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

(11) **EP 4 129 852 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
08.02.2023 Bulletin 2023/06

(21) Application number: **22188592.4**

(22) Date of filing: **03.08.2022**

(51) International Patent Classification (IPC):
B65D 51/18 *(1968.09)* ***B65D 85/72*** *(1968.09)*
B65D 47/06 *(1968.09)* ***A47G 19/22*** *(1968.09)*
B65D 43/00 *(1968.09)*

(52) Cooperative Patent Classification (CPC):
A47G 19/2272; B65D 47/088; B65D 47/32; B65D 53/02; B65D 81/3841; B65D 85/72;
B65D 2251/1058

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

(30) Priority: **03.08.2021 JP 2021127777**

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

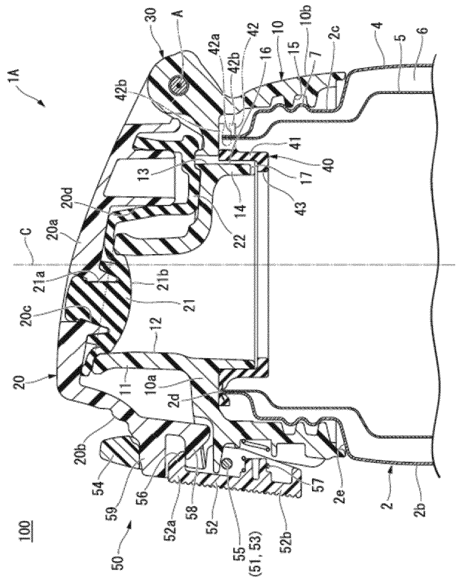
(72) Inventors:
- **YURUKI, Rikuto**
  Niigata-ken (JP)
- **MURATA, Takeshi**
  Niigata-ken (JP)
- **KIKUCHI, Shogo**
  Niigata-ken (JP)

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

(54) CAP UNIT AND DRINK CONTAINER

(57) A cap unit and a drink container which can prevent leaking of a drink through an air passage hole when the drink moves quickly in the upside down direction, being attached to a main container body 2, comprising a main cap body 10 and has a top wall section 10a and a circumferential wall section 10b, a lid body 20 disposed on top of the main cap body 10, a hinge 30 which rotatably couples the lid body 20, and a watertight packing 40 which seals the space between the main container body 2 and the main cap body 10, wherein the main cap body 10 has a liquid passage hole 12 and an air passage hole 13 covered by the lid body 20, and the air passage hole 13 is covered by the watertight packing 40 when seen from below.

FIG. 3



EP 4 129 852 A1

Description

[Technical Field]

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

[0002] A cap unit as described in Patent Literature 1 and 2, for example, is conventionally known. The cap unit is provided with the main cap body which blocks a top opening section of the main container body, a lid body which is rotatably coupled via a hinge to the main cap body, and a watertight packing which seals the space between the main container body and the main cap body. The main cap body has a liquid passage hole and an air passage hole which connect the inside and the outside of the main container body. By providing the ventilation holes, air can be taken into the main container body when pouring the contents (drink) of the main container body out through the liquid passage hole, thereby allowing the drink to flow smoothly out of the container.

[0003] In particular, with respect to a drink container of a type allowing a nozzle in which a liquid passage hole has been formed (a drinking hole) to be held in the mouth as in Patent Literature 1, the interior of the container becomes depressurized when the user drinks the drink, creating a strong need for a liquid passage hole. Note that when the lid body is in a closed state, the air passage hole is blocked by an elastic member (an air seal section). The drink is thus prevented from leaking out through the air passage hole when the container tips over, etc.

[Prior Art Documents]

[0004]

[Patent Literature 1] Patent No. 3937428 A
[Patent Literature 2] JP 2010-235137A

[Summary of the Invention]

[Problem to Be Solved by the Invention]

[0005] However, drink sometimes leaks out through the air passage hole through the sealed section between the air passage hole and the air seal section in cases where the drink container has been dropped upside down and has hit the floor, etc., resulting in the drink moving rapidly in the upside down direction. Furthermore, the drink has also sometimes leaked through the inside (interior) of the air passage hole in cases where the drink container has been tipped back quickly when drinking the drink with the lid open, causing the drink to move quickly in the upside down direction. In order to prevent such leaking, it is conceivable, for example, to make the position of the air passage hole as far as possible on the opposite side (the hinge side, i.e., further back than the drinking hole) in the direction of tilting during drinking, away from the drinking hole (the liquid passage hole), thereby preventing the inside of the air passage hole from becoming filled with the drink (i.e., keeping the inside of the air passage hole an air layer) when the drink container is tilted an appropriate amount, thereby making it possible to prevent the leaking of the drink through the air passage hole. However, the position in which the air passage hole can be provided is limited by the size of the main cap body, and if the drink container is tilted steeply for drinking, the inside of the air passage hole, too, will become filled with the drink, making it impossible to achieve the effect of leak prevention.

[0006] Furthermore, a configuration is also conceivable in which a valve member which blocks the air passage hole in a manner allowing opening and closing is provided, and the valve member is only open when taking in air through the air passage hole. However, in this case, problems occur such as the structure becoming complex, cleaning becoming difficult, and costs increasing.

[0007] The object of the present invention is to provide a cap unit and a drink container which can inhibit the leaking of a drink through an air passage hole using a simple structure even when the drink moves quickly in the upside down direction.

[Means for Solving the Problem]

[0008] One aspect of the present invention is a cap unit attached to a main container body having an open top section, comprising a main cap body which blocks the top opening section of the main container body and has a top wall section and a circumferential wall section, a lid body disposed on top of the main cap body, a hinge which rotatably couples the lid body to the main cap body, and a watertight packing which seals the space between the main container body and the main cap body, wherein the main container body has a liquid passage hole and an air passage hole covered by the lid body, connecting the inside and outside of the main container body by passing vertically through the top wall section, and the air passage hole is covered by the watertight packing when seen from below.

[0009] The aforementioned cap unit is preferably such that the main cap unit has a cylinder section which extends downward from the top wall section and covers the liquid passage hole when seen from below, the cylinder section has a vertical air passage groove which extends downward from the air passage hole and is recessed in the radial direction from a circumferential surface of the cylinder section, and the watertight packing covers the vertical air passage groove when seen from below.

[0010] The aforementioned cap unit is preferably such that the cylinder section has a lateral air passage groove which is connected to the vertical air passage groove and extends in the radial direction, being recessed upwards from a bottom end surface of the cylinder section, and the watertight packing opposes the lateral air passage groove from below.

[0011] The aforementioned cap unit is preferably such

that the main cap body has a cylinder section which extends downward from the top wall section and covers the liquid passage hole when seen from below, the watertight packing has a cylindrical packing circumferential wall which is fitted onto the cylinder section, an annular seal flange which expands radially outward from the packing circumferential wall and seals the space between the top opening section of the main container body and the top wall section of the main cap body, and a protruding lip section which extends radially inward from the bottom end section of the packing circumferential wall, and at least the protruding lip section of the watertight packing overlaps with the air passage hole when seen from below.

[0012] The aforementioned cap unit is preferably such that the watertight packing can elastically deform and seals the space between the air passage hole in the interior of the main container body in a manner allowing communication therebetween.

[0013] In the aforementioned cap unit, the center of the liquid passage hole may also be positioned further forward than the central axis of the main container body, and the air passage hole may also be positioned between the liquid passage hole and the hinge in the front and back direction.

[0014] In the aforementioned cap unit, the main cap body may also have an elastically deformable nozzle section which is formed as a separate member from the top wall section and is provided with the liquid passage hole inside.

[0015] Furthermore, one aspect of the present invention comprises the aforementioned cap unit, and the main container body to which the cap unit is attached.

[0016] The aforementioned drink container is preferably such that the main container body has a vacuum insulated structure.

[Effects of the Invention]

[0017] With the cap unit and the drink container according to one aspect of the present invention, leaking of a drink through an air passage hole can be inhibited using a simple structure even when the drink moves quickly in the upside down direction.

[Brief Description of the Drawings]

[0018]

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

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

[FIG. 3] FIG. 3 is a cross-sectional view showing part of the drink container, representing a lid body in a closed state (blocking position).

[FIG. 4] FIG. 4 is a cross-sectional view showing part of the drink container, representing the lid body in an open state (open position).

[FIG. 5] FIG. 5 is an oblique view showing part of the main cap body, representing in more detail part of a cylinder section, an air passage hole, a vertical air passage groove, and a lateral air passage groove, etc., omitting watertight packing.

[FIG. 6] FIG. 6 is a cross-sectional view showing part of the drink container according to the second embodiment of the present invention.

[FIG. 7] FIG. 7 is an oblique view showing part of a main cap body, representing in more detail part of a cylinder section, an air passage hole and a vertical air passage groove, etc., omitting watertight packing.

[FIG. 8] FIG. 8 is a cross-sectional view showing part of a drink container according to the third embodiment of the present invention.

[FIG. 9] FIG. 9 is an oblique view showing part of the main cap body, representing in more detail part of a cylinder section and an air passage groove, etc., omitting watertight packing.

[Embodiments]

<First Embodiment>

[0019] A cap unit 1A according to the first embodiment of the present invention and a drink container 100 provided therewith are described with reference to FIG. 1 to FIG. 5. Note that in the following description, the cap unit 1A is sometimes simply referred to as a cap and the drink container 100 is sometimes simply referred to as a container.

[0020] As shown in FIG. 1 and FIG. 2, the drink container 100 according to the present embodiment is provided with the cap unit 1A and a cylindrical main container body 2 which is closed at one end and to which the cap unit 1A is attached. The cap unit 1A is provided with a main cap body 10 which is a cylinder having a top wall (ceiling wall), i.e. with a closed end, a lid body 20 which is a cylinder with a closed end, a first hinge (hinge) 30 which rotatably couples the lid body 20 to the main cap body 10, watertight packing 40 which seals the space between the main container body 2 and the main cap body 10, and a lid locking mechanism 50. The cap unit 1A and the main container body 2 are disposed coaxially to each other around a central axis C.

[0021] 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 2 to a lid top wall section 20a of the lid body 20 is referred to as up, and the direction from the lid top wall section 20a 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. The direction circumferentially around the central axis C is referred to as the circumferential direction.

[0022] Furthermore, within the radial direction, the direction passing through the first hinge 30 and the central axis C is referred to as the forward and back direction. Within the forward and back direction, the direction from the first hinge 30 towards the central axis C is referred to as front, and the direction from the central axis C toward the first hinge 30 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 100 which has been placed upright, with the lid top wall section 20a of the lid body 20 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. Further, although not particularly shown, the attitude (state) of the beverage container 100 in which the lid top wall section 20a of the lid body 20 points downward in the vertical direction is referred to as being inverted.

[0023] Note that the central axis C is distinguished from a nozzle central axis and a hinge central axis A, etc., which are discussed below, and may be referred to as the cap central axis C or the container central axis C.

[0024] The drink container 100 can keep a drink (liquid content, a liquid) contained in the main container body 2 warm or cool by means of the main container body 2 which has a vacuum insulation structure. The main container body 2 is a cylinder closed at one end and having an opening in the top section. Note that the main container body 2 may contain content other than a drink.

[0025] Specifically, the main container body 2 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.

[0026] As shown in FIG. 3, a top end cylindrical section of the inner container 5 fits into a top end cylindrical section of the outer container 4, and the top ends are welded together in this fitted state. A top opening section 2d of the main container body 2 has a pointed shape known as an "ogami welded structure".

[0027] 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.

[0028] As shown in FIG. 1 and FIG. 2, the main container body 2 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, 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, and a shoulder section 2e which has a substantially tapered shape with a decreasing diameter as it moves up, and which connects the top end section of the trunk section 2b and the bottom end section of the mouth-neck section 2c.

[0029] As shown in FIG. 3, an inner circumferential section of the mouth-neck section 2c has a smaller diameter than the inner circumferential surface of the trunk section 2b. A male screw section 7 is provided to the outer circumferential surface of the mouth-neck section 2c. The top end section of the mouth-neck section 2c is open in a circle serving as the top opening section 2d of the main container body 2.

[0030] Note that the drink container 100 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 100, 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 2, the main cap body 10, and the lid body 20.

[0031] As shown in FIG. 3, the cap unit 1A is attached to the mouth-neck section 2c of the main container body 2, constituting a stopper body which closes the top opening section 2d of the main container body 2.

[0032] The main cap body 10 is a member which blocks the top opening section 2d of the main container body 2 and is made out of a heat resistant resin such as polypropylene (PP), etc., for example. The main cap body 10 has a top wall section 10a, circumferential wall section 10b, and a cylinder section 14.

[0033] The top wall section 10a covers the top opening section 2d of the main container body 2 from above. The top wall section 10a has a substantially annular disk shape. The top wall section 10a has a nozzle section 11 which protrudes upwards from the top wall section 10a. The nozzle 11 is a circular cylinder which extends in the vertical direction, and the nozzle central axis which is not shown in the drawings is positioned further forward than the central axis C of the container.

[0034] The nozzle section 11 has a liquid passage hole 12 inside. In other words, the main cap body 10 has the liquid passage hole 12. The liquid passage hole 12 passes through the top wall section 10a and connects the interior and exterior of the main container body 2. In other words, the liquid passage hole 12 extends in the vertical direction inside the nozzle section 11 and opens in the top end section in the bottom end section of the nozzle section 11. The center of the liquid passage hole 12 (the center of the opening) corresponds to the nozzle central axis of the nozzle section 11. The center of the liquid passage hole 12 is located further forward than the central axis C of the main container body 2. With the drink container 100 according to the present embodiment, the

interior of the main container body 2 becomes depressurized when the user consumes the drink by placing the nozzle section 11 inside his or her mouth.

[0035] Furthermore, the top wall section 10a has an air passage hole 13 which passes through the top wall section 10a in the vertical direction and connects the interior and exterior of the main container body 2. In other words, the main cap body 10 has the air passage hole 13. The air passage hole 13 is disposed between the nozzle section 11 (the liquid passage hole 12) and the first hinge 30 in the forward and back direction. In the present embodiment, the liquid passage hole 13 is a circular hole located further back than the central axis C of the container.

[0036] In the closed state of the lid body 20 shown in FIG. 3, the liquid passage hole 12 and the air passage hole 13 are covered by the lid body 20. Furthermore, in the open state of the lid body 20 shown in FIG. 4, the liquid passage hole 12 and the air passage hole 13 are open upward.

[0037] As shown in FIG. 3, the circumferential wall section 10b is a cylinder extending downward from the outer circumferential section of the top wall section 10a. The circumferential wall section 10b covers the entire circumference of the mouth-neck section 2c from the outer side in the radial direction. The bottom end of the circumferential wall section 10b faces the shoulder section 2e with a gap therebetween from above or touches it. The circumferential wall section 10b is a substantially circular cylinder which extends in the vertical direction so as to connect to the trunk section 2b of the main container body 2.

[0038] The circumferential wall section 10b has a female screw section 15 on an inner circumferential surface of the circumferential wall section 10b. The female screw section 15 screws together with the male screw section 7 of the mouth-neck section 2c. In other words, the main cap body 10 is removably attached by screwing onto the outside of the mouth-neck section 2c with the top opening section 2d of the main container body 2 covered.

[0039] The cylinder section 14 is a circular cylinder around the central axis C and extends downward from the top wall section 10a. The cylinder section 14 has a ring shape surrounding the liquid passage hole 12 when seen from below. Specifically, the cylinder section 14 surrounds the entire circumference of the liquid passage hole 12 from radially outward when seen from below. The cylinder section 14 is inserted into the mouth-neck section 2c.

[0040] As shown in FIG. 3 and FIG. 5, the cylinder section 14 has a vertical air passage groove 16 and a lateral air passage groove 17. The vertical air passage groove 16 is disposed on the back end section of the cylinder section 14. The vertical air passage groove 16 is recessed in the radial direction from the circumferential surface of the cylinder section 14 and extends downward from the air passage hole 13. In the present embodiment, the vertical air passage groove 16 is recessed radially inward from the outer circumferential surface of the cylinder section 14 and extends in the vertical direction. In the example shown in the drawings, the vertical air passage groove 16 is a round groove having a concave circular arc shape in cross-section. The top end section of the vertical air passage groove 16 connects with the bottom end section of the air passage hole 13.

[0041] The lateral air passage groove 17 is disposed on the back end section of the cylinder section 14. The lateral air passage groove 17 is recessed upward from the bottom end surface of the cylinder section 14 and extends in the radial direction. The radially outward end section of the lateral air passage groove 17 is connected to the bottom end section of the vertical air passage groove 16. In other words, the lateral air passage groove 17 connects to the air passage hole 13 via the vertical air passage groove 16. In the example shown in the drawings, the lateral air passage groove 17 is a round groove having a concave circular arc shape in cross-section.

[0042] In the present embodiment, the radial dimension, i.e. thickness, of the sections of the cylinder section 14 where the vertical air passage groove 16 and the lateral air passage groove 17 are disposed in the circumferential direction is greater than the thickness of locations other than these sections. These sections (thickness sections) of the cylinder section 14 protrude radially inward further than the inner circumferential surface of locations other than these sections.

[0043] As shown in FIG. 3, the lid body 20 is disposed on top of the main cap body 10. The lid body 20 is a member which covers the top section of the main cap body 10 and opens and closes the liquid passage hole 12 and the air passage hole 13. The lid body 20 has a section made out of a heat resistant resin such as polypropylene (PP), for example (e.g., sections other than the liquid passage sealing section 21 and the air passage sealing section 22 discussed below). The lid body 20 has a lid top wall section 20a, the lid surrounding wall section 20b, a liquid passage sealing section 21, and an air passage sealing section 22.

[0044] The lid top wall section 20a is disposed on top of the top wall section 10a of the main cap body 10. In the present embodiment, the lid top wall section 20a is flat and extends in the forward and back direction, and tilts upward the further it moves forward from the first hinge 30.

[0045] The lid top wall section 20a has a hole section 20c which passes through the lid top wall section 20a in the vertical direction, and a supporting cylinder 20d which protrudes down from the lid top wall section 20a and is disposed between the hole section 20c and the first hinge 30 in the front and back direction.

[0046] The lid surrounding wall section 20b has a cylindrical shape and extends downward from the outer circumferential section of the lid top wall section 20a. The lid surrounding wall section 20b is disposed so as to enclose the area around the top wall section 10a of the main cap body 10.

[0047] The liquid passage sealing section 21 comprises an elastic member such as rubber or an elastomer, etc., having heat resistance such as silicone rubber, for example. In other words, the liquid passage sealing section 21 can elastically deform. The liquid passage sealing section 21 is removably attached to the lid top wall section 20a of the lid body 20. The liquid passage sealing section 21 is in watertight contact with an opening section on top of the nozzle section 11 when the lid body 20 is closed. The liquid passage sealing section 21 can thus openably block the liquid passage hole 12 from above. The liquid passage sealing section 21 is a stopper-shaped sealing member which blocks the liquid passage hole 12 of the nozzle section 11.

[0048] The liquid passage sealing section 21 has a shaft section 21a which is fitted into the hole section 20c, and a stopper section 21b which substantially forms a convex dome facing downward and is connected to the bottom end section of the shaft section 21a. The liquid passage sealing section 21 is attachable and removable with respect to the hole section 20c. Accordingly, the lid body 20 and the liquid passage sealing section 21 can be washed separately, making it possible to maintain the area between the lid body 20 and the liquid passage sealing section 21 in a hygienic state.

[0049] With this cap unit 1A, when the lid body 20 is in the blocking position shown in FIG. 3, the stopper section 21b of the liquid passage sealing section 21 abuts the top open end of the nozzle section 11, i.e., the area around the opening section of the liquid passage hole 12, and the stopper section 21b becomes closely pressed against the area surrounding the opening section of the liquid passage hole 12 while undergoing elastic deformation. The liquid passage hole 12 of the nozzle section 11 can thus be blocked by the liquid passage sealing section 21.

[0050] The air passage sealing section 22 comprises an elastic member such as rubber or an elastomer having heat resistance, such as silicone rubber, for example. In other words, the air passage sealing section 22 can elastically deform. The air passage sealing section 22 is removably attached to the lid top wall section 20a of the lid body 20. The air passage sealing section 22 is in watertight contact with the opening section on top of the air passage hole 13 when the lid body 20 is in a closed state. The air passage sealing section 22 can thus openably block the air passage hole 13 from above. The air passage sealing section 22 is a cylindrical sealing member with a closed end which blocks the air passage hole 13.

[0051] The air passage sealing section 22 fits over the supporting cylinder 20d. The air passage sealing section 22 is attachable to and removable from the supporting cylinder 20d. Accordingly, the lid body 20 and the air passage sealing section 22 can be washed separately, making it possible to maintain the area between the lid body 20 and the air passage sealing section 22 in a hygienic state.

[0052] With this cap unit 1A, when the lid body 20 is in the blocking position, the bottom section of the air passage sealing section 22 abuts the area around the opening section of the air passage hole 13, this bottom section becoming closely pressed against the area around the opening section of the air passage hole 13 while undergoing elastic deformation. The air passage hole 13 can thus be blocked by the air passage sealing section 22.

[0053] Note that in the present embodiment, the liquid passage sealing section 21 and the air passage sealing section 22 are formed as a single unit from one member. Therefore, the number of parts can be reduced and loss of parts during washing, etc., can be minimized.

[0054] The first hinge 30 couples the top back end section of the main cap body 10 and the back end section of the lid body 20 in a manner allowing relative rotation around the hinge central axis A. The hinge central axis A of the first hinge 30 extends in the left and right direction. The lid body 20 can rotate between a position (the blocking position) blocking the liquid passage hole 12 and the air passage hole 13 shown in FIG. 3 and a position (the open position) opening the liquid passage hole 12 and the air passage hole 13 shown in FIG. 4 due to being connected to the main cap body 10 via the first hinge 30.

[0055] Although not shown in the drawings, the first hinge 30 has a spiral coil spring which extends in a spiral around the hinge central axis A. The spiral coil spring biases the lid body 20 in the opening direction relative to the main cap body 10. In other words, the lid body 20 receives biasing force in the opening direction around the hinge central axis A. Therefore, when the locked state by the lid locking mechanism 50 is released, the lid body 20 rotates from the blocking position to the open position.

[0056] As shown in FIG. 3, a watertight packing 40 is removably attached inside the main cap body 10. The watertight packing 40 is a ring-shaped sealing member which seals (in a watertight manner) the space between the main container body 2 and the main cap body 10, comprising an elastic member such as rubber or an elastomer having heat resistance such as silicone rubber, for example. In other words, the watertight packing 40 can elastically deform. Specifically, the watertight packing 40 according to the present embodiment seals in a watertight manner the space between the top opening section 2d of the main container body 2 and the top wall section 10a of the main cap body 10. Note that in FIG. 3 part of the watertight packing 40 is indicated by a double-dotted broken line (virtual line) as the shape prior to elastic deformation.

[0057] The watertight packing 40 is provided to the main cap body 10 fitted onto the cylinder section 14. Furthermore, the watertight packing 40 can be removed from the cylinder section 14. The watertight packing 40 can thus be washed separately from the main cap body 10, making it possible to maintain the space between the main cap body 10 and the watertight packing 40 in a hygienic state.

[0058] The watertight packing 40 has a cylindrical packing circumferential wall 41 which is fitted onto the

cylinder section 14, an annular seal flange 42 which expands radially outward from the packing circumferential wall 41 and seals the space between the top opening section 2d of the main container body 2 and the top wall section 10a of the main cap body 10, and extending lip section 43 which extends radially inward from the bottom end section of the packing circumferential wall 41.

[0059] The packing circumferential wall 41 extends in the vertical direction around the central axis C and fits onto the outside of the cylinder section 14. The inner circumferential surface of the packing circumferential wall 41 is in contact with the outer circumferential surface of the cylinder section 14. Furthermore, a flow path along which air can flow (a vertical air path) is provided between the vertical air passage groove 16 of the cylinder section 14 and the inner circumferential surface of the packing circumferential wall 41. The vertical air path extends in the vertical direction and communicates with the air passage hole 13. The bottom end section of the packing circumferential wall 41 protrudes further downward than the bottom end section of the cylinder section 14.

[0060] The seal flange 42 is a substantially annular plate around the central axis C. The seal flange 42 protrudes radially outward from the top end section of the packing circumferential wall 41 and extends in the circumferential direction. As indicated by the double-dotted line in FIG. 3, in the present embodiment the seal flange 42 has a groove section 42a which is recessed radially inward from the outer circumferential surface of the seal flange 42 and extends in the circumferential direction, and a pair of flange sections 42b disposed above and below the groove section 42a. Therefore, the seal flange 42 is such that a cross-sectional shape thereof parallel to the central axis C (the vertical cross-sectional shape) has substantially a C-shape or a U-shape which opens radially outward.

[0061] Of the pair of flange sections 42b, the top surface of the upper flange section is in contact with the bottom surface of the top wall section 10a. In other words, the top surface of the seal flange 42 is in contact with the bottom surface of the top wall section 10a. The thickness (plate thickness) of one of the pair of flange sections 42b is thinner than the thickness of the packing circumferential wall 41. Of the watertight packing 40, the pair of flange sections 42b are particularly elastically deformable and are made so as to closely press against the top opening section 2d and the top wall section 10a, making it possible to achieve a stable seal therebetween.

[0062] The extending lip section 43 is an annular plate around the central axis C. The extending lip section 43 protrudes radially inward from the bottom end section of the packing circumferential wall 41 and extends in the circumferential direction. The extending lip section 43 is disposed directly below the circumferential wall of the cylinder section 14. A gap is provided in the vertical direction between the top surface of the extending lip section 43 and the bottom end surface of the cylinder section 14. Therefore, the extending lip section 43 can be prevented from hitting the bottom end surface of the cylinder section 14 due to manufacturing error of materials, etc., for example during assembly of the watertight packing 40, thereby minimizing problems including instability in the closely pressing state between the seal flange 42 and the top wall section 10a.

[0063] Furthermore, the inner circumferential section of the extending lip section 43 protrudes radially inward a bit more than sections of the cylinder section 14 other than sections where the vertical air passage groove 16 and the lateral air passage groove 17 are disposed in the circumferential direction (the thick section of the back end of the cylinder section 14) or is coplanar therewith. Therefore, when the user drinks the drink, the drink inside the main container 2 which has been tilted forward can easily overcome the inner circumferential section of the extending lip section 43 towards the liquid passage hole 12, and the drink flows smoothly out of the liquid passage hole 12, thereby making it easy to drink the drink.

[0064] Furthermore, a flow path along which air can flow (a lateral air path) is provided between the top surface of the extending lip section 43 and the lateral air passage groove 17 of the cylinder section 14. The lateral air path extends in the radial direction. The radially outer end section of the lateral air path connects to the vertical air path. Specifically, the lateral air path communicates with the air passage hole 13 via the vertical air path. The radially inner end section of the lateral air path opens towards the inside of the cylinder section 14 and communicates with the inside of the main container body 2. The outside (outside of the container, outside of the cap) thus communicates with the inside of the main container body 2, so air is suctioned into the main container body 2 through the air passage hole 13 when the inside of the main container body 2 has become depressurized when the user has consumed the drink by placing the nozzle section 11 into his or her mouth.

[0065] The watertight packing 40 covers the air passage hole 13 when seen from below. Put differently, the air passage hole 13 is covered by the watertight packing 40 seen from below. Furthermore, the watertight packing 40 covers at least part of the lateral air passage groove 17 (the lateral air path) and the vertical air passage groove 16 (the vertical air path) when seen from below. Furthermore, the extending lip section 43 faces the lateral air passage groove 17 with a gap from below. In other words, the watertight packing 40 faces the lateral air passage groove 17 from below.

[0066] In more detail, at least the extending lip section 43 of the watertight packing 40 overlaps with the air passage hole 13 when seen from below. In the present embodiment, the packing circumferential wall 41 and the extending lip section 43 of the watertight packing 40 overlap with the air passage hole 13 when seen from below. The air passage hole 13 is covered by the packing circumferential wall 41 and the extending lip section 43 when seen from below.

[0067] Furthermore, the extending lip section 43 over-

laps with the vertical air passage groove 16 when seen from below. The vertical air passage groove 16 is covered by the extending lip section 43 when seen from below. Furthermore, the extending lip section 43 overlaps with the lateral air passage groove 17 when seen from below. The lateral air passage groove 17 is covered at least partially by the extending lip section 43 when seen from below.

[0068] As seen in FIG. 1, FIG. 3, and FIG. 4, the lid locking mechanism 50 immobilizes the lid body 20 relative to the main cap body 10 in the blocking position (closed state) described above against the rotational biasing force in the opening direction around the first hinge 30 (the hinge central axis A). The lid locking mechanism 50 is disposed on the front end section of the cap unit 1A. Note that FIG. 1 and FIG. 3 show the lid body 20 immobilized in the blocking position by the lid locking mechanism 50 (locked state), and FIG. 4 shows the immobilization of the lid body 20 released by the lid locking mechanism 50 (unlocked state).

[0069] The lid locking mechanism 50 has a second hinge 55 in which a hinge central axis (not shown in the drawings) extends in the left and right direction, a lock member 52 which can swivel around the hinge central axis of the second hinge 55, and a ring stopper 54 which can rotate around the hinge central axis of the second hinge 55. Furthermore, the second hinge 55 has an inner hinge section 51, and outer hinge sections 53 which are located on either side of the inner hinge section 51 in the left and right direction. The inner hinge section 51 and the outer hinge sections 53 have the hinge central axis of the second hinge 55 in common and are disposed coaxially to each other.

[0070] The lock member 52 is attached to the main cap body 10 in a manner allowing swiveling via the inner hinge section 51. The ring stopper 54 is attached to the main cap body 10 in a manner allowing rotation via the outer hinge sections 53.

[0071] The inner hinge section 51 is provided to the front surface of the circumferential wall section 10b of the main cap body 10. The inner hinge section 51 is disposed inside the outer hinge sections 53 in the left and right direction (i.e., on the central axis C side). The lock member 52 is supported by the inner hinge section 51 in a manner allowing swiveling in the forward and back direction. The lock member 52 has an upper arm section 52a which extends up from the hinge central axis of the second hinge 55, and a lower arm section 52b which extends down from the hinge central axis of the second hinge 55. A hook section 56 is provided protruding to the back to the tip section of the upper arm section 52a (the top end section of the lock member 52). A compressed coil spring 57 is provided compressed in the forward and back direction between the lower arm section 52b and the circumferential wall section 10b.

[0072] The outer hinge sections 53 are provided to the front surface of the circumferential wall section 10b of the main cap body 10. The ring stopper 54 comprises a substantially C-shaped curved member in which both end sections are supported by the outer hinge sections 53 in a manner allowing rotation in the vertical direction.

[0073] Furthermore, the lid locking mechanism 50 has a lock receiving section 58 engaged by the hook section 56 of the lock member 52, and a stopper receiving section 59 engaged by the ring stopper 54. The lock receiving section 58 is a claw protruding forward from the bottom end section of the front side of the lid body 20. The stopper receiving section 59 is a substantially circular ring matching the shape of the inner circumferential section of the ring stopper 54 and protrudes forward from a position on the front surface of the lid body 20 surrounding the lock receiving section 58.

[0074] With this lid locking mechanism 50, when the lid body 20 is in the blocking position, the hook section 56 of the lock member 52 is engaged by the lock receiving section 58, thereby immobilizing the lid body 20 relative to the main cap body 10 against the rotational biasing force in the opening direction of the first hinge 30.

[0075] When the user pushes the lower arm section 52b of the lock member 52 from this state towards the back while compressing compressed coil spring 57, the engaged state of the hook section 56 with respect to the lock receiving section 58 is released. The lid body 20, which is biased in the opening direction, can thus be turned to the open position.

[0076] Furthermore, with the lid locking mechanism 50, when the lid body 20 is in the blocking position, rotation of the lid body 20 in the opening direction is inhibited by the ring stopper 54 engaging the stopper receiving section 59. Thus, with the lid locking mechanism 50, the lid body 20 can be prevented from opening due to an unnecessary (unintentional) operation of the lock member 52.

[0077] With the cap unit 1A and the drink container 100 according to the present embodiment described above, the air passage hole 13 of the main cap body 10 is covered by the watertight packing 40 when seen from below. Therefore, even if the drink container 100 is tilted quickly when drinking the drink or if the drink container 100 is dropped upside down and hits the ground, etc., for example, the drink inside the main container body 2 is minimized from quickly entering the air passage hole 13. In other words, even if the drink in the main container body 2 moves quickly in the direction of the main cap unit 1A (i.e., the upside down direction), the watertight packing 40 receives the shock of the drink prior to reaching the air passage hole 13, thereby reducing the speed of the drink. Therefore, the drink can be prevented from leaking through the air passage hole 13 when the lid body 20 is open, and the drink can be prevented from leaking out through the sealed section between the air passage seal section 22 and the air passage hole 13 when the lid body 20 is closed.

[0078] Furthermore, with the present invention, leaking of the drink through the air passage hole 13 is inhibited using the watertight packing 40 which seals the space

between the main cap body 10 and the main container body 2. In other words, by giving the watertight packing 40 multiple functions, the number of parts can be prevented from increasing. Specifically, there is no need to use a complex structure in which a valve member which openably blocks of the air passage hole is newly provided, and the valve member is opened only when taking in air through the air passage hole, in order to prevent leaks. With the present embodiment, there is no need to add new members, while preventing leaking of the drink through the air passage hole 13, making it possible to simplify the structure. Accordingly, washing characteristics of the container can be maintained favorably and increases in costs can be minimized.

[0079] Thus, with the present embodiment, the drink can be reliably prevented from leaking through the air passage hole 13 using a simple structure even when the drink in the main container body 2 moves towards the cap unit 1A quickly.

[0080] Furthermore, with the present embodiment, the watertight packing 40 covers the air passage hole 13 and the vertical air passage groove 16 (the vertical air path) from the bottom. Therefore, the inertia of the drink inside the main container body 2 is reduced by the watertight packing 40 and the drink is prevented from entering the air passage hole 13 quickly through the vertical air passage groove 16 when the drink container 100 is tilted quickly during drinking or when the container receives a strong shock while upside down. Accordingly, the drink can be reliably prevented from leaking through the air passage hole 13.

[0081] Furthermore, with the present embodiment, the watertight packing 40 is disposed facing the lateral air passage groove 17 (lateral air path) from below. Therefore, the inertia of the drink inside the main container body 2 is reduced by the watertight packing 40 and the drink is prevented from entering the air passage hole 13 quickly through the vertical air passage groove 16 when the drink container 100 is tilted quickly during drinking or when the container receives a strong shock while upside down. Accordingly, the drink can be reliably prevented from leaking through the air passage hole 13 from the lateral air passage groove 17.

[0082] Furthermore, with the present embodiment, the watertight packing 40 has the packing circumferential wall 41, the seal flange 42, and the extending lip section 43. In this case, the drink can be reliably prevented from leaking through the air passage hole 13 by the extending lip section 43, while the seal flange 42 of the watertight packing 40 seals the space between the top wall section 10a of the main cap body 10 and the top opening section 2d of the main container body 2. Furthermore, because the extending lip section 43 can be used as a pressing margin when fitting the watertight packing 40 onto the cylinder section 14, the watertight packing 40 is easy to press until contact is achieved with the top wall section 10a of the main cap body 10. Moreover, the extending lip section 43 can be used as a gripping margin when removing the watertight packing 40 from the cylinder section 14, making the watertight packing 40 easy to remove.

<Second Embodiment>

[0083] Next, a cap unit 1B according to the second embodiment of the present invention and the drink container 100 provided therewith are described with reference to FIG. 6 and FIG. 7. Note that in the present embodiment, the same names and reference numerals are given to the same configurations as in the previous embodiment and descriptions thereof are omitted.

[0084] The cap unit 1B according to the present embodiment differs from the cap unit 1A described in the previous embodiment in the configuration of the cylinder section 14 and the watertight packing 40.

[0085] As shown in FIG. 6 and FIG. 7, in the present embodiment, the vertical air passage groove 16 of the cylinder section 14 is recessed radially outward from the inner circumferential surface of the cylinder section 14, and extends downward from the air passage hole 13. Furthermore, in the present embodiment the cylinder section 14 does not have the lateral air passage groove 17 (lateral air path).

[0086] Furthermore, the cylinder section 14 has a step surface 14a. The step surface 14a is located on a section of the cylinder section 14 where the vertical air passage groove 16 is disposed in the circumferential direction (the thick section of the back end of the cylinder section 14). The step surface 14a expands inward from the inner circumferential surface of the cylinder section 14, is located further up than the bottom end surface of the cylinder section 14, and faces downward. The step surface 14a is a flat surface which extends in a direction perpendicular to the central axis C.

[0087] Furthermore, the air passage hole 13 has a section (upper section) which passes through the top wall section 10a in the vertical direction, and a section (lower section) extending downward from that section and located in the thick section of the cylinder section 14. The bottom end section of the air passage hole 13 opens in the step surface 14a. In other words, in the present embodiment part of the air passage hole 13 extends in the vertical direction inside the circumferential wall of the cylinder section 14.

[0088] The extending lip section 43 of the watertight packing 40 has a lateral extending section 43a and a vertical extending section 43b. The lateral extending section 43a extends radially inward from the bottom end section of the packing circumferential wall 41. The lateral extending section 43a is a ring-shaped plate around the central axis C. A gap is provided between the top surface of the lateral extending section 43a and the bottom end surface of the cylinder section 14.

[0089] The vertical extending section 43b extends upward from the inner circumferential surface of the lateral extending section 43a. The vertical extending section 43b is a circular cylinder around the central axis C and

extends in the vertical direction. The bottom end section of the cylinder section 14 is disposed between the packing circumferential wall 41 and the vertical extending section 43b in the radial direction. The outer circumferential surface of the vertical extending section 43b and the inner circumferential surface of the bottom end section of the cylinder section 14 either touch or face each other across a gap.

[0090] A flow path (vertical air path) along which air can flow is provided between the vertical air passage groove 16 of the cylinder section 14 and the outer circumferential surface of the vertical extending section 43b. The vertical air path is connected to the bottom end section of the air passage hole 13. Furthermore, in the present embodiment the top end surface of the vertical extending section 43b is in contact with the step surface 14a. The watertight packing 40 thus seals the space between the air passage hole 13 and the interior of the main container body 2 in a manner allowing communication therebetween.

[0091] The same effects can be obtained as in the previous embodiment with the cap unit 1B and the drink container 100 according to the present embodiment described above.

[0092] Furthermore, with the present embodiment, the watertight packing 40, which can elastically deform, seals the space between the air passage hole 13 and the interior of the main container body 2 in a manner allowing communication therebetween. In this case, the drink can be reliably prevented from leaking through the air passage hole 13 by the watertight packing 40. For example, the drink can be prevented from leaking through the air passage hole 13 because the space between the air passage hole 13 and the interior of the main drink container 2 is sealed, even if the user takes his or her time to drink the drink inside the main container body 2 while tilting the drink container 100 and holding the nozzle section 11 in his or her mouth, for example. Moreover, the interior of the main container body 2 communicates with the outside via the air passage hole 13 because the watertight packing 40 elastically deforms when the user drinks the drink inside the main container body 2 through the liquid passage hole 12 with the nozzle section 11 in his or her mouth, causing the interior of the main container body 2 to be depressurized and air to be taken into the main container body 2 through the air passage hole 13. Furthermore, when intake of air through the air passage hole 13 into the main container body 2 stops, the watertight packing 40 is restored to its original shape and the space between the air passage hole 13 and the interior of the main container body 2 is once again sealed. In other words, in the present embodiment, the watertight packing 40 operates (functions) as an opening/closing valve, making the effects described above of the present invention even more remarkable using a simple structure.

[0093] Furthermore, with the present embodiment, the rigidity of the extending lip section 43 has been increased, and therefore by using the extending lip section 43 as a pressing margin when fitting the watertight packing 40 onto the cylinder section 14, the watertight packing 40 can be pressed easily. Moreover, the watertight packing 40 can be removed easily by using the highly rigid extending lip section 43 as a gripping margin when removing the watertight packing 40 from the cylinder section 14.

<Third Embodiment>

[0094] Next, a cap unit 1C according to the third embodiment of the present invention and the drink container 100 provided therewith are described with reference to FIG. 8 and FIG. 9. Note that in the present embodiment, the same names and reference numerals are given to the same configurations as in the previous embodiments, and descriptions thereof are omitted.

[0095] The cap unit 1C according to the present embodiment differs from the cap unit 1A, 1B described in the foregoing embodiments in the configuration of the cylinder section 14 and the watertight packing 40.

[0096] As shown in FIG. 8 and FIG. 9, in the present embodiment the cylinder section 14 does not have the vertical air passage groove 16 (vertical air path or the lateral air passage groove 17 (lateral air path). Furthermore, the bottom end surface of the thick section of the back end of the cylinder section 14 protrudes further down than the bottom end surface of sections of the cylinder section 14 other than the thick section. The bottom end surface of the thick section of the cylinder section 14 is a flat surface which extends in a direction perpendicular to the central axis C.

[0097] Furthermore, the air passage hole 13 has a section (upper section) which passes through the top wall section 10a in the vertical direction, and a section (lower section) which extends downward from that section and passes through the thick section of the cylinder section 14 in the vertical direction. The bottom end section of the air passage hole 13 opens in the bottom and surface of the thick section of the cylinder section 14.

[0098] The extending lip section 43 of the watertight packing 40 protrudes radially inward from a section on the cylinder section 14 other than the thick section. In the example shown in the drawings, the amount by which the extending lip section 43 extends inward from the inner circumferential surface of a site on the cylinder section 14 other than the thick section is greater than the thickness of that site. Therefore, the rigidity of the extending lip section 43 is increased.

[0099] Furthermore, the top surface of the extending lip section 43 is in contact with the bottom end surface of the thick section of the cylinder section 14. The extending lip section 43 thus blocks the opening in the bottom end section of the air passage hole 13. In other words, the watertight packing 40 can seal the space between the air passage hole 13 and the interior of the main container body 2 in a manner allowing communication therebetween. Furthermore, a gap is provided between the top surface of the extending lip section 43 and the

bottom end surface of sections of the cylinder section 14 other than the thickness section.

[0100] The same effects can be provided as in the foregoing embodiments with the cap unit 1C and the drink container 100 according to the present embodiment described above.

[0101] Note that the present invention is not limited to the foregoing embodiments and may be modified in configuration, etc., as is described below, for example, without departing from the gist of the present invention.

[0102] In the first embodiment, an example was given in which a gap is provided between the top surface of the extending lip section 43 of the airtight packing 40 and the bottom end section of the cylinder section 14, but this is not a limitation. in other words, it is also possible to make the top surface of the extending lip section 43 and the bottom end surface of the cylinder section 14 to be in contact when, for example, thoroughly minimizing manufacturing error of the members. In the first embodiment, the lateral air passage groove 17 (lateral air path) was provided to the bottom end surface of the cylinder section 14, so even if a configuration is used in which the top surface of the extending lip section 43 and the bottom end surface of the cylinder section 14 are in contact with each other, air can be reliably taken into the main container body 2 through the vertical air passage groove 16 and the lateral air passage groove 17 from the air passage hole 13 irrespective of how much the watertight packing 40 elastically deforms.

[0103] In the foregoing embodiments, an example was given in which the main cap body 10 has the nozzle section 11 which protrudes upward from the top wall section 10a of the main cap body 10, and the liquid passage hole 12 which connects the outside and the inside of the main container body 2 by passing through the interior of the nozzle section 11 in the vertical direction, but this is not a limitation. Specifically, the same effect can be achieved for drinking the drink inside the main container body 2 through the liquid passage hole 12 by placing the nozzle section 11 in the mouth, even if the nozzle section 11 is made out of an elastic member. Although not shown in the drawings, specifically, the present invention can similarly be applied to a structure in which the main cap body 10 is provided with an elastically deformable nozzle section 11 which is removably attached to the top wall section 10a, a liquid passage hole 12 which connects the interior of the main container body 2 and the outside by passing through the interior of the nozzle section 11 in the vertical direction, and a straw member which is attached continuously to the bottom end of the liquid passage hole 12. In this case, the top wall section 10a of the main cap body 10, on the one hand, and the nozzle section 11 and the straw member, on the other hand, are formed as separate members.

[0104] With the foregoing embodiments, examples were given in which the present invention is applied to the drink container 100 which has functionality for keeping a liquid warm or cold by means of the main container body 2 having a vacuum insulated structure, but this is not a limitation. Specifically, the present invention can be broadly applied to cap-equipped containers in which the cap unit is removably attached to the mouth-neck section of the main container body.

[0105] 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.

[Explanation of the Reference Numerals]

[0106] 1A, 1B, 1C ... cap unit; 2 ... main container body; 2d ... top opening section; 10 ... main cap body; 10a ... top wall section; 10b ... circumferential wall section; 11 ... nozzle section; 12 ... liquid passage hole; 13 ... air passage hole; 14 ... cylinder section; 16 ... vertical air passage groove; 17 ... lateral air passage groove; 20 ... lid body; 22 ... air passage sealing section; 30 ... first hinge (hinge); 40 ... watertight packing; 41 ... packing circumferential wall; 42 ... seal flange; 43 ... extending lip section; 100 ... drink container; C ... central axis

Claims

1. A cap unit attached to a main container body having an open top section, comprising

   a main cap body which blocks the top opening section of the main container body and has a top wall section and a circumferential wall section,
   a lid body disposed on top of the main cap body,
   a hinge which rotatably couples the lid body to the main cap body, and
   a watertight packing which seals the space between the main container body and the main cap body,
   wherein the main container body has a liquid passage hole and an air passage hole covered by the lid body, connecting the inside and outside of the main container body by passing vertically through the top wall section, and
   the air passage hole is covered by the watertight packing when seen from below.

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

   the main cap body has a cylinder section which extends downward from the top wall section and covers the liquid passage hole when seen from below,
   the cylinder section has a vertical air passage groove which extends downward from the air

passage hole and is recessed in the radial direction from a circumferential surface of the cylinder section, and
the watertight packing covers the vertical air passage groove when seen from below.

3. The cap unit as claimed in claim 2, wherein

the cylinder section has a lateral air passage groove which is connected to the vertical air passage groove and extends in the radial direction, being recessed upwards from a bottom end surface of the cylinder section, and
the watertight packing opposes the lateral air passage groove from below.

4. The main cap body as claimed in any one of claims 1-3, wherein

the main cap body has a cylinder section which extends downward from the top wall section and covers the liquid passage hole when seen from below, and
the watertight packing has
a cylindrical packing circumferential wall which is fitted onto the cylinder section,
an annular seal flange which expands radially outward from the packing circumferential wall and seals the space between the top opening section of the main container body and the top wall section of the main cap body, and
a protruding lip section which extends radially inward from the bottom end section of the packing circumferential wall, and
at least the protruding lip section of the watertight packing overlaps with the air passage hole when seen from below.

5. The cap unit as claimed in any one of claims 1-4, wherein
the watertight packing can elastically deform and seals the space between the air passage hole in the interior of the main container body in a manner allowing communication therebetween.

6. The cap unit as claimed in any one of claims 1-5, wherein

the center of the liquid passage hole is positioned further forward than the central axis of the main container body, and
the air passage hole is positioned between the liquid passage hole and the hinge in the front and back direction.

7. The cap unit as claimed in any one of claims 1-6, wherein
the main cap body has an elastically deformable nozzle section which is formed as a separate member from the top wall section and is provided with the liquid passage hole inside.

8. A drink container, comprising

the cap unit as claimed in any one of claims 1-7, and
the main container body to which the cap unit is attached.

9. The drink container as claimed in claim 8, wherein the main container body has a vacuum insulated structure.

FIG. 1

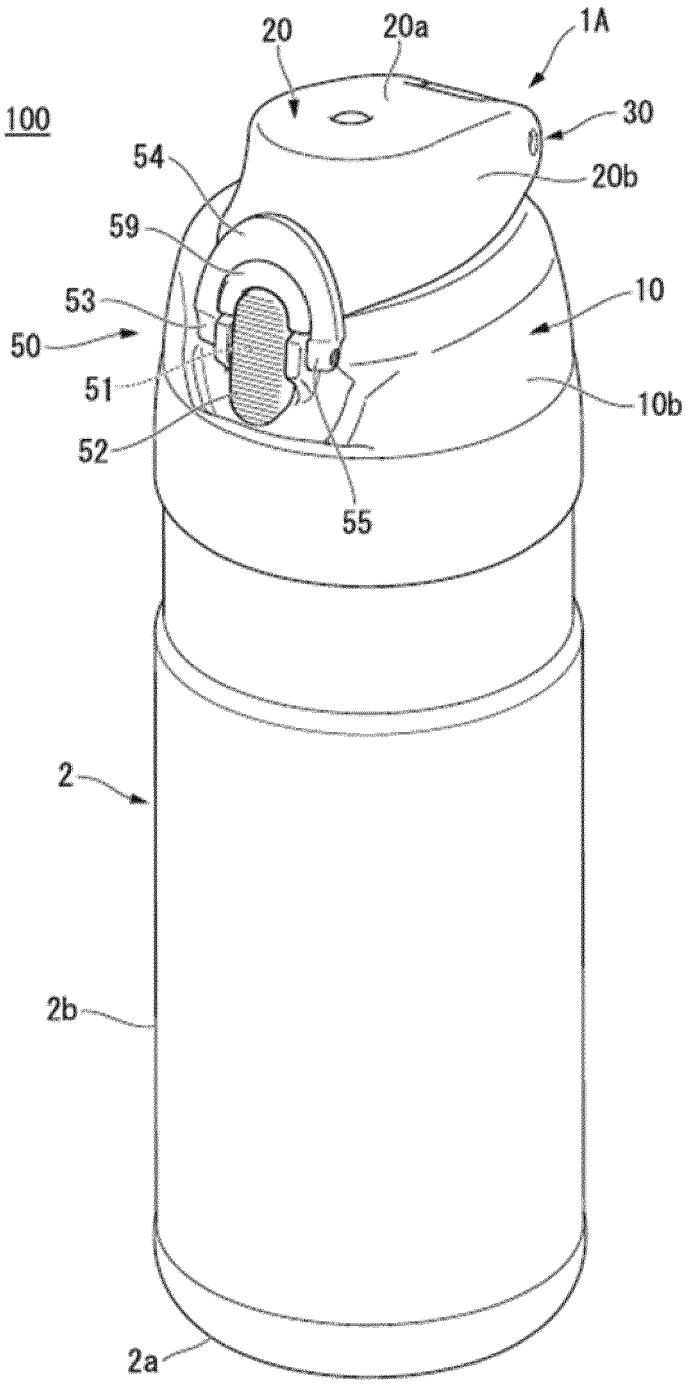


FIG. 2

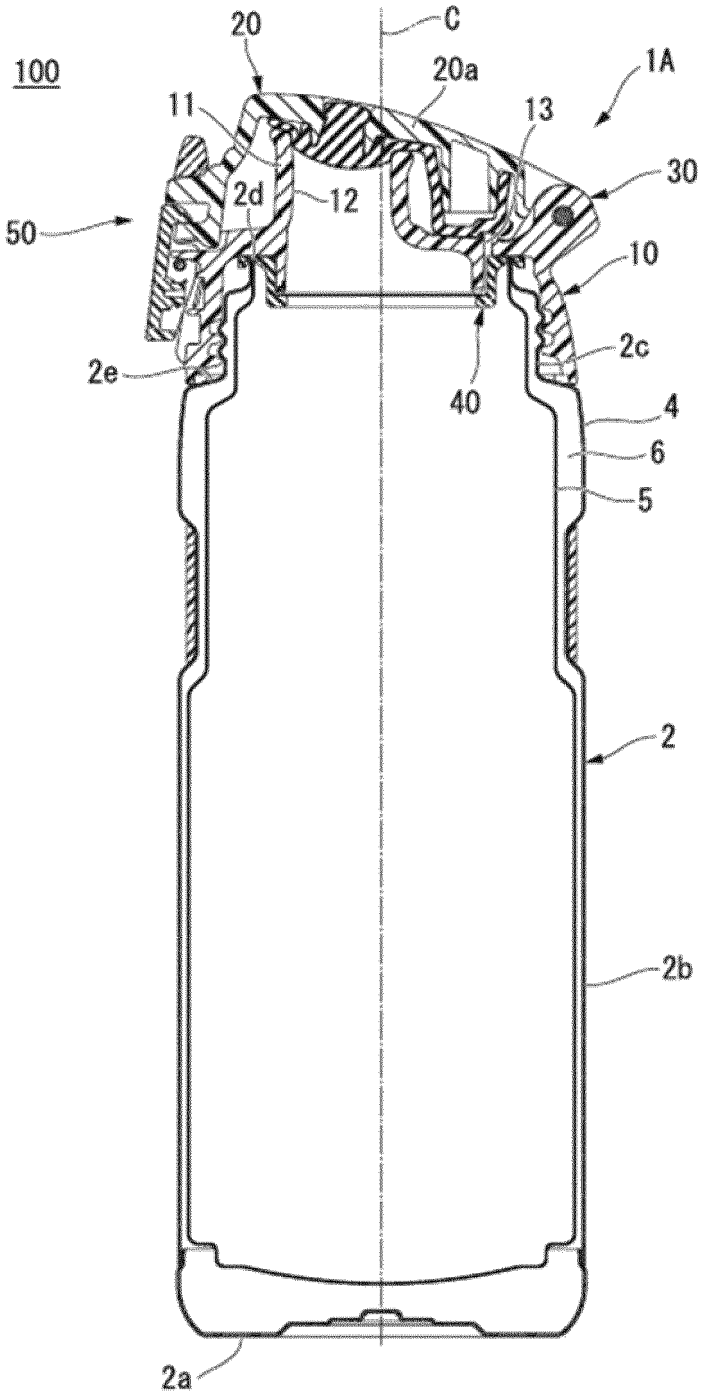


FIG. 3

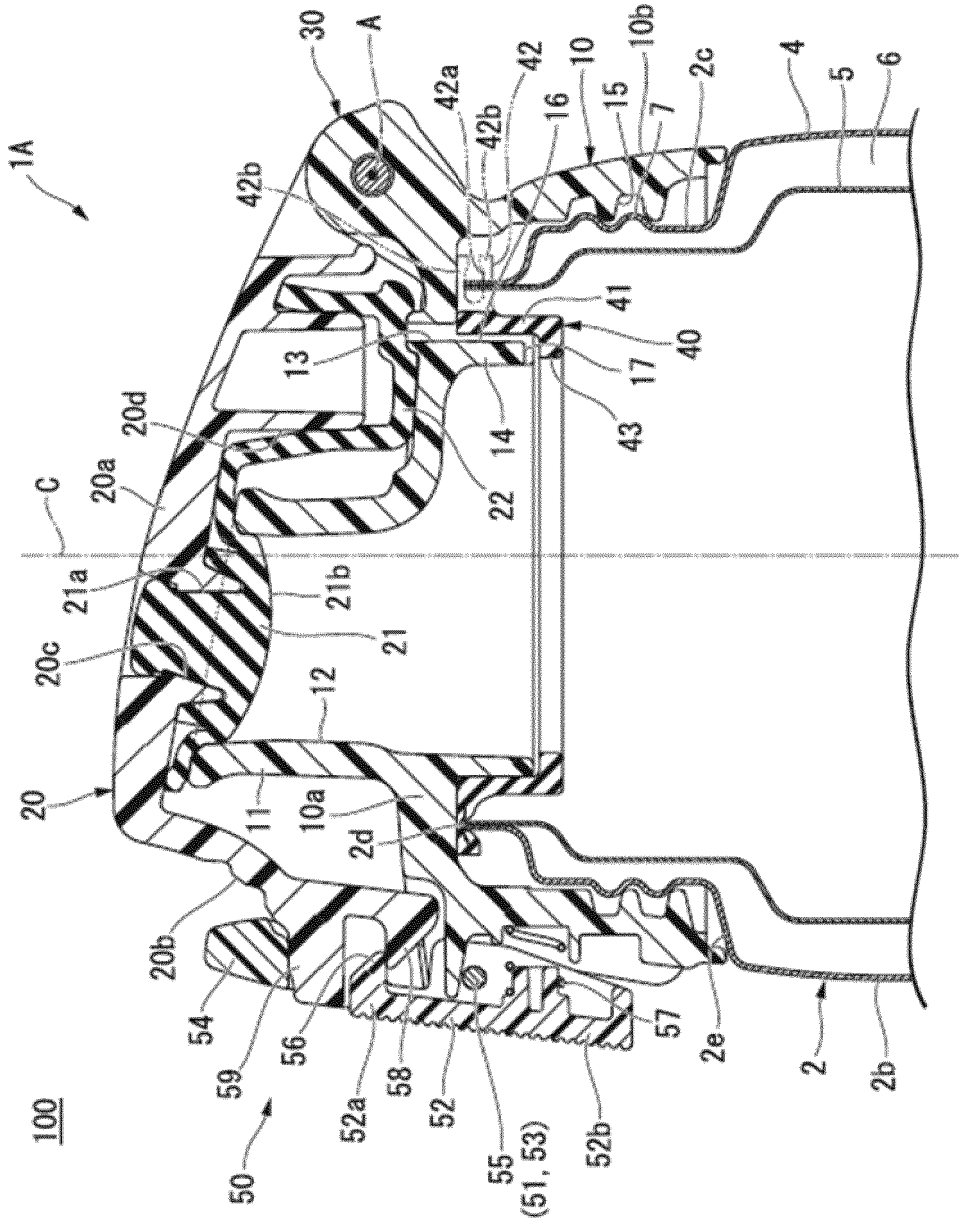

1A
30
A
42a
42
10
10b
2c
4
5
6
42b
16
15
7
41
40
17
43
13
14
22
20d
20a
C
21a
21b
21
20c
12
20
11
10a
2d
20b
54
59
56
52a
58
52
55
(51, 53)
52b
57
2e
2
2b
50
100

FIG. 4

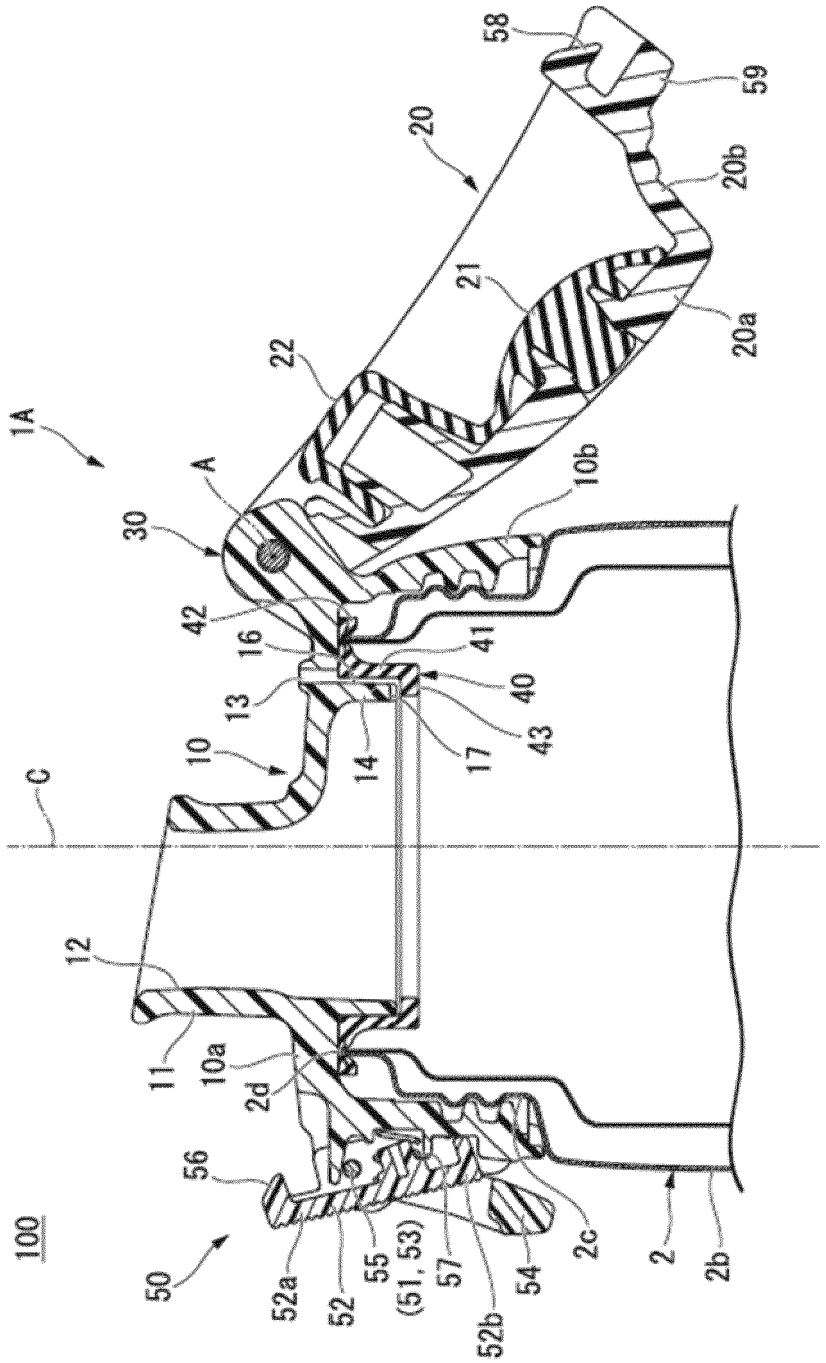

58
59
20
20b
21
20a
22
1A
A
10b
30
42
16
41
13
40
43
17
14
10
C
12
11
10a
2d
56
100
50
52a
52
55
(51, 53)
57
52b
54
2c
2
2b

FIG. 5

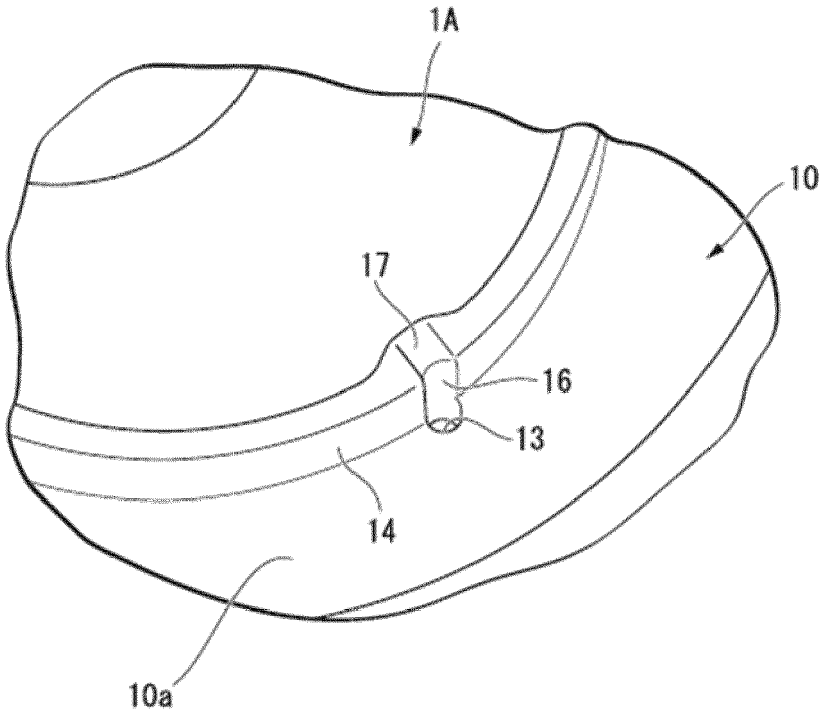


FIG. 6

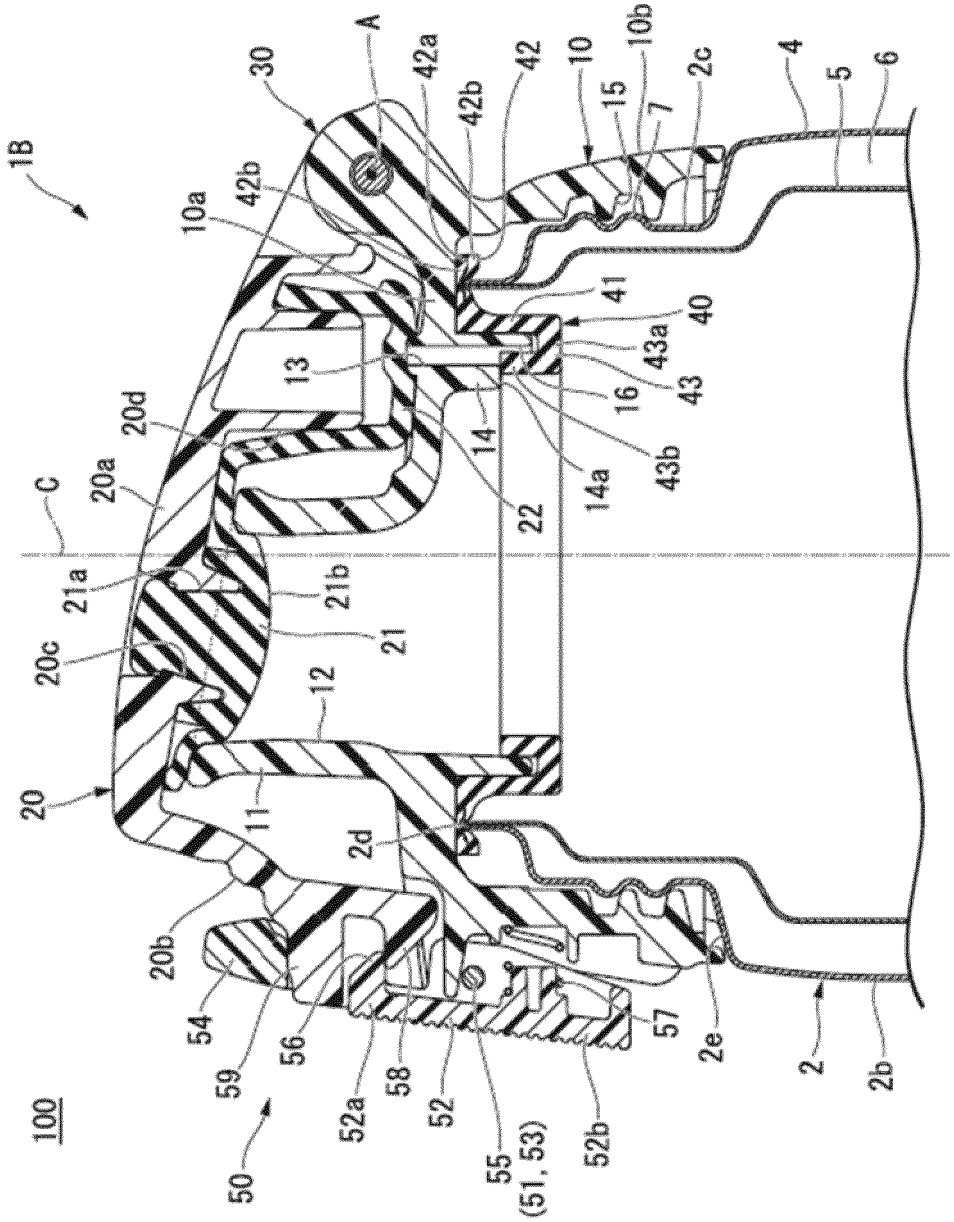

1B
30
A
42a
42b
42
10
10b
15
7
2c
4
5
6
10a
41
40
43a
43
13
16
14
43b
14a
22
20d
20a
C
21a
21b
21
20c
12
20
11
2d
20b
54
59
56
52a
58
52
55
(51, 53)
52b
57
2e
2
2b
50
100

FIG. 7

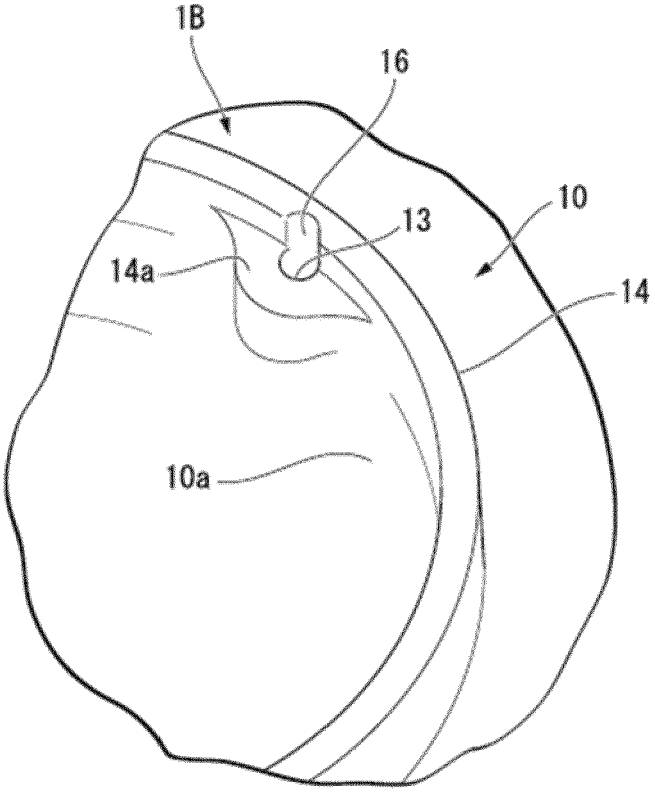


FIG. 8

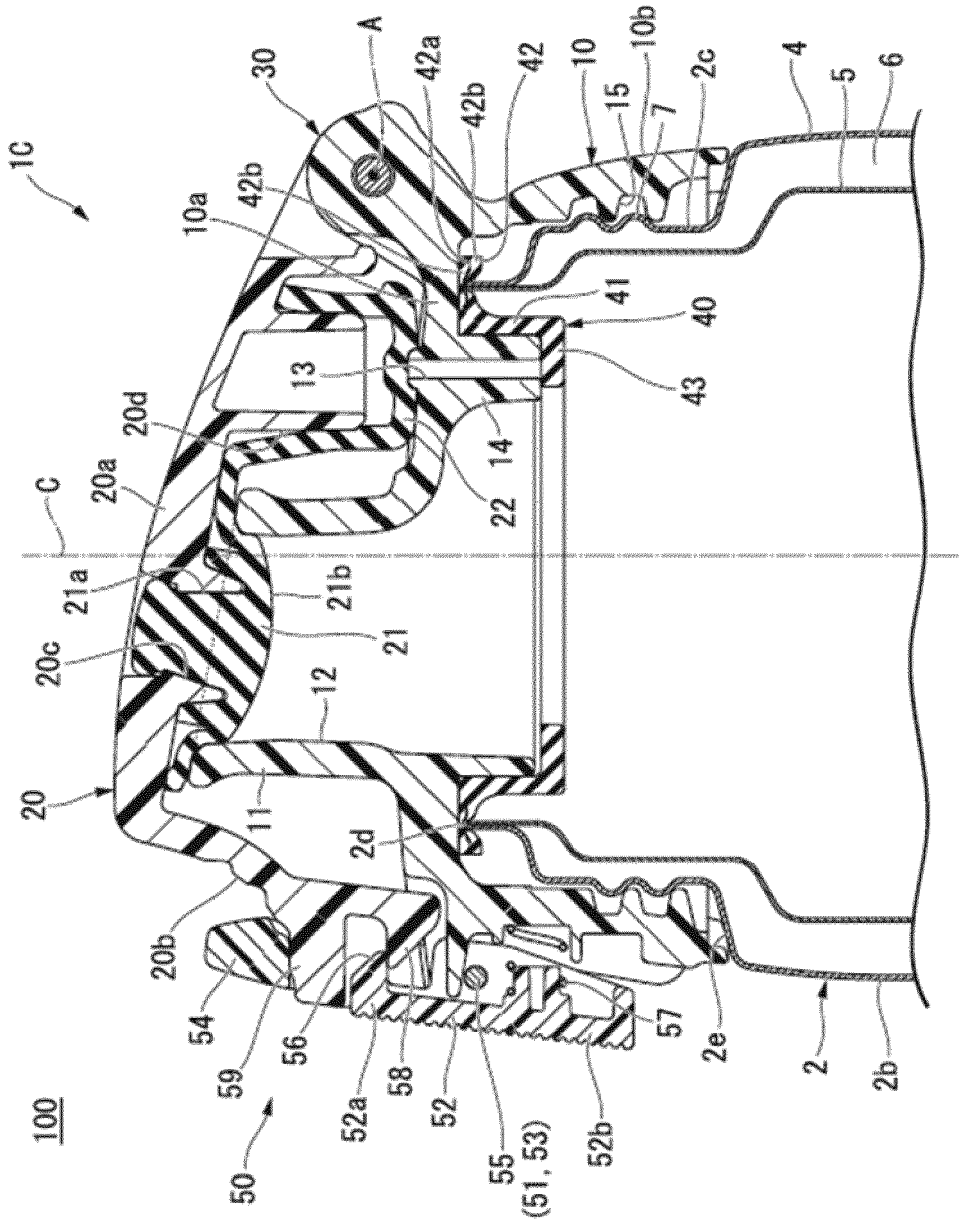
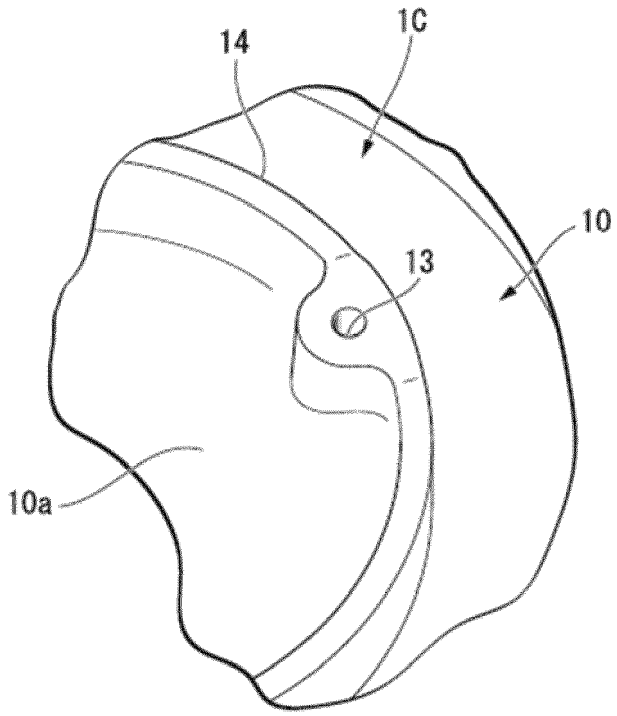

1C
30
A
42a
42b
42
10
10b
15
7
2c
4
5
6
10a
42b
41
40
13
43
20d
14
22
C
20a
21a
21b
21
20c
12
20
11
2d
20b
54
59
56
52a
58
52
55
(51, 53)
52b
57
2e
2
2b
50
100

FIG. 9



Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 22 18 8592

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2015 231852 A (THERMOS KK) 24 December 2015 (2015-12-24) * paragraphs [0021] - [0080]; figures *	1-9	INV. B65D51/18 B65D85/72 B65D47/06
X	CN 104 417 958 B (THERMOS CHINA HOUSEWARES CO LTD; THERMOS KK) 23 June 2017 (2017-06-23) * paragraphs [0027] - [0085]; figures *	1,2,5,8, 9	A47G19/22 B65D43/00
A	JP 4 798553 B2 (THERMOS KK) 19 October 2011 (2011-10-19) * paragraphs [0019] - [0046]; figures *	1	
A	US 7 575 126 B2 (HANDI CRAFT CO [US]) 18 August 2009 (2009-08-18) * paragraphs [0026] - [0052]; figures *	1-9	

TECHNICAL FIELDS SEARCHED (IPC)
B65D A47G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 December 2022	Van Bastelaere, Tiny

CATEGORY OF CITED DOCUMENTS

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

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 22 18 8592

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

16-12-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2015231852 A	24-12-2015	JP 5955890 B2	20-07-2016
		JP 2015231852 A	24-12-2015
CN 104417958 B	23-06-2017	CN 104417958 A	18-03-2015
		HK 1207047 A1	22-01-2016
		JP 5662536 B1	28-01-2015
		JP 2015051781 A	19-03-2015
		KR 20150028211 A	13-03-2015
JP 4798553 B2	19-10-2011	JP 4798553 B2	19-10-2011
		JP 2010023854 A	04-02-2010
US 7575126 B2	18-08-2009	AR 052892 A1	11-04-2007
		AT 463184 T	15-04-2010
		AU 2005326688 A1	10-08-2006
		BR PI0519915 A2	07-04-2009
		CA 2595705 A1	10-08-2006
		CN 101188960 A	28-05-2008
		EP 1841662 A2	10-10-2007
		EP 2181933 A2	05-05-2010
		JP 2008528175 A	31-07-2008
		KR 20070110500 A	19-11-2007
		US 2006169694 A1	03-08-2006
		WO 2006083420 A2	10-08-2006
		ZA 200706092 B	28-05-2008

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

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

Patent documents cited in the description

- JP 3937428 A **[0004]**
- JP 2010235137 A **[0004]**