

(19)



(11)

**EP 4 095 064 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:

**01.11.2023 Bulletin 2023/44**

(51) International Patent Classification (IPC):

**B65D 55/16** <sup>(2006.01)</sup> **B65D 41/34** <sup>(2006.01)</sup>  
**B65D 51/16** <sup>(2006.01)</sup>

(21) Application number: **21717940.7**

(52) Cooperative Patent Classification (CPC):

**B65D 55/16; B65D 41/3447; B65D 51/1688;**  
**B65D 2251/1008; B65D 2401/30**

(22) Date of filing: **25.01.2021**

(86) International application number:

**PCT/ES2021/070051**

(87) International publication number:

**WO 2021/148707 (29.07.2021 Gazette 2021/30)**

(54) **A CAPPING DEVICE INTENDED TO BE FIXED ON THE NECK OF A CONTAINER AND AN ASSEMBLY COMPRISING A CONTAINER AND SAID CAPPING DEVICE**

EINE VERSCHLIESSVORRICHTUNG, DIE DAZU BESTIMMT IST, AUF DEM HALS EINES BEHÄLTERS BEFESTIGT ZU WERDEN, UND EINE BAUGRUPPE, DIE EINEN BEHÄLTER UND DIE VERSCHLIESSVORRICHTUNG UMFASST

DISPOSITIF DE BOUCHAGE DESTINÉ À ÊTRE FIXÉ AU GOULOT D'UN RÉCIPIENT ET ENSEMBLE COMPRENANT UN RÉCIPIENT ET UN TEL DISPOSITIF DE BOUCHAGE

(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 Validation States:  
**MA TN**

(73) Proprietor: **Betapack, S.A.U.**  
**20305 Irun (Guipúzcoa) (ES)**

(72) Inventor: **BERROA GARCÍA, Francisco, Javier**  
**20305 IRUN (Gipuzcoa) (ES)**

(30) Priority: **24.01.2020 ES 202030056**  
**24.01.2020 ES 202030057**

(74) Representative: **Herrero & Asociados, S.L.**  
**Edificio Aqua - Agustín de Foxá, 4-10**  
**28036 Madrid (ES)**

(43) Date of publication of application:  
**30.11.2022 Bulletin 2022/48**

(56) References cited:  
**WO-A1-2015/061834 ES-U- 1 232 089**  
**US-A1- 2011 297 682**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

**EP 4 095 064 B1**

**Description****Technical field**

[0001] The invention refers to an assembly comprising a container and a capping device which is equipped with a stopper and enables the stopper to be kept fixed to the neck of a container, thus preventing the stopper from being lost altogether.

**Technological background**

[0002] Document ES1232089U discloses a capping device which includes a lower ring intended to be fixed axially to the neck of a container, a cap which includes a thread intended to be attached to an additional thread formed in the gland of the container and a joint which joins the cap to the lower ring. The lower ring includes means of attachment intended to retain the lower ring with the gland of the container. The section of the lower ring diameter in which there are means of attachment extends from 25 to 75 % of the diameter of the lower ring. The section of the lower ring which is connected to the stopper by the hinge device has no means of attachment which allows that section to rotate between a lowered and a raised position, in particular to allow the stopper to be unscrewed. Moreover, the cap includes ratchet means intended to cooperate with the complementary ratchet means formed in the lower ring and thus allows the cap to be kept in an open tilted position.

[0003] This capping device is not completely satisfactory. In particular, this capping device is capable of exhibiting insufficient resistance to pressure, so that the cap is liable to open inadvertently due to too great a pressure in the container, particularly when it is intended to store carbonated drinks.

[0004] Furthermore, despite the absence of means of attachment to the section of the lower ring that is connected to the cap by the joint, manipulations of the cap to allow the section of the lower ring that is connected to the cap to rotate into a raised position when the cap must be moved from the open tilted position to the closed position are not easy.

[0005] US 2011 297 682 A1 also discloses a capping device comprising a hinge device and a locking portion.

**Summary**

[0006] An underlying idea of the invention is to propose a capping device which will enable a cap to be kept attached to the neck of the container which is reliable, easy to make and use.

[0007] The invention provides a capping device intended to be fixed on the neck of a container including an orifice, including the capping device:

- a cap that includes a top wall and an external peripheral skirt, with the external peripheral skirt having

a helical thread formed by a series of ribs and intended to cooperate with a helical thread formed in the neck to allow:

- a unscrewing of the neck cap around an X-axis to move the cap from a closing position where the top wall closes the neck hole and the outer peripheral skirt surrounds the neck to a released position where the cap is no longer attached to the neck; and
- a screwing of the cap on the neck to move the cap from the released position to the closing position;

- a lower ring configured to be fixed axially to the neck and moving in rotation about the neck along the X axis; and
- a hinge device that joins the cap to the lower ring, including the hinge device two plates that connect the outer peripheral skirt and the lower ring and are arranged to allow the cap to rotate between the released position and an open tilted position where the cap disengages from the neck hole,

including the capping device in addition a cap locking device configured to lock the cap in the open tilted position, including such a locking device a bead which forms on the outer peripheral skirt, between the two sheets, and which is configured to rest against the neck of the container when the cap is in the open tilted position, the bead having an inner face on which at least one of the ribs of the helical thread series forms.

[0008] This allows the pressure resistance of the capping device to be improved.

[0009] Depending on other advantageous embodiments, a capping device of this type may have one or more of the following characteristics.

[0010] According to one embodiment, the lower ring includes a first sector comprising coupling elements which project radially into the lower ring and are intended to be arranged under the coupling collar to retain the lower ring axially in the container neck and a second sector, the first sector and the second sector of the lower ring are hinged together in such a way that the second sector rotates with respect to the first sector between a lowered position where the second sector is intended to be arranged under the locking collar and a raised position where the second sector is intended to be arranged at least partially above the locking collar.

[0011] According to one embodiment, the first sector of the lower ring, a front zone which is diametrically opposed to the second sector and two coupling zones which are each arranged between the front zone of the first sector and the second sector, the coupling elements are arranged only in the two coupling zones to allow a radial movement of the lower ring capable of facilitating the passage of a part of the second sector to each side of the coupling collar during the movement of the second

sector between the lowered and the released position. In this way, the tensile forces that will be exerted on the lower ring to allow the second sector to move between the lowered and the raised position are lower, making the use of the capping device easier.

**[0012]** According to one embodiment, the coupling elements are protrusions that project radially inwards.

**[0013]** Depending on the embodiment, the second sector extends over an angular range of 90° to 150°.

**[0014]** Depending on the embodiment, the front of the second sector extends over an angular range of 90° to 150°.

**[0015]** Depending on the embodiment, each of the two attachment areas extends over an angular range of between 30° and 90°.

**[0016]** According to one embodiment, the hinge device is extended over a first angular interval that is cut in two equal parts by a Pb bisector plane, the two hinge areas are extended over angular sectors that are symmetrical with respect to the Pb bisector plane.

**[0017]** According to one embodiment, the hinge device extends over a first angular interval which is cut in two equal parts by a Pb bisector plane and in which the helical thread formed on the outer peripheral skirt of the cap develops around the X axis according to a first direction and has a lower and an upper end, the lower end of the helical thread is arranged in a second angular interval which is defined between the Pb bisector plane and a radial plane positioned at 160° from the Pb bisector plane according to a second direction opposite to the first direction. This facilitates the coupling of the cap in the neck when moving the cap from the open tilted position to the closed position.

**[0018]** According to one embodiment, the invention also refers to an assembly comprising a container equipped with a neck including a distribution hole, a coupling collar and a helical thread and a capping device mentioned above, the lower ring being fixed axially to the neck and being mobile in rotation on the neck around said X-axis.

**[0019]** Depending on the embodiment, the capping device also includes a locking device configured to lock the cap in the open tilted position, including a stop that projects radially outwards from the cap and is configured to rest against the neck attachment collar during movement of the cap from the open tilted position to the position released for use in the second sector, a tensile force that has a component directed radially outwards and a component directed axially upwards to assist the movement of the second sector between the lowered position and the raised position. This makes it even easier to use the capping device, particularly when the cap has to be moved from the open tilted position to the closed position.

**[0020]** According to one embodiment, the stop is configured so that, during movement of the cap from the released position to the open tilted position, the stop rests against an upper end of the second sector of the lower ring to move it from the raised position to the lowered

position. This also makes it easier to use the capping device.

**[0021]** Depending on the embodiment, the locking device also includes a bead that is formed on the outer peripheral skirt of the cap and is extended axially, with the heel configured to rest against a helical rib of the helical thread formed in the neck of the container during movement of the cap from the open tilted position to the released position to exert a tensile force on the second sector which has a component directed radially outwards and a component directed axially upwards to assist movement of the second sector from the lowered position to the raised position. This also makes it easier to use the capping device.

**[0022]** Depending on the embodiment, the hinge device includes two blades and the heel is formed between the two blades.

**[0023]** Depending on the embodiment, the stop protrudes radially outwards from the heel.

### Brief description of the figures

**[0024]** The invention will be better understood and other purposes, details, features and advantages thereof will become more apparent in the following description of several particular embodiments of the invention, provided solely by way of illustration and not limitation, with reference to the attached drawings.

**Figure 1** is a perspective view of three quarters of a capping device.

**Figure 2** is a sectional view of a container neck intended to receive the capping device of Figure 1.

**Figure 3** is a side view of the capping device mounted on the neck of the container and showing the cap of the capping device in a released position in which it is no longer engaged with the neck of the container

**Figure 4** is a perspective view of the capping device mounted on the neck of the container and showing the cap of the capping device in a tilted open position in which the cap is disengaged from the orifice of the neck.

**Figure 5** is a side perspective view of the capping device.

**Figure 6** is another side perspective view of the capping device.

**Figure 7** is a rear perspective view of the capping device.

**Figure 8** is a front perspective view of the capping device.

**Figure 9** is a sectional view of the capping device mounted on the neck of the container and showing the cap of the capping device in a tilted open position in which the cap is disengaged from the orifice of the neck.

**Figure 10** is a sectional view of the capping device mounted on the neck of the container and showing the cap of the capping device in an intermediate position between the released position and the tilted open position.

**Figure 11** is a perspective view of the capping device mounted on the neck of the container and showing the cap of the capping device in the tilted open position.

### Detailed description of the embodiments

**[0025]** In the description and the figures, the axis X corresponds to the axis of rotation of the cap 1 of the capping device when it is screwed onto the neck 2 of the container. By convention, the "radial" orientation is directed orthogonal to the axis X and the axial orientation is directed parallel to the axis X. The terms "external" and "internal" are used to define the relative position of one element with respect to another, by reference to the X axis, an element close to the axis X is thus classified as internal as opposed to an external element located radially on the periphery.

**[0026]** The terms "upper" and "lower" are used to define the relative position of one element with respect to another by reference to a position in which the orifice 3 of the neck 2 is oriented upwards and the cap 1 is in the closed position on the neck 2 of the container, an element intended to be placed lower being named lower and an element intended to be placed higher being named, upper. The terms "front" and "back" are used to define the relative position of one element with respect to another along a diameter perpendicular to the axis X.

**[0027]** With reference to Figures 1 to 10, an assembly comprising a capping device, represented, in particular, in Figure 1, and a container equipped with a neck 2, represented, in particular, in Figure 2, are described below.

**[0028]** As shown in figure 2, the neck 2 of the container has an upper end on which an orifice 3 is formed that allows the contents of the container to be poured. The neck 2 of the container includes a support collar 4 projecting radially outward and an engaging collar 5 that also projects radially outward and is arranged axially between the support collar 4 and the orifice 3. A cylindrical portion is axially formed between the support collar 4 and the orifice 3. On the other hand, the neck 2 includes, axially positioned between the engaging collar 5 and the orifice 3, a helical thread 6 formed by a series of helical ribs, projecting radially towards the exterior from an external surface of the neck 2. The helical thread 6 is intended to cooperate with a complementary helical thread 7 formed

from a series of helical ribs that are formed on the cap 1 of the capping device.

**[0029]** According to one embodiment, the helical thread 6 formed on the neck 2, as well as the helical thread 7 formed on the cap 1 are interrupted. In other words, the adjacent helical ribs are separated by a space that forms a vent and that allows, in particular, to evacuate the gas present inside the container while the cap 1 is still attached to the neck 2.

**[0030]** The capping device includes a lower ring 9 that is retained in the neck 2 of the container, a cap 1 that is intended to cover the orifice 3 of the container in order to seal it, a hinge device 10 that joins the cap 1 with the lower ring 9 and a locking device positioned to lock the cap 1 in an tilted open position, shown in Figures 4, 9 and 11. In the tilted open position, cap 1 is disengaged from the orifice 3 of the container and does not hinder the pouring of the contents of the container.

**[0031]** As illustrated in Figures 7 and 8, the hinge device 10 extends over an angular range S1 which is intersected in two equal parts by a vertical bisection plane Pb.

**[0032]** Returning to Figure 1, it is observed that the cap 1 includes an upper wall 13 intended to be arranged substantially and orthogonally to the axis X, opposite the orifice 3 of the neck 2 when said cap 1 is in the closed position. The cap 1 further includes an outer peripheral skirt 14 intended to surround the neck 2 of the container when the cap 1 is in the closed position. The outer peripheral skirt 14 extends, downward, perpendicular to the upper wall 13, from the outer periphery of said upper wall 13.

**[0033]** The outer peripheral skirt 14 has, on its inner face, a helical thread 7, visible in Figures 2 and 5 to 7, formed by a series of helical ribs that extend around the axis X in a first direction of rotation. The helical thread 7 is intended to cooperate with the helical thread 6 formed on the external surface of the neck 2. In this way, the cap 1 is able to screw into the neck 2 in order to close the container and to unscrew from the neck 2 in order to open the container. The cap 1 can thus be moved between a closed position and a released position, shown in figure 3. In said released position, the cap 1 is no longer engaged with the neck 2. Therefore, it is capable of tilting towards the tilted open position, represented in figures 4, 9 and 11, wherein the cap 1 is disengaged from the orifice 3 of the neck 2 so as not to hinder the pouring of the contents of the container.

**[0034]** As shown in particular in Figure 9, the cap 1 also includes an internal skirt 8, which extends perpendicularly downward from the upper wall 13 of the cap 1 and is dimensioned to insert into the orifice 3 of the neck 2. The cap 1 also includes an annular lip 15 extending, from the upper wall 13, radially between the inner skirt 8 and the outer peripheral skirt 14. The inner skirt 8 and the annular lip 15 are dimensioned so that, when the cap 1 is in the closed position, in the neck 2 of the container, the inner skirt 8 is in contact against the inner face of the neck 2 while the annular lip 15 is in contact against the

outer face of the neck 2. In this way, the internal skirt 8 and the annular lip 15 make it possible to guarantee the sealing of the closure.

**[0035]** Advantageously, the lower ring 9 is, before the first opening of the container, connected to the cap 1 by some frangible bridges, not visible in the figures, intended to be broken during the opening of the cap 1. These frangible bridges thus constitute tamperproof seals.

**[0036]** The lower ring 9 is held axially on the neck 2 of the container while it can rotate with respect to it about the axis X. As shown in figure 3, the lower ring 9 includes two parts that are articulated to each other, that is, a first section 16 and a second section 17 whereby the lower ring 9 is connected to cap 1 by means of the hinge device 10.

**[0037]** According to one embodiment, the lower ring 9 includes two narrowed areas, that is, the radial thickness of which is less than the radial thickness of the lower ring 9 outside of said narrowed areas. The two narrowed areas delimit the first section 16 and the second section 17. The narrowed areas thus form pivots that allow the second section 17 to articulate with respect to the first section 16.

**[0038]** According to another embodiment, the lower ring 9 does not have narrowed areas that delimit the first and second sections 16, 17.

**[0039]** The second section 17 is able to rotate upwards with respect to the first section 16, between a lowered position in which the second section 17 is intended to be arranged under the engaging collar 5 and a raised position, wherein the second section 17 is arranged at least in part above the engaging collar 5. This allows the cap 1 to move upward relative to the neck 2 of the container, until helical thread 7 of cap 1 disengages from the helical thread 6 formed on the neck 2 of the container. In other words, when cap 1 is unscrewed, the lower ring 9 is rotatably driven around the axis X while the second section 17 of the lower ring 9 rotates with respect to first section 16 to the raised position to allow axial movement, up the cap 1, from the closed position, to the released position, represented in figure 3. When the cap 1 rotates from the released position to the tilted open position, the second section 17 of the lower ring 9 rotates in the opposite direction with respect to the first section 16 and then returns to the lowered position. On the other hand, as described in more detail below, the second section 17 also rotates relative to the first section 16 from the lowered position to the raised position when the cap 1 rotates from the tilted open position to the released position.

**[0040]** The lower ring 9 is held axially on the neck 2 of the container by means of the engaging collar 5, in particular, visible in Figures 5 to 7. The engaging collar 5 presents a frusto-conical external surface that tapers upwards, that is, in direction to the orifice 3 of the container. The engaging collar 5 delimits, downwards, that is, in a direction opposite to the orifice 3, a projection. The first section 16 of the lower ring 9 includes engaging elements 18 that cooperate with the engaging collar 5 formed on

the container in order to axially retain the lower ring 9 to the neck 2 of the container. The engaging elements 18 are protrusions, represented in detail in particular in Figures 5 and 6, which protrude radially inward from the first section 16 of the lower ring 9. The retaining elements 18 have a radial dimension that increases, from bottom to top, that is to say, in the direction of the upper edge of the lower ring 9. During the assembly of the capping device on the neck 2 of the container, the engaging elements 18 slide against the frusto-conical surface of the engaging collar 5 and then are locked by an elastic return behind the engaging collar 5.

**[0041]** As shown in Figures 5 and 6, the first section 16 of the lower ring 9 includes a front area 19 that is diametrically opposite to the second section 17 of the lower ring 9 and two engagement areas 20, 21 that are arranged on each side of the front area 19 and are each arranged between the front area 19 and the second section 17 of the lower ring 9. The engaging elements 18 are only arranged in the two engagement areas 20, 21. Thus, due to the absence of engaging elements 18 in the front area of the first section 16, there is a radial space between the lower ring 9 and the neck 2 that allows the lower ring 9 to move from front to back and vice versa. The radial clearance between the lower ring 9 and the neck 2 in the front / rear direction is, for example, between 0.5 and 1 mm. This facilitates the passage of a part of the second section 17 on either side of the engaging collar 5 during the movement of the second section 17 between the lowered position and the raised position. In other words, the tensile forces that shall be exerted on the lower ring 9 to allow the second section 17 to pass to each side of the engaging collar 5 are less.

**[0042]** Advantageously, the second section 17 extends over an angular range between 90 and 150°, and for example, in the order of 120°, the front area of the second section 16 extends over an angular range between 90 and 150°, for example, in the order of 120°, while each of the two engagement areas 20, 21 extends over an angular range comprised between 30 and 90°, for example, in the order of 60°.

**[0043]** On the other hand, the bisection plane Pb cuts the second section 17 into two equal parts, as well as the front part of the second section 17. The angular ranges corresponding to the two engagement areas 20, 21 are therefore symmetrical with each other with respect to the bisection plane Pb.

**[0044]** The hinge device 10 is configured to allow the cap 1 to rotate between the released position, shown in Figure 3, wherein the outer peripheral skirt 14 extends downward from the upper wall 13 of the cap 1, and the tilted open position, represented in Figures 4, 9 and 11, wherein the outer peripheral skirt 14 extends upwards from the upper wall 13 of the cap 1. In the embodiment shown, the hinge device 10 includes two foils 11, 12, in particular visible in figure 4, which join the cap 1 and, more particularly, the outer peripheral skirt 14 of the cap 1 with the lower ring 9, and more particularly, with the

second section 17 of the lower ring 9. The two foils 11, 12 are symmetric with respect to the bisection plane Pb.

**[0045]** The locking device includes a heel 22, in particular, visible in figure 1, which is formed on the outer peripheral skirt 14 of the cap 1. The heel 22 is arranged between the two foils 11, 12. The lower end of the heel 22 is advantageously located at the same height as the lower end of the outer peripheral skirt 14. The heel 22 includes a stop 23 which extends circumferentially about the axis X and projects radially outward from the heel 22.

**[0046]** During the movement of the cap 1 from the released position towards the tilted open position, the stop 23 abuts against the upper end of the second section 17 of the lower ring 9 which tends to return said second section 17 towards the lowered position.

**[0047]** On the other hand, during the movement of the cap 1 from the tilted open position towards the released position, at first, the stop 23 rests against the engaging collar 5, as shown in figure 10, to exert on the second section 17 of the lower ring 9 a tensile force having a component directed radially outward and a component directed axially upward. This allows the lower ring 9 to be moved from the front to the rear to press the front area 19 of the first section 16 of the lower ring 9 against the neck 2 of the container in order to facilitate the movement of the second section 17 towards the raised position. This also allows aiding the movement of the second section 17 between the lowered position and the raised position.

**[0048]** Then, as shown in figure 10, during the movement of the cap 1 from the tilted open position to the released position, the outer surface of the heel 22, comes in a second moment, rests against the upper surface of a helical rib of the helical thread 6 formed in the neck 2 of the container, which also allows to exert on the second section 17 a tensile force having a component directed radially outward and a component directed upward to move the second section 17 towards the raised position.

**[0049]** On the other hand, as shown in Figure 11, the lower end 24 of the helical thread 7 formed on the inner face of the outer peripheral skirt 14, that is, the beginning of the helical thread 7, is arranged in an angular range S2 which is defined between the bisection plane Pb and a radial plane Pr located at 160° from the bisection plane Pb according to a second direction opposite to the first direction of rotation, that is, in the direction of rotation of the helical thread 7 about the axis X. Thus, a lower front portion 25 of the outer peripheral skirt 14 lacks a helical thread 7, which makes it easier to fit the cap 1 on the neck 2 of the container. This arrangement is particularly advantageous when the cap 1 is capable of being presented in a slightly rearward position when it comes into contact with the neck 2 of the container. This is particularly the case, when the engaging elements 18 are absent from the front area 19 of the first section 16 and that, consequently, the lower ring 9 can move radially from front to back with respect to the neck 2 of the container.

**[0050]** Advantageously, the lower end of the helical thread 7 is arranged in an angular range defined between

two radial planes respectively positioned at 90° and 160° from the bisection plane Pb according to a second direction of rotation opposite the direction of the helical thread 7 of the cap 1.

**[0051]** On the other hand, as schematically represented in Figures 8, 9 and 10, at least one of the ribs of the series of ribs of the helical thread 7 is formed on the inner face of the heel 22. In other words, at least one of the ribs of the helical thread 7 is formed between the two foils 11, 12 of the hinge device 10. The presence of said rib formed on the heel 22 makes it possible to increase the resistance to pressure of the helical thread 7 and, therefore, prevents cap 1 from opening unintentionally due to excessive pressure on the container, in particular when it is intended to receive carbonated beverages.

**[0052]** The kinematics of the cap 1 is as follows. During the first unscrewing, the cap 1 leaves the closed position and moves away from the lower ring 9 to the released position, illustrated in figure 3. The frangible bridges break in the course of this movement. Furthermore, during this unscrewing movement of the cap 1, the lower ring 9 is rotatably driven around the axis X and the second section 17 of the lower ring 9 rotates towards the raised position as the cap 1 moves away from the engaging collar 5. The cap 1 can then be rotated backwards in the direction of the open tilted position in which the outer peripheral skirt 14 extends upward from the top wall 13. During the movement of the cap 1 back in the direction of its open tilted position, the stop 23 abuts against the upper end of the second section 17 of the lower ring 9, so that the second section 17 of the lower ring 9 rotates from the raised position to the lowered position.

**[0053]** As shown in figure 9, when the second section 17 of the lower ring 9 is in the lowered position and the cap 1 is in its tilted open position, the stop 23 is supported against the engaging collar 5. In this way, the cap 1 remains in its tilted open position since, due to this abutment of the stop 23 against the engaging collar 5, the cap 1 cannot rotate towards the released position in which the cap 1 faces the dispensing orifice 3 while the second section 17 of lower ring 9 remains in the lowered position. This makes it possible to increase the minimum opening angle of the cap 1. Thus, advantageously, when the cap 1 is in its tilted open position and the second section 17 of the lower ring 9 is in the lowered position, the opening angle of the cap 1 is greater than 120° and, advantageously, greater than or equal to 145° and, for example, in the order of 180°. The opening angle corresponds to the projecting angular section that is formed at the intersection between a plane parallel to the upper wall 13 of the cap 1 and a horizontal plane.

**[0054]** To close the cap 1 again, the user tilts the cap 1 forward to the released position. During this tilting, the stop 23 rests against the engaging collar 5 to exert on the second section 17 of the lower ring 9 a tensile force that has a component directed radially outward that makes it possible to move the lower ring 9 from front to back and a component directed axially upwards that al-

lows to aid the movement of the second section 17 of the lower ring 9 towards the raised position. The outer surface of the heel 22 also abuts against a helical rib of the helical thread 6 which also facilitates the movement of the second section 17 of the lower ring 9 towards the raised position. When the second section 17 is in the raised position and the cap 1 is in the released position, the cap 1 can then be screwed back into the neck 2 of the container. During screwing, the lower ring 9 is rotatably driven around the axis X and the second section 17 of the lower ring 9 rotates towards the lowered position as the cap 1 is close to the engaging collar 5.

**[0055]** Advantageously, the entire capping device is molded in a single piece of synthetic material, such as polyethylene and advantageously high-density polyethylene. Advantageously, the capping device is molded in the configuration of figure 1, that is, in a closed position, a position in which it can be mounted directly on the neck 2 of the container.

**[0056]** Although the invention has been described in relation to various particular embodiments, it is more than evident that it is not limited in any way by them and that it comprises combinations thereof if they fall within the scope of the invention as defined by the claims.

**[0057]** The use of the verb "comprise" or "include" and its conjugated forms do not exclude the presence of other elements or stages other than those established in a claim.

**[0058]** In the claims, any reference signs in parentheses are not to be construed as limiting the claim.

## Claims

1. Capping device intended to be attached to a neck (2) of a container which includes a hole (3), including the capping device:

- a cap (1) which includes an upper wall (13) and an external peripheral skirt (14), with the external peripheral skirt (14) having a helical thread (7) formed by a series of ribs and intended to cooperate with a helical thread (6) formed in the neck (2) to allow

- unscrewing of the cap (1) from the neck (2) around an X-axis to move the cap (1) from a closing position where the upper wall (13) closes the neck hole (3) and the outer peripheral skirt (14) surrounds the neck (2) to a released position where the cap (1) is no longer attached to the neck (2); and
- screwing of the cap (1) into the neck (2) to move the cap (1) from the released position to the closing position;

- a lower ring (9) configured to be fixed axially to the neck (2) and movable in rotation about

the neck (2) along the X axis; and

- a hinge device that connects the cap (1) to the lower ring (9), including the hinge device two plates (11, 12) that connect the outer peripheral skirt (14) and the lower ring (9) and are arranged to allow the cap (1) to rotate between the released position and an open tilted position in which the cap (1) disengages from the neck hole (2),

including the capping device in addition a cap (1) lock configured to lock the cap (1) in the open tilted position, including such locking device a bead (22) which is formed on the outer peripheral skirt (14), between the two sheets (11, 12), and which is configured to rest against the neck (2) of the container when the cap (1) is in the open tilted position, the bead (22) has an internal face where at least one of the ribs of the helical thread series (7) is formed.

2. Capping device according to claim 1, in which the lower ring (9) includes a first sector (16) comprising coupling elements (18) which project radially into the lower ring (9) and are intended to be arranged under the coupling collar (5) to retain the lower ring (9) axially in the neck (2) of the vessel and a second sector (17), the first sector (16) and the second sector (17) of the lower ring (9) are hinged together so that the second sector (17) rotates with respect to the first sector (16) between a lowered position where the second sector (17) is intended to be positioned under the locking collar (5) and a raised position where the second sector (17) is intended to be at least partially positioned above the locking collar (5).
3. Capping device according to claim 2, in which the first sector (16) of the lower ring (9) includes a front zone (19) which is diametrically opposed to the second sector (17) and two coupling zones (20, 21) which are each arranged between the front zone (19) of the first sector (16) and the second sector (17), the coupling parts (18) are arranged only in the two coupling zones (20, 21) to allow a radial movement of the lower ring (9) capable of facilitating the passage of a part of the second sector (17) on each side of the coupling collar (5) during the movement of the second sector (17) between the lowered and the released position.
4. Capping device according to claim 3, in which the coupling elements (18) are protrusions that project radially inwards.
5. Capping device according to any of the claims 1 to 4, in which the hinge device (10) extends over a first angular interval that is cut in two equal parts by a Pb bisector plane and in which the helical thread (7) formed on the outer peripheral skirt (14) of the cap

(1) develops around the X axis according to a first direction and has a lower and an upper end, with the lower end of the helical thread (7) arranged in a second angular interval which is defined between the Pb bisector plane and a radial plane positioned at 160° from the Pb bisector plane according to a second direction opposite to the first direction.

6. An assembly comprising a container equipped with a neck (2) including a distribution hole (3), a coupling collar (5) and a helical thread (6) and a capping device according to any of the claims 1 to 5, the lower ring (9) being fixed axially to the neck (2) and moving in rotation about the neck (2) along the X axis. 10
7. Assembly according to claim 6, in which the capping device also includes a locking device configured to lock the cap (1) in the open tilted position, including such a locking device a stop (23) which projects radially outwards from the cap (1) and is configured to rest against the collar (5) of the neck (2) during movement of the cap (1) from the open tilted position to the released position to exert a tensile force on the second sector (17) which has a component directed radially outwards and a component directed axially upwards to assist movement of the second sector (17) between the lowered position to the raised position. 20 25
8. Assembly according to claim 7, in which the stop (23) is configured so that, during movement of the cap (1) from the released position to the open tilted position, the stop (23) rests against an upper end of the second sector (17) of the lower ring (9) to move it from the raised position to the lowered position. 30 35
9. Assembly according to claims 7 or 8, in which the locking device also includes a bead (22) which is formed on the outer peripheral skirt (14) of the cap (1) and extends axially, with the bead (22) configured to rest against a helical rib of the helical thread (6) formed in the neck (2) of the container during movement of the cap (1) from the open tilted position to the released position to exert a tractive force on the second sector (17) which has a component directed radially outwards and a component directed axially upwards to assist movement of the second sector (17) from the lowered position to the raised position. 40 45
10. Assembly according to claim 9, in which the hinge device (10) includes two plates (11, 12) and in which the bead (22) is formed between the two plates (11, 12). 50
11. Assembly according to claim 9, in which the stop (23) projects radially outwards from the bead (22). 55

## Patentansprüche

1. Verschlussvorrichtung, bestimmt zur Befestigung an einem Hals (2) eines Behälters, der eine Öffnung (3) aufweist, wobei die Verschlussvorrichtung umfasst:

- eine Kappe (1), die eine obere Wand (13) und eine äußere Umfangsschürze (14) aufweist, wobei die äußere Umfangsschürze (14) ein schraubenförmiges Gewinde (7) aufweist, das durch eine Reihe von Rippen gebildet wird und dazu bestimmt ist, mit einem schraubenförmigen Gewinde (6) zusammenzuwirken, das in dem Hals (2) ausgebildet ist, um zu ermöglichen

- ein Abschrauben der Kappe (1) vom Hals (2) um eine X-Achse, um die Kappe (1) aus einer Verschlussposition, in der die obere Wand (13) die Hals-Öffnung (3) verschließt und die äußere Umfangsschürze (14) den Hals (2) umgibt, in eine Freigabeposition zu bewegen, in der die Kappe (1) nicht mehr am Hals (2) befestigt ist, und
- ein Einschrauben der Kappe (1) in den Hals (2), um die Kappe (1) von der Freigabeposition in die Verschlussposition zu bringen;

- einen unteren Ring (9), der so gestaltet ist, dass er axial am Hals (2) befestigt und um den Hals (2) entlang der X-Achse drehbar ist, und

- eine Scharniervorrichtung, die die Kappe (1) mit dem unteren Ring (9) verbindet, wobei die Scharniervorrichtung zwei Platten (11, 12) umfasst, die die äußere Umfangsschürze (14) und den unteren Ring (9) verbinden und so angeordnet sind, dass sie eine Drehung der Kappe (1) zwischen der Freigabeposition und einer offenen, gekippten Position ermöglichen, in der die Kappe (1) von der Hals (2)-Öffnung gelöst ist,

wobei die Verschlussvorrichtung zusätzlich eine Verriegelung der Kappe (1) aufweist, die so konfiguriert ist, dass sie die Kappe (1) in der offenen, gekippten Position verriegelt, wobei die Verriegelung einen Wulst (22) aufweist, der an der äußeren Umfangsschürze (14) zwischen den beiden Platten (11, 12) ausgebildet ist und der so ausgestaltet ist, dass er am Hals (2) des Behälters anliegt, wenn sich die Kappe (1) in der offenen, gekippten Position befindet, wobei der Wulst (22) eine Innenfläche aufweist, an der mindestens eine der Rippen der spiralförmigen Gewinde (7)-Serie ausgebildet ist.

2. Verschlussvorrichtung gemäß Anspruch 1, wobei der untere Ring (9) einen ersten Sektor (16) mit Kupplungselementen (18), die radial in den unteren

- Ring (9) hineinragen und dazu bestimmt sind, unter dem Kupplungskragen (5) angeordnet zu werden, um den unteren Ring (9) axial im Hals (2) des Behälters zu halten, und einen zweiten Sektor (17) umfasst, wobei der erste Sektor (16) und der zweite Sektor (17) des unteren Rings (9) gelenkig miteinander verbunden sind, so dass der zweite Sektor (17) in Bezug auf den ersten Sektor (16) zwischen einer abgesenkten Position, in der der zweite Sektor (17) dazu bestimmt ist, unter dem Kupplungskragen (5) positioniert zu werden, und einer angehobenen Position, in der der zweite Sektor (17) dazu bestimmt ist, zumindest teilweise über dem Kupplungskragen (5) positioniert zu werden, rotiert.
3. Verschlussvorrichtung gemäß Anspruch 2, wobei der erste Sektor (16) des unteren Rings (9) einen vorderen Bereich (19), der dem zweiten Sektor (17) diametral gegenüberliegt, und zwei Kupplungsbereiche (20, 21) aufweist, die jeweils zwischen dem vorderen Bereich (19) des ersten Sektors (16) und dem zweiten Sektor (17) angeordnet sind, wobei die Kupplungselemente (18) nur in den beiden Kupplungsbereichen (20, 21) angeordnet sind, um eine radiale Bewegung des unteren Rings (9) zu ermöglichen, die ausgestaltet ist, um den Durchgang eines Teils des zweiten Sektors (17) auf jeder Seite des Kupplungskragens (5) während der Bewegung des zweiten Sektors (17) zwischen der abgesenkten und der gelösten Position zu ermöglichen.
  4. Verschlussvorrichtung gemäß Anspruch 3, wobei die Kupplungselemente (18) radial nach innen ragende Vorsprünge sind.
  5. Verschlussvorrichtung gemäß einem der Ansprüche 1 bis 4, wobei sich die Scharniervorrichtung (10) über ein erstes Winkelintervall erstreckt, das durch eine Halbierungsebene Pb in zwei gleiche Teile geteilt wird, und wobei sich das an der äußeren Umfangsschürze (14) der Kappe (1) ausgebildete schraubenförmige Gewinde (7) um die X-Achse gemäß einer ersten Richtung erstreckt und ein unteres und ein oberes Ende aufweist, wobei das untere Ende des schraubenförmigen Gewindes (7) in einem zweiten Winkelintervall angeordnet ist, das zwischen der Halbierungsebene Pb und einer Radialebene definiert ist, die um 160° von der Halbierungsebene Pb in einer zweiten Richtung entgegengesetzt zur ersten Richtung angeordnet ist.
  6. Baugruppe, umfassend einen Behälter mit einem Hals (2), der eine Verteiler-Öffnung (3), einen Kupplungskragen (5) und ein spiralförmiges Gewinde (6) aufweist, und eine Verschlussvorrichtung gemäß einem der Ansprüche 1 bis 5, wobei der untere Ring (9) axial am Hals (2) befestigt ist und sich drehend um den Hals (2) entlang der X-Achse bewegt.
  7. Anordnung gemäß Anspruch 6, wobei die Verschlussvorrichtung weiterhin eine Verriegelungsvorrichtung umfasst, die derart ausgestaltet ist, dass sie die Kappe (1) in der offenen, gekippten Position verriegelt, wobei die Verriegelungsvorrichtung einen Anschlag (23) umfasst, der von der Kappe (1) radial nach außen vorsteht und so ausgestaltet ist, dass er während der Bewegung der Kappe (1) von der offenen, gekippten Position in die Freigabeposition am Kragen (5) des Halses (2) anliegt, um eine Zugkraft auf den zweiten Sektor (17) auszuüben, die eine radial nach außen gerichtete Komponente und eine axial nach oben gerichtete Komponente aufweist, um die Bewegung des zweiten Sektors (17) zwischen der abgesenkten Position und der angehobenen Position zu unterstützen.
  8. Baugruppe gemäß Anspruch 7, wobei der Anschlag (23) derart ausgestaltet ist, dass der Anschlag (23) bei der Bewegung der Kappe (1) aus der gelösten Position in die offene, gekippte Position an einem oberen Ende des zweiten Sektors (17) des unteren Rings (9) anliegt, um ihn aus der angehobenen Position in die abgesenkte Position zu bewegen.
  9. Anordnung gemäß Anspruch 7 oder 8, wobei die Verriegelungsvorrichtung weiterhin einen Wulst (22) umfasst, der an der äußeren Umfangsschürze (14) der Kappe (1) ausgebildet ist und sich axial erstreckt, wobei der Wulst (22) derart ausgestaltet ist, dass er während der Bewegung der Kappe (1) aus der offenen, gekippten Position in die gelöste Position an einer schraubenförmigen Rippe des im Hals (2) des Behälters ausgebildeten schraubenförmigen Gewindes (6) anliegt, um eine Zugkraft auf den zweiten Sektor (17) auszuüben, die eine radial nach außen gerichtete Komponente und eine axial nach oben gerichtete Komponente aufweist, um die Bewegung des zweiten Sektors (17) aus der abgesenkten Position in die angehobene Position zu ermöglichen.
  10. Anordnung gemäß Anspruch 9, wobei die Scharniervorrichtung (10) zwei Platten (11, 12) umfasst und wobei der Wulst (22) zwischen den beiden Platten (11, 12) ausgebildet ist.
  11. Baugruppe gemäß Anspruch 9, bei der der Anschlag (23) radial nach außen aus dem Wulst (22) herausragt.

## Revendications

1. Dispositif de bouchage destiné à être fixé sur un goulot (2) d'un récipient qui comporte un orifice (3), comportant le dispositif de bouchage :

- un bouchon (1) qui comporte une paroi supé-

rieure (13) et une jupe périphérique externe (14), la jupe périphérique externe (14) présentant un filetage hélicoïdal (7) formé par une série de nervures et destinée à coopérer avec un filetage hélicoïdal (6) formé dans le goulot (2) pour permettre

- le dévissage du bouchon (1) du goulot (2) autour d'un axe X pour déplacer le bouchon (1) d'une position de fermeture où la paroi supérieure (13) ferme l'orifice de goulot (3) et la jupe périphérique externe (14) entoure le goulot (2) à une position libérée où le bouchon (1) n'est plus attaché au goulot (2) ; et
- le vissage du bouchon (1) dans le goulot (2) pour déplacer le bouchon (1) de la position de libération à la position de fermeture ;

- une bague inférieure (9) conçue pour être

fixée axialement au goulot (2) et mobile en rotation autour du goulot (2) le long de l'axe X ; et

- un dispositif de charnière qui relie le bouchon (1) à la bague inférieure (9), comportant le dispositif de charnière, deux plaques (11, 12) qui relient la jupe périphérique externe (14) et la bague inférieure (9) et sont agencées pour permettre au bouchon (1) de tourner entre la position libérée et une position inclinée ouverte dans laquelle le bouchon (1) se désolidarise du orifice de goulot (2), comportant le dispositif de bouchage, en plus d'un verrou de bouchon (1) conçu pour verrouiller le bouchon (1) dans la position inclinée ouverte, comportant un tel dispositif de verrouillage, un cordon (22) qui est formé sur la jupe périphérique externe (14), entre les deux feuilles (11, 12), et qui est conçu pour reposer contre le goulot (2) du récipient lorsque le bouchon (1) est dans la position inclinée ouverte, le cordon (22) a une face interne où au moins une des nervures de la série de filetages hélicoïdaux (7) est formée.

2. Dispositif de bouchage selon la revendication 1, dans lequel la bague inférieure (9) comporte un premier secteur (16) comprenant des éléments d'accouplement (18) qui font saillie radialement dans la bague inférieure (9) et sont destinés à être agencés sous le collier d'accouplement (5) pour retenir la bague inférieure (9) axialement dans le goulot (2) du récipient et un second secteur (17), le premier secteur (16) et le second secteur (17) de la bague inférieure (9) sont articulés entre eux de sorte que le second secteur (17) tourne par rapport au premier secteur (16) entre une position abaissée où le se-

cond secteur (17) est destiné à être positionné sous le collier de verrouillage (5) et une position relevée où le second secteur (17) est destiné à être au moins partiellement positionné au-dessus du collier de verrouillage (5).

3. Dispositif de bouchage selon la revendication 2, dans lequel le premier secteur (16) de la bague inférieure (9) comporte une zone avant (19) diamétralement opposée au second secteur (17) et deux zones d'accouplement (20, 21) qui sont chacune agencées entre la zone avant (19) du premier secteur (16) et le second secteur (17), les parties d'accouplement (18) sont agencées uniquement dans les deux zones d'accouplement (20, 21) pour permettre un déplacement radial de la bague inférieure (9) apte à faciliter le passage d'une partie du second secteur (17) de part et d'autre du collier d'accouplement (5) lors du déplacement du second secteur (17) entre la position abaissée et la position de libération.

4. Dispositif de bouchage selon la revendication 3, dans lequel les éléments d'accouplement (18) sont des saillies qui font saillie radialement vers l'intérieur.

5. Dispositif de bouchage selon l'une quelconque des revendications 1 à 4, dans lequel le dispositif de charnière (10) s'étend sur un premier intervalle angulaire qui est coupé en deux parties égales par un plan bissecteur Pb et dans lequel le filetage hélicoïdal (7) formé sur la jupe périphérique externe (14) du bouchon (1) se développe autour de l'axe X selon une première direction et présente une extrémité inférieure et une extrémité supérieure, l'extrémité inférieure du filetage hélicoïdal (7) étant agencée dans un second intervalle angulaire qui est défini entre le plan bissecteur Pb et un plan radial positionné à 160 ° du plan bissecteur Pb selon une seconde direction opposée à la première direction.

6. Ensemble comprenant un récipient équipé d'un goulot (2) comportant un orifice de distribution (3), un collier d'accouplement (5) et un filetage hélicoïdal (6) et un dispositif de bouchage selon l'une quelconque des revendications 1 à 5, la bague inférieure (9) étant fixée axialement au goulot (2) et se déplaçant en rotation autour du goulot (2) le long de l'axe X.

7. Ensemble selon la revendication 6, dans lequel le dispositif de bouchage comporte également un dispositif de verrouillage conçu pour verrouiller le bouchon (1) dans la position inclinée ouverte, comportant un tel dispositif de verrouillage, une butée (23) qui fait saillie radialement vers l'extérieur depuis le bouchon (1) et est conçue pour reposer contre le collier (5) du goulot (2) lors du déplacement du bouchon (1) de la position inclinée ouverte à la position de libération pour exercer une force de traction sur

le second secteur (17) qui présente un composant dirigé radialement vers l'extérieur et un composant dirigé axialement vers le haut pour aider le mouvement du second secteur (17) entre la position abaissée à la position relevée.

5

8. Ensemble selon la revendication 7, dans lequel la butée (23) est conçue de sorte que, lors du déplacement du bouchon (1) de la position de libération à la position inclinée ouverte, la butée (23) repose contre une extrémité supérieure du second secteur (17) de la bague inférieure (9) pour le déplacer de la position relevée vers la position abaissée. 10
9. Ensemble selon les revendications 7 ou 8, dans lequel le dispositif de verrouillage comporte également un cordon (22) qui est formé sur la jupe périphérique externe (14) du bouchon (1) et s'étend axialement, le cordon (22) étant conçu pour reposer contre une nervure hélicoïdale du fil hélicoïdal (6) formée dans le goulot (2) du récipient pendant le déplacement du bouchon (1) de la position inclinée ouverte à la position de libération pour exercer une force de traction sur le second secteur (17) qui présente un composant dirigé radialement vers l'extérieur et un composant dirigé axialement vers le haut pour aider le mouvement du second secteur (17) depuis la position abaissée à la position relevée. 15 20 25
10. Ensemble selon la revendication 9, dans lequel le dispositif de charnière (10) comporte deux plaques (11, 12) et dans lequel le cordon (22) est formé entre les deux plaques (11, 12). 30
11. Ensemble selon la revendication 9, dans lequel la butée (23) fait saillie radialement vers l'extérieur du cordon (22). 35

40

45

50

55

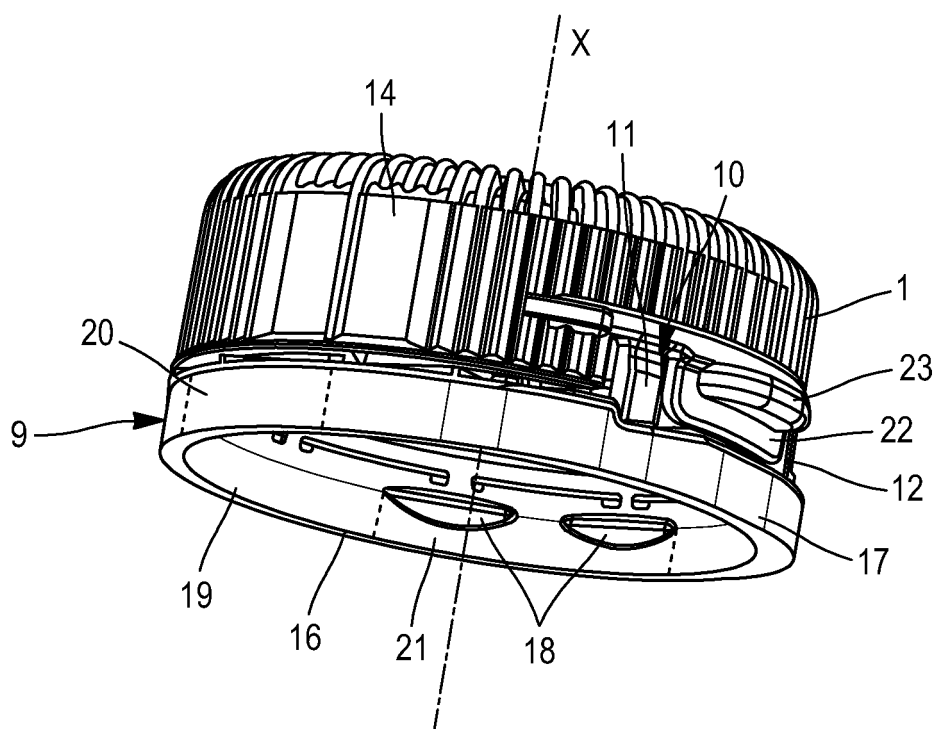


FIG. 1

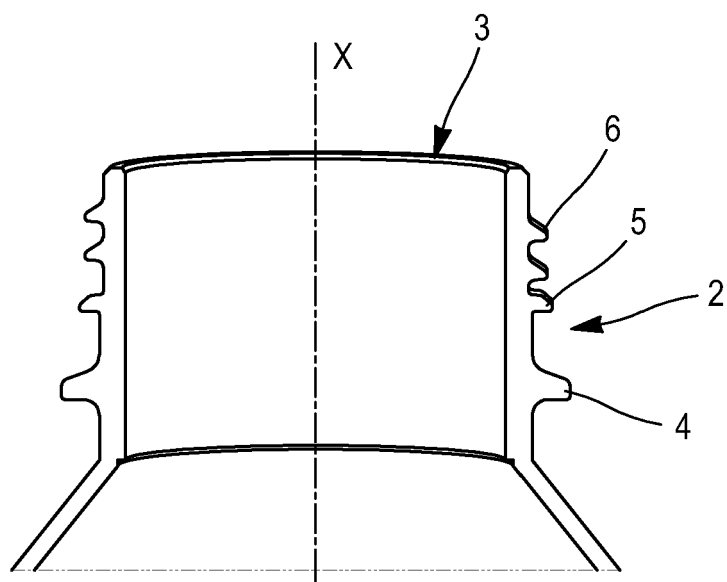


FIG. 2

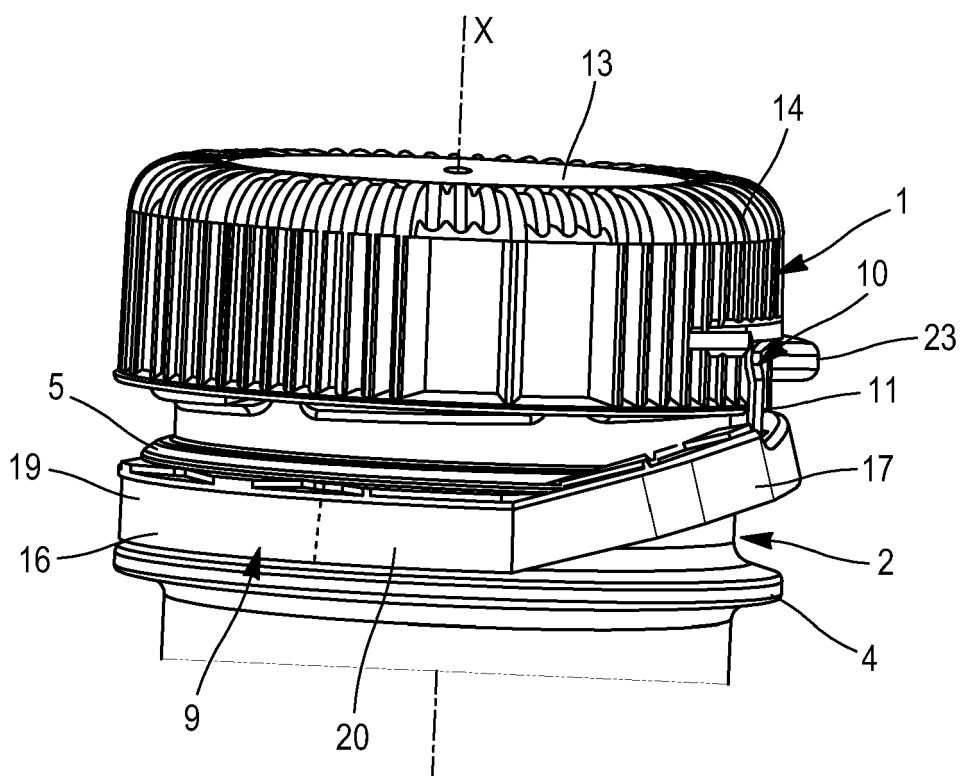


FIG. 3

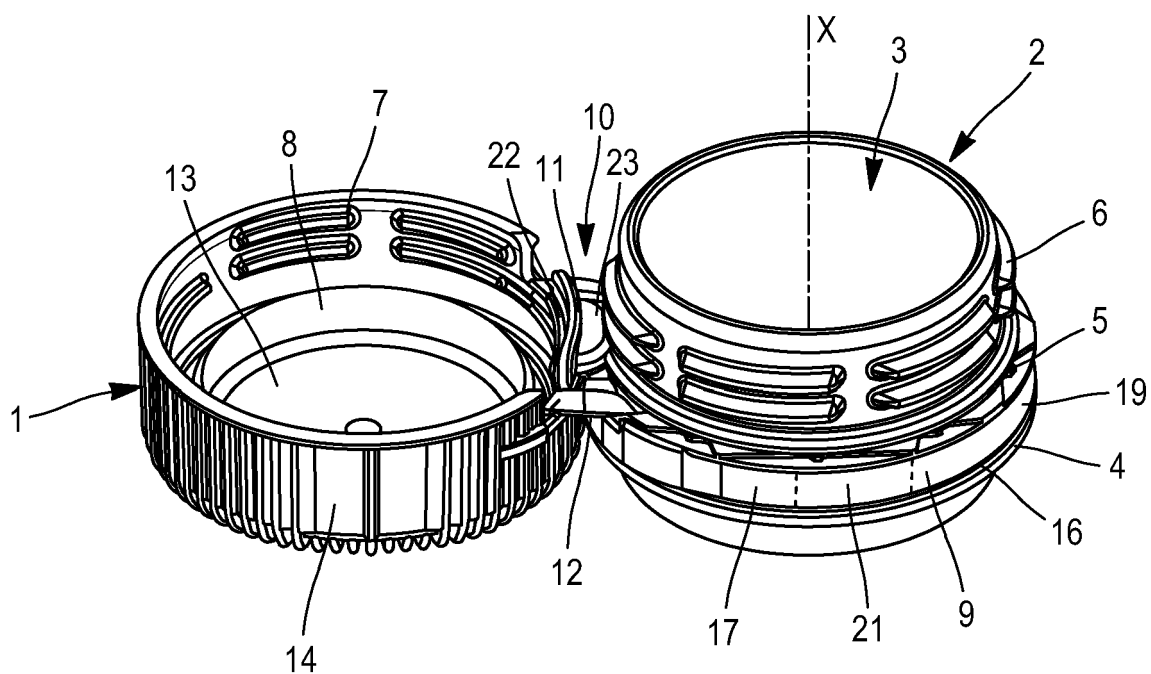


FIG. 4

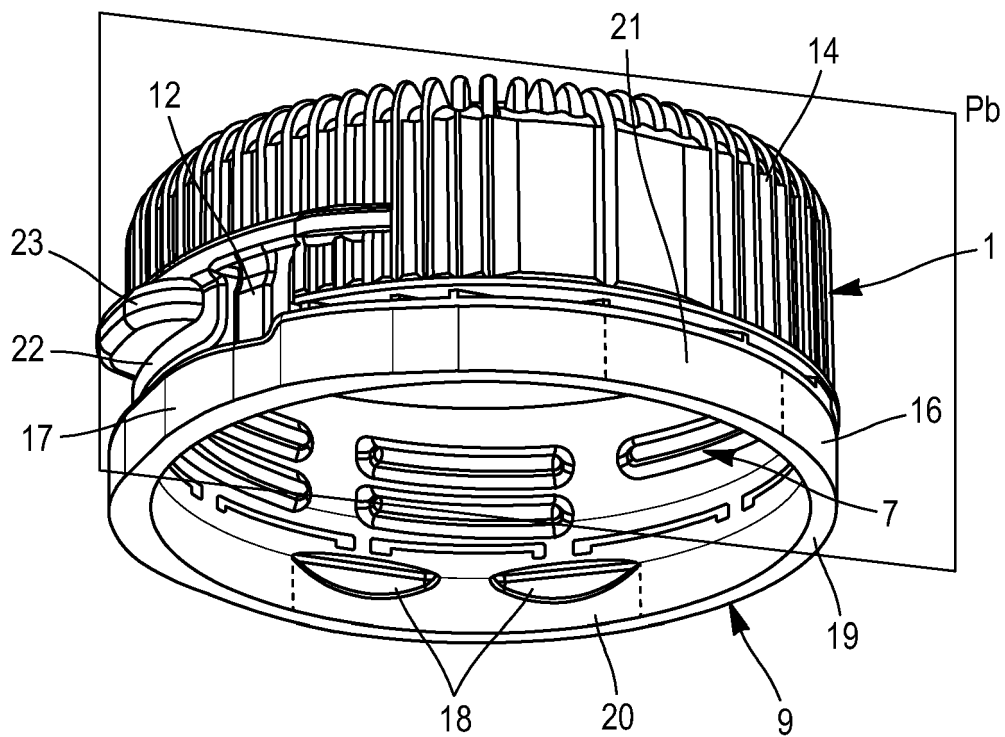


FIG. 5

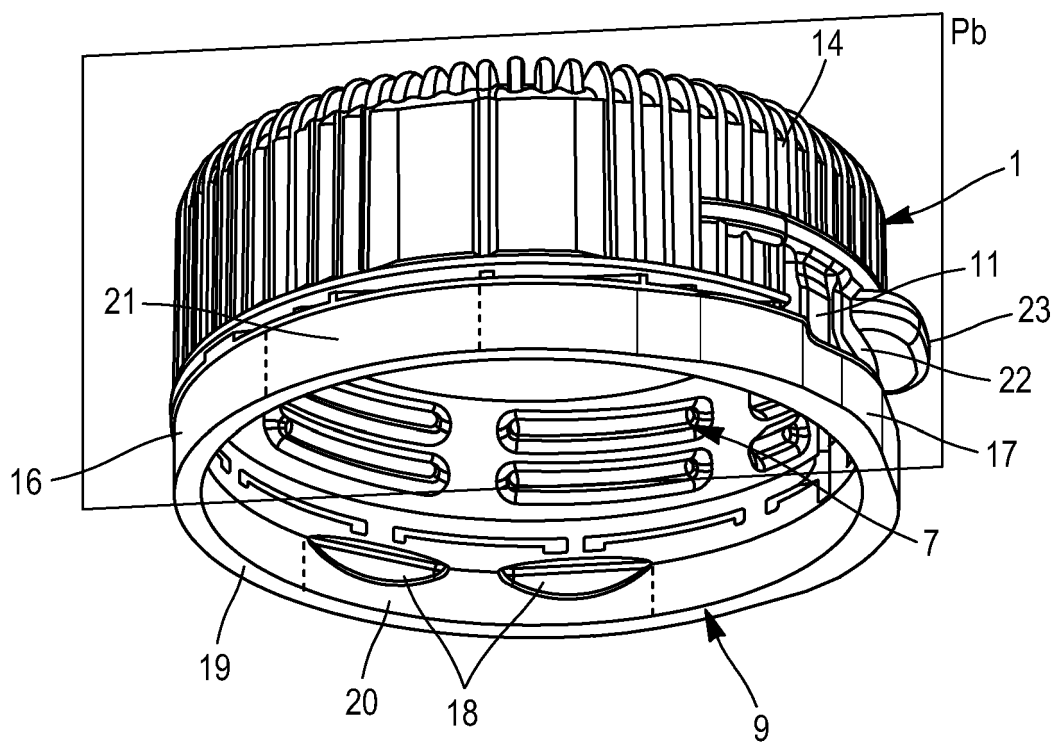


FIG. 6

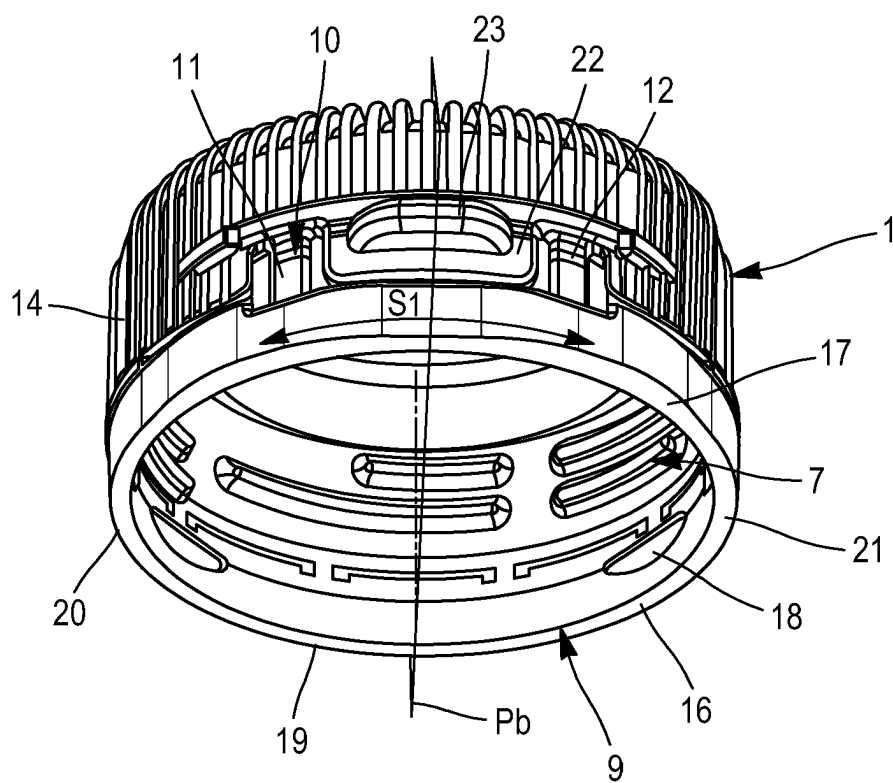


FIG. 7

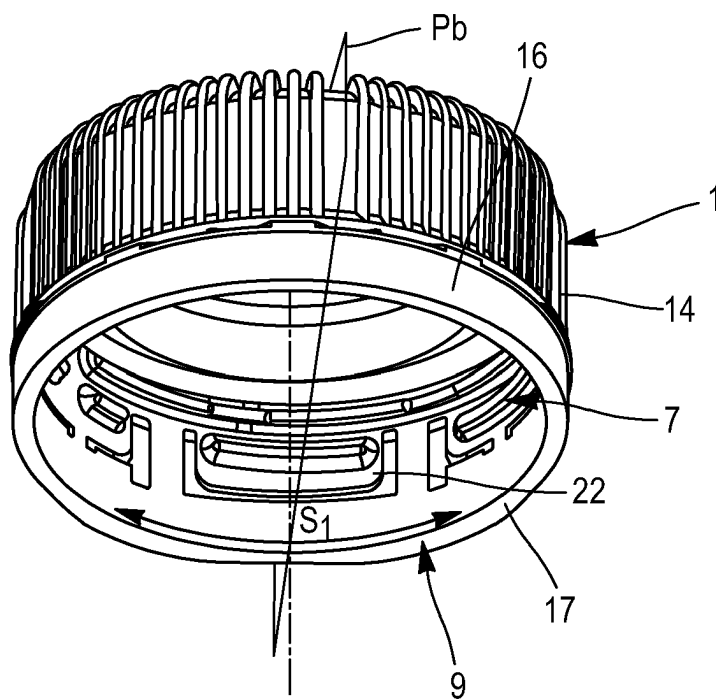


FIG. 8

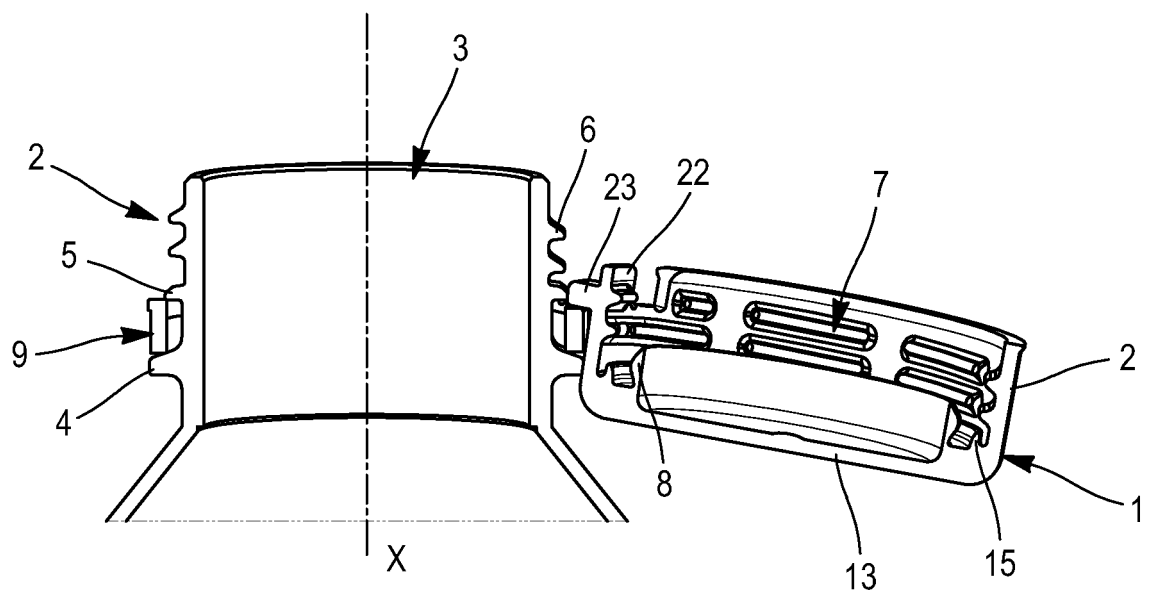


FIG. 9

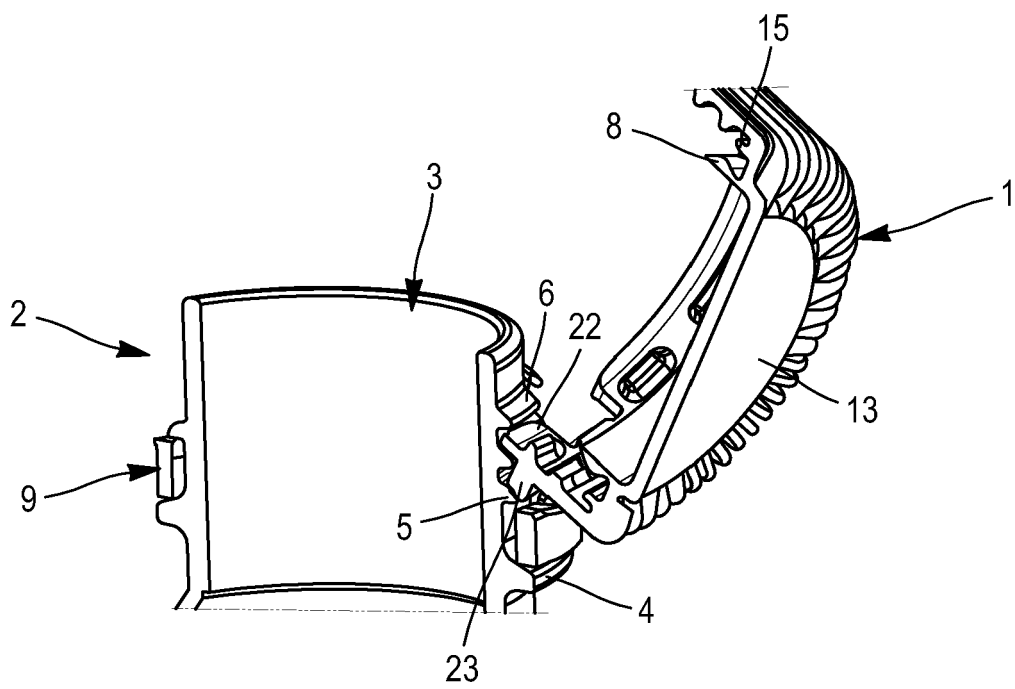


FIG. 10

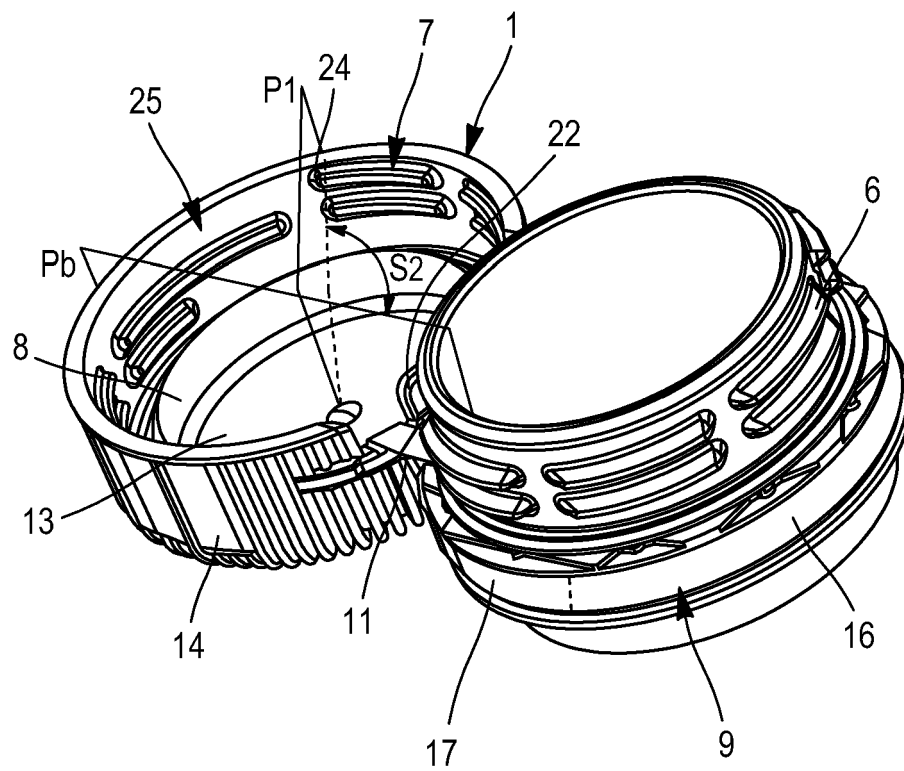


FIG. 11

**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**

- ES 1232089 U [0002]
- US 2011297682 A1 [0005]