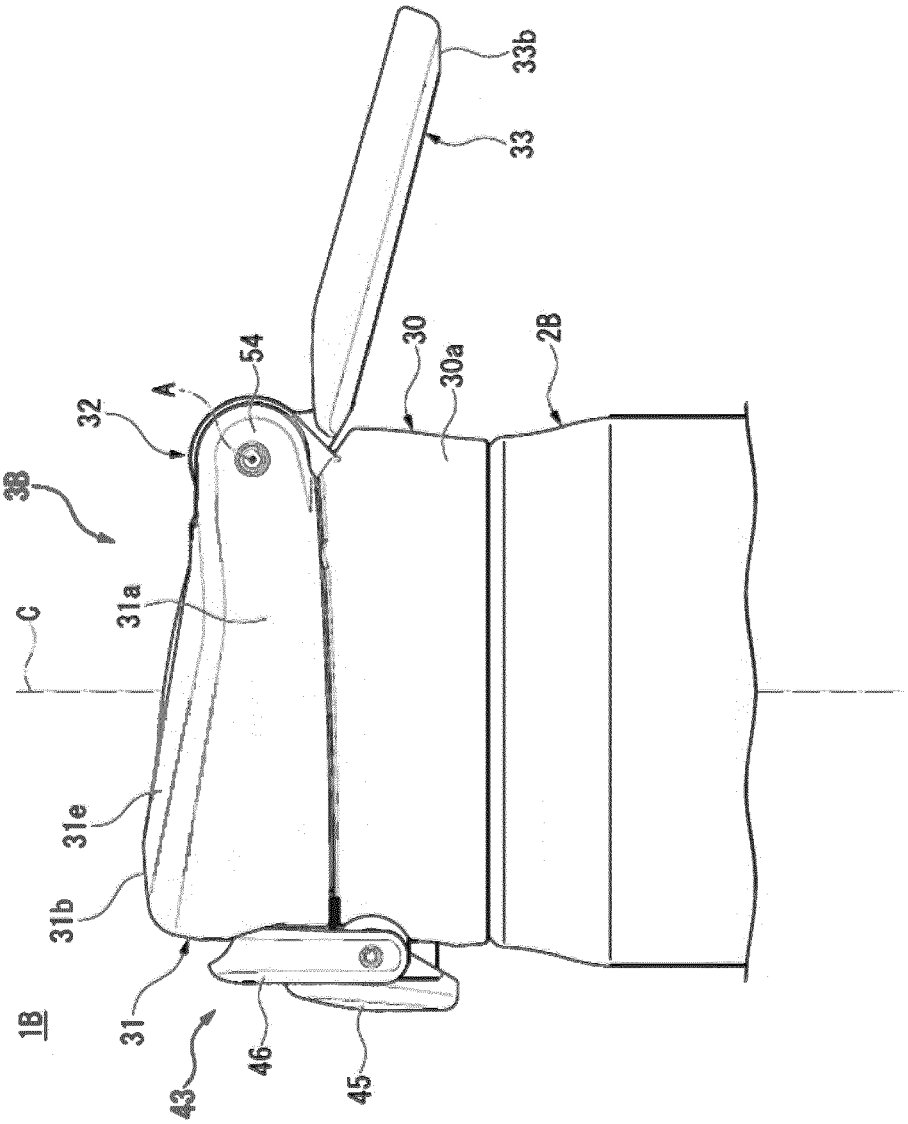


FIG. 14

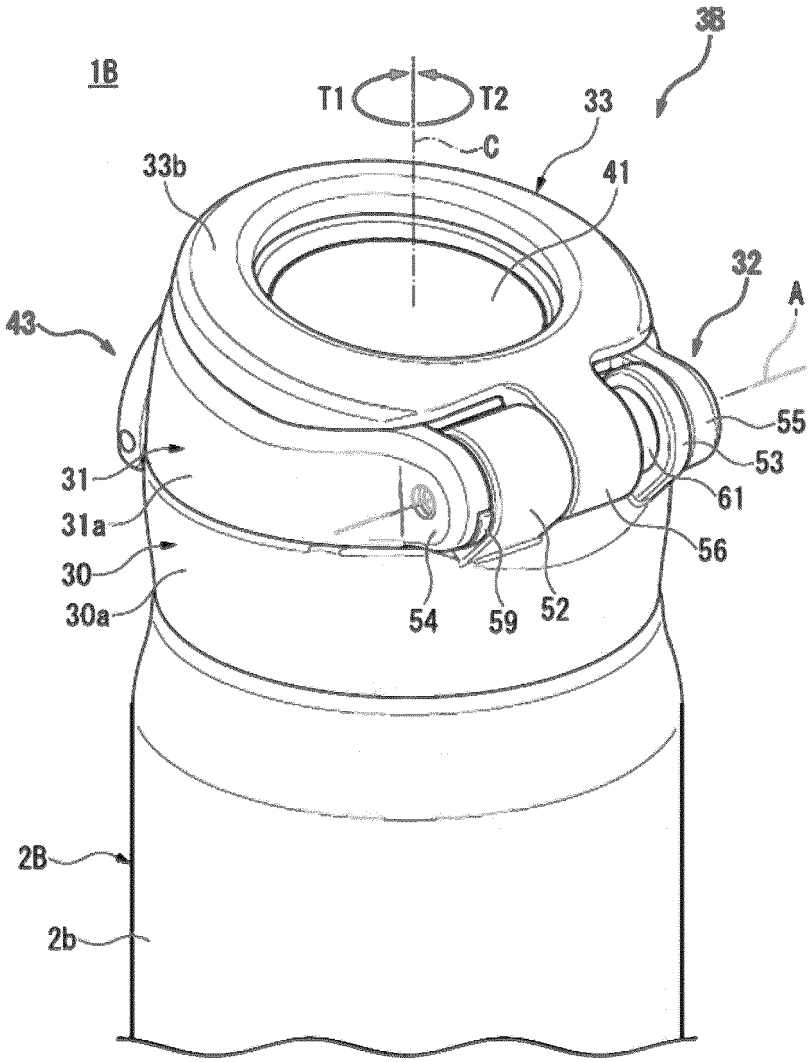


FIG. 15

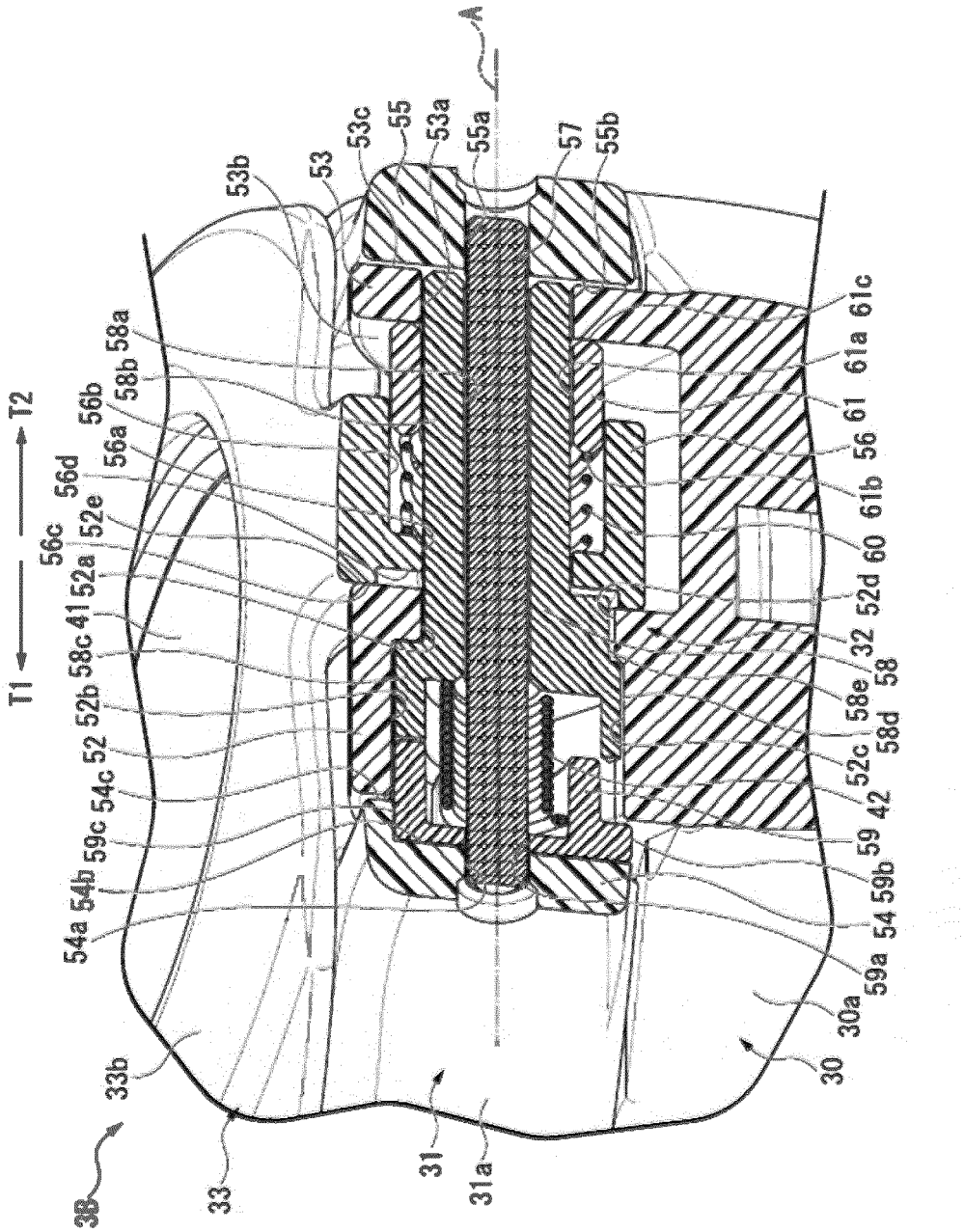

A
53b
53
53c
55
53a
55a
57
55b
58a
58b
56b
56a
56d
52e
56c
52a
41
58c
52b
52
54c
59c
54b
54a
61c
61a
61
56
61b
60
52d
32
58e
58d
52c
42
59
59b
54
59a
30a
30
33b
3B
33
31
31a
T1
T2

FIG. 16

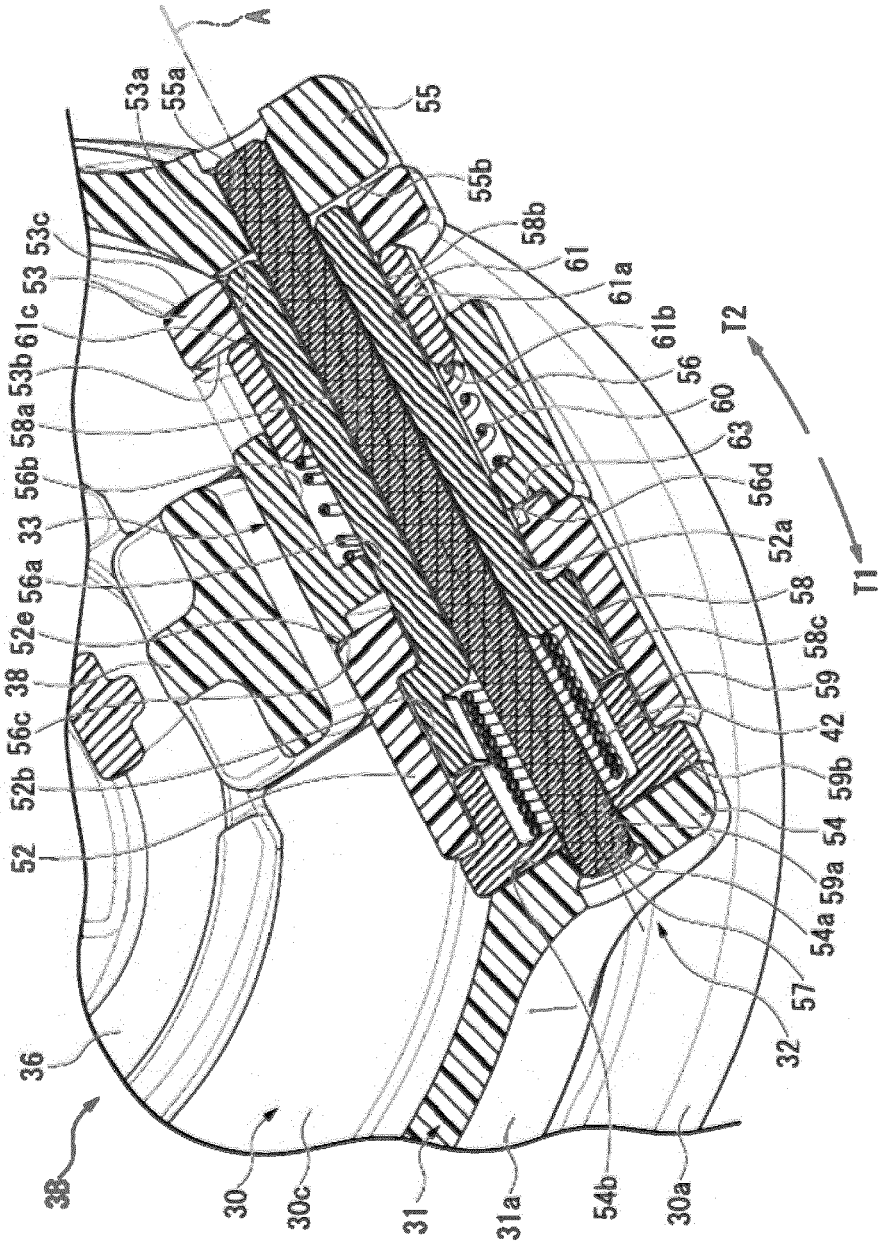

A
53a
55a
55
55b
58b
61
61a
61b
T2
T1
53c
53
61c
53b
58a
56b
33
56a
52e
38
56c
52b
52
36
38
30
30c
31
31a
54b
30a
56
60
63
56d
52a
58
58c
59
42
59b
54
59a
54a
57
32

FIG. 17

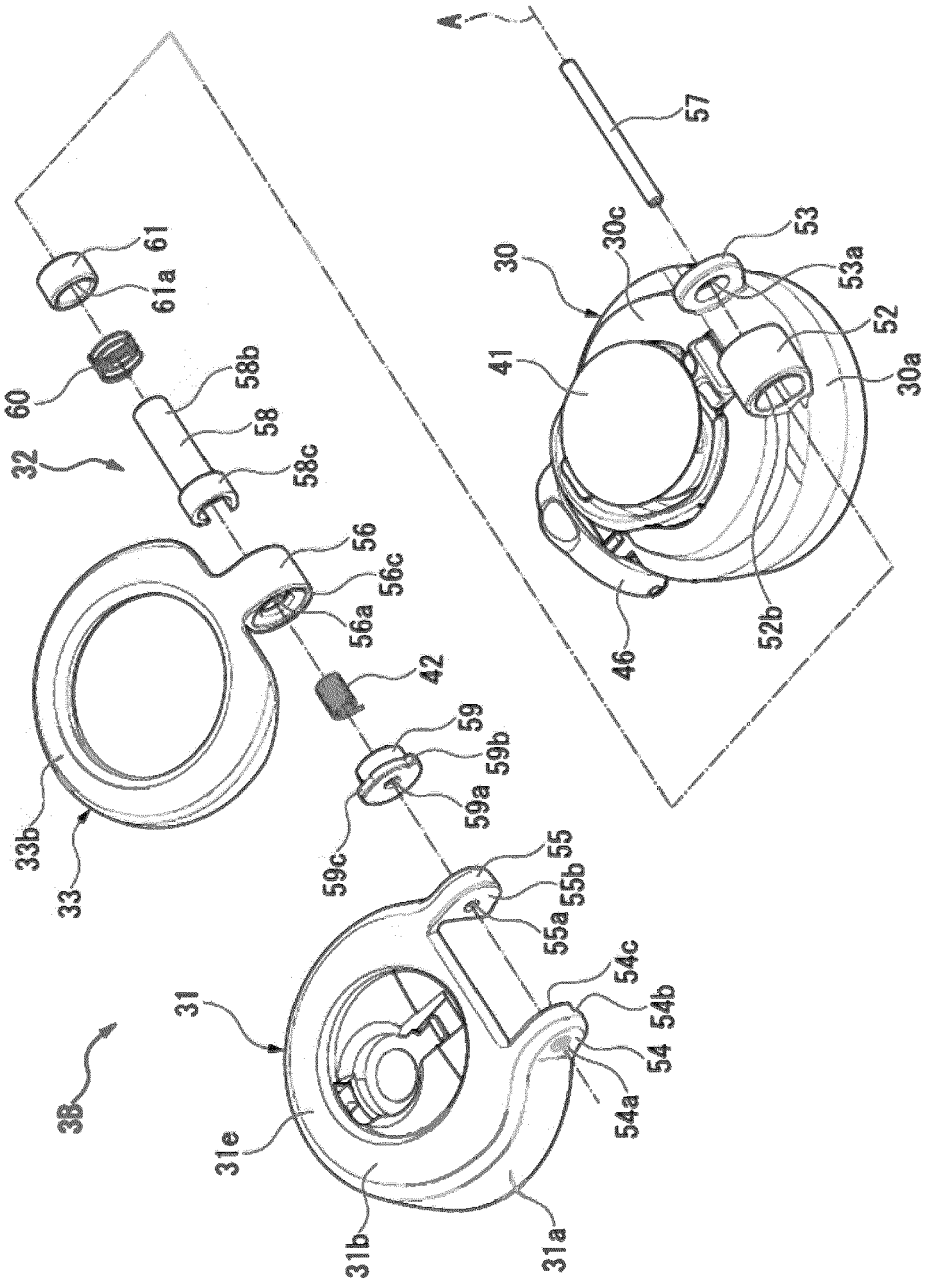

A
57
30c
53
53a
30
52
41
30a
52b
46
61
61a
60
58b
58
32
58c
56
56c
56a
42
59
59b
59a
59c
33b
33
55
55b
55a
54c
54b
54
54a
31
3B
31e
31b
31a

FIG. 18

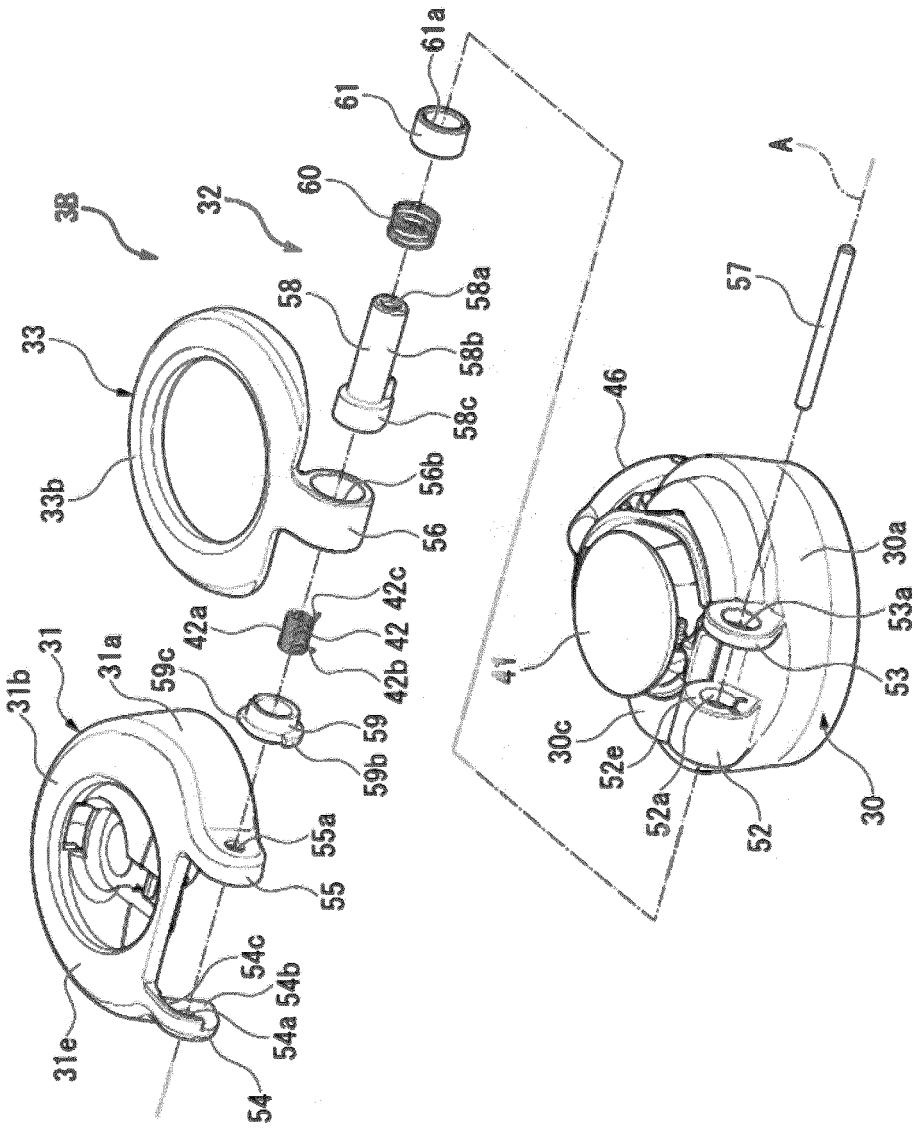

61a
61
60
38
32
58
58a
58b
58c
33
33b
56b
56
42c
42a
42
42b
31
31a
31b
59c
59
59b
55a
55
54c
54b
54a
54
31e
A
57
46
41
30a
53a
53
30c
52e
52a
52
30

FIG. 19

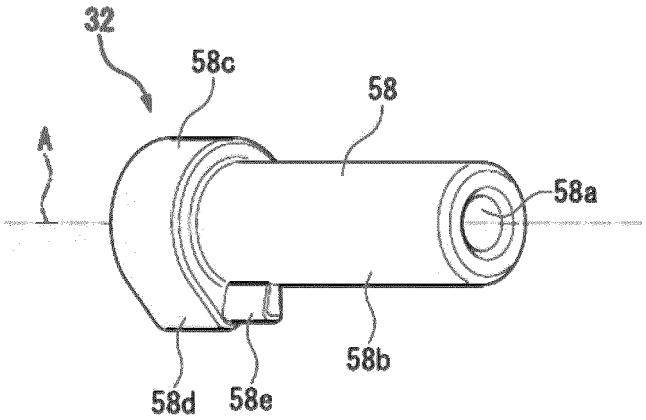

32
58c
58
A
58a
58b
58d
58e

FIG. 20

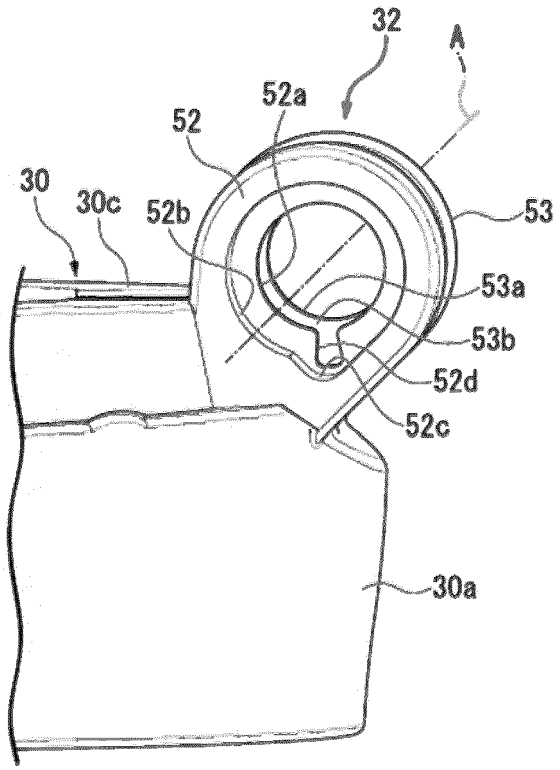

32
A
52a
52
30
30c
52b
53
53a
53b
52d
52c
30a

FIG. 21

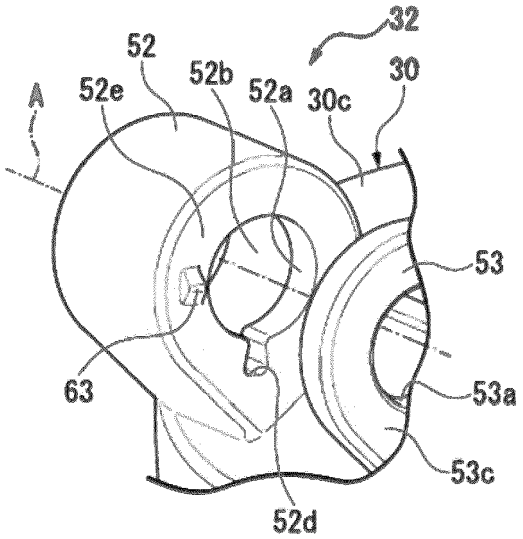
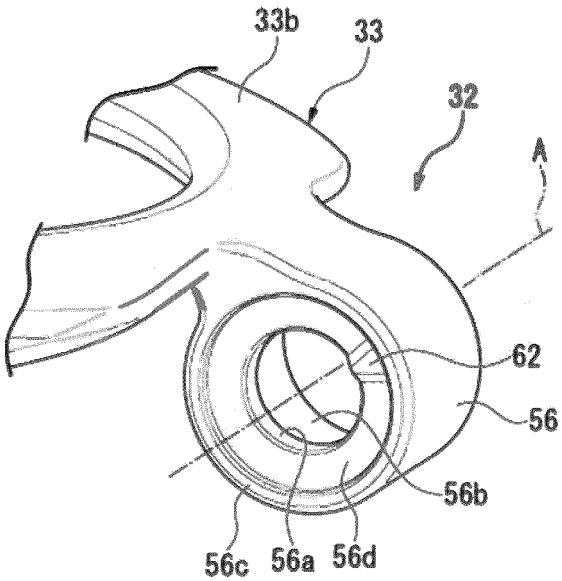

32
52
52b
52a
30
A
52e
30c
53
63
53a
53c
52d

FIG. 22


33b
33
32
A
62
56
56b
56c
56a
56d

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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	22 December 2022	Tempels, Marco

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