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(54) PLASTIC CAP HAVING A POURING PROTRUSION

KUNSTSTOFFKAPPE MIT AUSGUSSVORSPRUNG

BOUCHON EN PLASTIQUE DOTÉ D'UN BEC VERSEUR

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Description

Technical Field:

[0001] This invention relates to a plastic cap having a pouring protrusion (e.g., pouring cylinder) that serves as a guide when a liquid in a container is to be poured. More specifically, the invention relates to a plastic cap in which a bill is formed as a spout protruding outward at an upper end of the pouring protrusion.

Background Art:

[0002] Plastic caps have been widely used having a pouring cylinder that serves as a guide for pouring the liquid in the containers. A representative example of such plastic caps has a structure comprising, for example, a cap body fixed to the mouth portion of the container and an upper lid coupled by hinge to the cap body so as to be opened and closed, and in which a pouring cylinder is provided in the cap body. That is, the cap body has a cylindrical side wall (skirt) and a top panel which is so formed as to close the upper end of the cylindrical side wall. The pouring cylinder is formed in the upper surface of the top panel, and a portion where a port will be formed is sectionalized by an endless score in an area of the top panel surrounded by the pouring cylinder. An opening is formed by tearing apart the score in the cap body fixed to the mouth portion of the container. If the liquid in the container is poured through the opening, the liquid that is poured flows along the wall surface of the pouring cylinder; i.e., the liquid is smoothly poured without being scattered.

[0003] In the above pouring cylinder, in general, at least a portion of the upper end is protruding outward beyond the root portion of the pouring cylinder to form a spout, and the upper end portion of the spout is curved outward like a horn. Recently, however, it has been proposed to form a bill that greatly protrudes outward at the upper end of the pouring cylinder and to use the bill as the spout featuring improved liquid cutting performance due to the formation of the bill (see patent documents 1 and 2). Patent document 2 discloses a plastic cap according to the preamble of claim 1.

[0004] There has, further, been proposed a cap in which a slender portion is formed in a portion of the pouring cylinder protruding outward from the lower end up to the upper end thereof, and the content liquid is poured through the above portion (see patent document 3).

[0005] Patent document 4 discloses a cap with a lid in which respective back parts of the peripheral wall of a cap body and the peripheral wall of a lid body are hinge-connected, and a finger hooking projection is projected forward from the front face lower part of the peripheral wall of the lid body. An undersurface of the finger hooking projection is made to be an engaging inclined face from the upper front to the lower back. A lever is stood up from the lower part of the peripheral wall of the cap main body, and the upper end part of the lever is engaged on the engaging inclined face so that the finger hooking projection can be pushed up by pushing inward the lever. In addition, an undersurface of the intermediate part of a sealing band connected with the left and right both end parts on the cap body side through a breaking part, is locked on the upper face of the finger hooking projection, and at least one of the breaking parts of the left and right both ends of the sealing band is provided so as to be breakable by pushing inward the lever.

[0006] Patent document 5 discloses a hinge cap, wherein a lid is openably and closeably connected to the back upper end part of a peripheral wall of a cap body opened by a pull ring through a hinge. A knob for opening and closing is projected on the lower end on the opposite side to the hinge on the peripheral wall of the lid. An apex of one of a connecting belt for preventing unfair opening is connected to a central apex position in the left and right direction of the knob for opening and closing through a thin weak line, and the upper end of the outer periphery of a locking ring having a locking ring on the inner peripheral face of the lower end of the peripheral wall is connected at the other apex of the connecting belt for preventing the unfair opening through a thin weak line. The lid is closed onto the cap body, and the locking ring is locked on the lower end part of the peripheral wall of the cap body to seal it.

[0007] Patent document 6 discloses a can with a spout.

[0008] Patent document 7 discloses a cap consisting of the cap main body into which the container mouth part is fitted and fixed and an upper lid provided on the cap main body so as to be freely openable and closable, on a cylindrical side wall of the cap main body, a tearing region which is tearable into an inside wall part and an outside wall part, and a fixed region which is not tearable, are formed. On one boundary part between the tearing region and the fixed region, a score in the axial direction is formed on the outside wall part from the upper end to the lower end. In the tearing region, the lower end part of the inside wall part is connected to the outside wall part through a tearable thin connecting part by a slit deeply extending downward from the upper end of the thickness part of the cylindrical side wall.

Patent document 1: JP-A-2003-40299

Patent document 2: JP-A-2004-352284

Patent document 3: JP-A-2007-131352

Patent document 4: JP 2006-151491 A

Patent document 5: JP 2006-016052

Patent document 6: JP 54-90348

Patent document 7: JP 2007-022567

Disclosure of the Invention:

Problems that the Invention is to Solve:

[0009] The plastic caps having a bill formed in the pouring cylinder like those of the patent documents 1 and 2 are excellent in regard to liquid cutting performance but cause the width of liquid poured from the bill to vary if the degree of inclination of the container is varied even by a small amount at the time of pouring the content liquid. As a result, the size (area) of the liquid greatly varies when it is poured and falls. The problem is not serious when the size of the liquid that is falling is small. When the size of the falling liquid increases, however, the content liquid may fall on undesired portions, too, which is inconvenient.

[0010] With the cap in which a slender portion is protruding in the pouring cylinder as disclosed in the patent document 3, on the other hand, the content liquid is not poured until the container is greatly inclined, which is not suited for pouring the content liquid in small amounts. Moreover, the liquid tends to be poured in large amounts, the width of the liquid is subject to vary when it is poured depending upon a change in the degree of inclination of the container and, besides, the liquid cutting performance cannot be much expected.

[0011] With the caps of the patent documents 1 to 3, further, the bills or the slender protruded portions effectively work when the content liquid is poured at a constant rate but cannot follow a change in the amount of pouring the content liquid. For example, if the bill is so designed as to smoothly pour the liquid when the liquid is poured in small amounts, then the bill fails to effectively work when it is attempted to pour the liquid in large amounts by greatly inclining the container. For instance, the liquid is poured even from the portion other than the bill, the liquid is poured unstably, and the liquid is not favorably cut. Further, if the bill is so designed as to smoothly pour the liquid when the liquid is poured in large amounts, the liquid can be smoothly poured even when poured in small amounts. In this case, however, the bill or the slender protruded portion must be formed in unnecessarily large sizes. Therefore, there still remains much room for improvement from the standpoint of convenience for customers in general.

[0012] It is, therefore, an object of the present invention to provide a plastic cap having a pouring protrusion which is capable of smoothly pouring a content liquid maintaining a constant liquid width even in case the degree of inclination of a container is varied to some extent at the time of pouring the content liquid and which also serves as a guide for pouring the liquid featuring good liquid cutting performance.

[0013] Another object of the invention is to provide a plastic cap which is capable of smoothly pouring the liquid maintaining stability even when the liquid is poured in small amounts and in large amounts offering excellent convenience.

Means for Solving the Problems:

[0014] According to the present invention, there is provided a plastic cap including a cap body fixed to a mouth portion of a container and an upper lid mounted on said cap body so as to be opened and closed, said cap body having a top panel and a skirt falling down from a circumferential edge of the top panel, said top panel having an opening or a predetermined opening area for pouring a liquid in the container, and on an outer side of said opening or the predetermined opening area in the upper surface of said top panel, a pouring protrusion and an annular small protrusion for engagement with the upper lid being formed, said pouring protrusion serving as a guide for pouring the liquid in the container, and said annular small protrusion being positioned on an outer side of said pouring protrusion wherein:

a bill is formed at an upper end portion of said pouring protrusion, the bill protruding outward in an inclined manner and assuming a triangular shape as viewed from the upper surface thereof;
a lower end portion of an inner surface of said pouring protrusion is a seal surface that extends in a vertical direction;
a groove is formed in the inner surface of said pouring protrusion extending from an upper end portion of said bill up to an upper end portion of said seal surface; and
a seal ring is formed on an inner surface of said upper lid so as to come into close contact with said seal surface when said upper lid is closed.

[0015] Further, a buffer protrusion is formed protruding outward on the outer surface of said pouring protrusion, and the buffer protrusion is positioned on a lower portion than said bill and on a higher portion than said annular small protrusion for engagement with the upper lid.

[0016] The plastic cap of the invention can employ the following embodiments.

(1) The pouring protrusion has a cylindrical shape.
(2) The inner surface of said bill of said pouring protrusion is forming an inclined surface that is inclined upward and outward from an upper end of said seal surface, said inclined surface being formed to a height of at least not less than a half that of said pouring protrusion as viewed on a side section at the center of said bill in the circumferential direction.
(3) Said opening or the predetermined opening area is formed in a shape in which a portion thereof on a side facing said bill has a pouring liquid-squeezing region of a small width.
(4) Said groove includes, as viewed from the upper direction, a large groove portion for guiding a large amount pouring extending from the upper end portion of said seal surface up to the upper end of the bill, and a small groove portion or a intermediate

groove portion for guiding a small amount or intermediate amount pouring, the small groove portion or the intermediate groove portion being positioned on an inside of the large groove portion, having a width smaller than that of the large groove portion, and being deeper than the large groove portion, and being extending from the upper end portion of the seal surface up to the upper end of the bill.

(5) On the inside of the large groove portion in said groove, there are formed the intermediate groove portion and the small groove portion, the small groove portion has a width smaller than, and is deeper than, said intermediate groove portion, and is extending from the upper end portion of said seal surface up to the upper end of the bill.

(6) A dented portion that is most dented at the central portion thereof is formed on the inner side of the pouring protrusion of said top panel, said opening or said predetermined opening area is positioned in said dented portion, a pouring passage that is tapered to become narrow toward the end thereof is formed from the pouring liquid-squeezing region in the opening or in the predetermined opening area toward a root portion of said pouring protrusion, and the central portion of said groove is positioned on an extension of the pouring flow passage.

(7) Said buffer protrusion is positioned near a lower end of the bill, and an outer end of said buffer protrusion in the direction of diameter is located at a position the same as, or slightly on the outer side of, the outer end of the bill in the direction of diameter.

(8) Said upper lid is coupled by hinge to the upper end portion of said skirt, and said bill is formed on an opposite side to a portion where said upper lid and the skirt are coupled together by hinge.

(9) The outer end of said bill in the direction of diameter is so protruding as to approach the inner circumferential surface of the lower end of said upper lid but so as not to contact thereto when said upper lid is closed.

(10) A double wall structure comprising an inner wall and an outer wall is formed in at least a portion of said skirt, said inner wall and said outer wall being coupled together at their lower ends through a weakened portion that can be torn apart, and said hinge-coupled portion is formed on said outer wall.

(11) An axial score is formed in said outer wall on the outer side of one end of said hinge-coupling portion and extends in the axial direction so as to be torn apart;

notches are formed at an upper end and at a lower end of said outer wall, respectively, in the portion where said axial score is formed;

at the lower ends of said inner wall and said outer wall, there are formed a tear start region that starts with the lower end of said axial score and extends in the circumferential direction toward the side on where the other end portion of said hinge-coupling portion is positioned and a tear proceed region continuous to said tear start region; and

a strength of coupling the inner wall with the outer wall in said tear start region is set to be relatively smaller than a strength of coupling in said tear proceed region.

Effects of the Invention:

[0017] The plastic cap of the present invention has an important feature in that a groove is formed in the inner surface of a bill that protrudes outward from a pouring protrusion, the groove extending from an upper end portion of the seal surface up to an upper end of the bill. The groove works to squeeze the liquid that is poured. Therefore, even if the degree of inclination of the container varies to some extent at the time of pouring the content liquid, the content liquid can be smoothly poured maintaining a constant liquid width and, therefore, pouring of the content liquid can be easily adjusted. For example, even if the container is greatly inclined to some extent and the liquid is poured in large amounts, the liquid is squeezed by the groove. Therefore, the width of the liquid being poured from the bill does not almost change, and the area of the liquid does not increase at a point on where it falls.

[0018] Further, the inner surface of the bill is positioned in the inclined surface that is inclined outward from the upper end of the nearly vertical seal surface, and the groove extends passing through the inclined surface. Therefore, the liquid can be poured without the need of greatly inclining the container.

[0019] In the invention, further, a large groove portion for guiding a large amount pouring is formed in the groove. In the large groove portion, there are further formed a small groove portion for guiding a small amount pouring and an intermediate groove portion for guiding an intermediate amount pouring. Therefore, the liquid can be smoothly poured suppressing a change in the width of the liquid either when the liquid is poured in large amounts by greatly inclining the container or the liquid is poured in small amounts by little inclining the container.

[0020] Still further, uncomfortable feeling that stems from when the finger hits the end of the bill when the upper lid is to be opened is effectively prevented by the formation of the buffer protrusion. Further, it possible to reliably pour the content liquid into a small container without spilling the content liquid.

Brief Description of the Drawings:

[0021]

[Fig. 1] is a plan view showing a plastic cap having a pouring cylinder in a state where an upper lid is opened.

[Fig. 2] is a side sectional view (A-A cross section) of the plastic cap having the pouring cylinder of Fig. 1.

[Fig. 3] is a side sectional view of the plastic cap having the pouring cylinder of Fig. 1 in a state where the upper lid is closed.

[Fig. 4] is a perspective view of when a cap body is viewed from an inclined upper side in a state where an opening is formed in the top panel by tearing a score in the plastic cap having the pouring cylinder of Fig. 1.

[Fig. 5] is a plan view illustrating, on an enlarged view, a major portion of the plastic cap having the pouring cylinder of Fig. 1.

[Fig. 6] is an enlarged side sectional view (B-B sectional view) of the bill in the pouring cylinder shown in Fig. 4.

[Fig. 7] is a plan view showing, on an enlarged scale, another example of the bill which is a major portion of the plastic cap having the pouring cylinder of Fig. 1.

[Fig. 8] is a plan view showing the plastic cap of the present invention provided with a buffer protrusion in a state where the upper lid is opened.

[Fig. 9] is a side sectional view (A-A sectional view) of the plastic cap of Fig. 8.

[Fig. 10] is a side view of when the buffer protrusion of the plastic cap of Fig. 8 is viewed from the front.

[Fig. 12] is a bottom view of the plastic cap of Fig. 8.

[Fig. 13] is a view of a state of a finger of when the upper lid of the plastic cap without the buffer protrusion is opened.

[Fig. 14] is a view of a state of a finger of when the upper lid of the plastic cap of Fig. 8 is opened.

[Fig. 15] is a view showing a state of the cap of when the liquid contained in the container is transferred into a small container using the plastic cap of Fig. 13 without the buffer protrusion.

[Fig. 16] is a view showing a state of the cap of when the liquid contained in the container is transferred into a small container using the plastic cap of Fig. 8.

[Fig. 17] is a bottom view of the cap in a state where the skirt of the cap body is sectionalized into an inner wall and an outer wall by a slit S, the inner wall and the outer wall being coupled together through breakable bridge portions.

[Fig. 18] is a side view of the plastic cap of Fig. 17 in a state where a score formed in the outer side wall and the bridge portions between the inner wall and the outer wall are torn apart.

[Fig. 19] is a top view of the cap in the state of Fig. 18.

Best Mode for Carrying Out the Invention:

[0022] Referring to Fig. 1 to Fig. 4, the cap includes a cap body 1 and an upper lid 2 coupled to the cap body 1 by hinge. Such a cap is molded in a state where the upper lid 2 is opened (see Fig. 2) by injection-molding a known synthetic resin, e.g., an olefin resin such as low-, intermediate- or high-density polyethylene, linear low-density polyethylene, isotactic polypropylene, ethylene/propylene copolymer, polybutene-1, ethylene/butene-1 copolymer, propylene/butene-1 copolymer or ethylene/vinyl acetate copolymer, or polystyrene, styrene/butadiene copolymer, ABS resin, thermoplastic polyester or polyamide.

[0023] The cap body 1 comprises a top panel 5 and a skirt 6 hanging down from the circumferential edge of the top panel 5. The upper lid 2 is coupled by hinge to an upper end portion of the skirt 6. The hinge-coupling is designated at 7, and includes a central band 7a coupled to the upper end of the skirt 6 and a pair of auxiliary bands 7b, 7b positioned on both sides of the central band 7a and are coupled to the portions slightly lower than the upper end of the skirt 6. Upon turning the upper lid 2 coupled by hinge to the skirt 6, the top panel 5 of the cap body 1 is closed by the upper lid 2.

[0024] A rectangular shallow groove 7c is extending in the central band 7a on the upper surface side at the central portion thereof nearly up to both ends of the central band 7a. The groove 7c is provided so that the hinge can be easily bent. The groove 7c is formed so as not to reach both ends of the hinge from such a standpoint that the hinge will not be broken even when the upper lid is opened and closed many times.

[0025] Referring, particularly, to Fig. 2, an engaging protrusion 8 is formed on the inner surface of the skirt 6 of the cap body 1, and an inner ring 9 is formed at the circumferential edge portion on the inner surface of the top panel 5, the inner ring 9 extending downward maintaining a gap from the skirt 6. That is, a mouth portion (not shown) of the container is fitted into a space between the inner ring 9 and the skirt 6, and the cap body 1 is firmly fixed to the mouth portion of the container due to the engagement of the engaging protrusion 8 with the outer surface of the container mouth portion.

[0026] Further, the skirt 6 forms a slit S in a thick portion thereof so as to extend downward from the upper end thereof. Due to the slit S, the skirt 6 is sectionalized into an inner wall 6a and an outer wall 6b to constitute a double wall structure. As shown in Figs. 2 and 3, the inner wall 6a and the outer wall 6b are coupled together at the lower ends thereof. Upon constituting the skirt 6 in the double wall structure, the cap can be easily removed from the container mouth portion for sorted disposal of caps.

[0027] A pouring cylinder 11 is formed in the upper surface of the top panel 5 of the cap body 1 so as to guide the liquid when the content liquid is to be poured. As will be understood from Figs. 2 and 3, the top panel 5 forms a dented portion being dented like a cup in the inner portion of the pouring cylinder 5. Referring to Fig. 1, further, an endless score 12 is formed in the dented portion to form an opening for pouring. A tab ring 15 for breaking the score is provided on the outer surface of the top panel 5 via a strut 14 formed in a region on the inside of the endless score 12. Upon pulling up the tab ring 15, the score 12 breaks, the opening for pouring is formed in the top panel 5 as shown in Fig. 4, and the liquid in the container can be poured through the opening for pouring.

[0028] Therefore, the content liquid that has flew out

through the opening for pouring formed by the breakage of the score 12 is guided by the pouring cylinder 11 and is poured along the inner surface thereof. As will be understood, particularly, from Figs. 2 and 3, the pouring cylinder 11 is becoming low on the side where it is coupled to the upper lid 2 by hinge, and an upper portion 11a of the low portion is inclined outward. This is to prevent the pouring cylinder 11 from hindering the upper lid 2 when it is to be closed.

[0029] The lower end portion on the inner surface of the pouring cylinder 11 is flat over the whole circumference and is forming a nearly vertical seal surface 17. When the upper lid 2 is closed, therefore, part of the upper lid 2 comes into close contact with the seal surface 17 to maintain sealing after the opening for pouring has been formed by breaking the score 12.

[0030] At a portion of the pouring cylinder 11 on the side opposite to the hinge-coupling portion 7, the upper end portion is partly inclined outward, and a bill 20 is formed protruding outward in a triangular shape as shown in a plan view of Fig. 1 and in a perspective view of Fig. 4. An end of the bill 20 (central portion of the most protruded upper end) 20a is positioned on a center line X of the cap that passes through the center of the hinge-coupling portion 7a and is forming a vertex of a triangle. The lower portion on the inner surface of the bill 20 (corresponds to the base of a triangle formed by the bill 20) is positioned on the upper end of the seal surface 17, and the inner surface of the bill 20 is forming an inclined surface 20b being inclined upward from this portion. Thus, the bill 20 greatly protruding outward from the root of the pouring cylinder 11 serves as a spout, and the content liquid can be smoothly poured from this portion.

[0031] As shown in Figs. 2 and 3, further, the bill 20 is becoming thin at its upper end and is curved outward like a horn. That is, upon being curved like a horn in addition to assuming the shape of a bill, the liquid is suppressed from adhering on this portion, the liquid cutting performance is improved, and the liquid is effectively prevented from dripping after the content liquid has all been poured.

[0032] Further, an annular small protrusion 21 for engagement with the upper lid 2 is formed on the outer surface of the top panel 5 on the outer side of the pouring cylinder 11.

[0033] The upper lid 2, on the other hand, comprises a top panel 25 and a cylindrical side wall 27 extending from the circumferential edge of the top panel 25, and a seal ring 29 is formed on the inner surface of the top panel 25. That is, when the upper lid 2 is closed, the outer surface of the seal ring 29 comes into close contact with the seal surface 17 on the lower side of the pouring cylinder 11 to maintain sealing after the opening for pouring has been formed by breaking the score 12. Here, a portion 11a of the pouring cylinder 11 on the side of the hinge-coupling portion 7 is becoming low and is inclined outward. At the time of closing the upper lid 2, therefore, the seal ring 29 smoothly enters into the pouring cylinder 11 and comes into close contact with the seal surface 17.

[0034] As shown in Fig. 3, further, the central portion of the top panel 25 of the upper lid 2 is forming a swollen portion 25a being swollen like a dome. Upon forming the swollen portion 25a, an arcuate surface without corner is formed by the inner surface of the top panel 25 surrounded by the seal ring 29 continuing from the inner surface of the seal ring 29, and the content liquid adhered on the inner surface of the top panel 25 can be quickly returned back into the container after the score 12 is broken.

[0035] Further, a flange 25b is formed on a portion of the top panel 25 on the side opposite to the hinge-coupling portion 7 enabling the upper lid 2 to be easily opened and closed. As will be understood from Fig. 3, the flange 25b is provided at the upper end of the cylindrical side wall 27. At the time of opening the upper lid 2, therefore, the end 20a of the bill 20 formed in the pouring cylinder 11 is least touched by a finger.

[0036] Referring to Fig. 2, small protrusions 27a are provided maintaining a suitable gap on the front end side (opposite to the hinge-coupling portion 7) on the lower end surface of the cylindrical side wall 27 of the upper lid 2. That is, when the content liquid is poured, the liquid that is poured may often adhere onto the circumferential edge portion on the upper surface of the top panel 5 of the cap body 1 and, particularly, onto the portion on the opposite side of the hinge-coupling portion 7b. In such a case, if the whole lower end surface of the cylindrical side wall 27 comes into close contact with the circumferential edge portion on the upper surface of the top panel 5 when the upper lid 2 is closed, the adhered liquid is splashed to contaminate the surrounding. The above small protrusions 27a, however, effectively prevent the adhered liquid from splashing.

[0037] On the lower end surface of the cylindrical wall 27 on the side of the hinge-coupling portion 7b, arcuate protrusions 27b are formed for adjusting the height to avoid tilting caused by the formation of small protrusions 27a.

[0038] Further, a protrusion 27c is circumferentially formed on the inner surface of the cylindrical side wall 27 at a lower portion thereof. That is, when the upper lid 2 is closed, the protrusion 27c comes into engagement with the small protrusion 21 formed on the outer surface of the top panel 5 and, therefore, the upper lid 2 is held in the closed state.

[0039] With reference to Figs. 5 and 6 showing a major portion of the plastic cap having the pouring cylinder on an enlarged scale together with the perspective view of Fig. 4, it is important that a groove 30 is formed in the inner surface of the bill 20 of the pouring cylinder 11. The groove 30 extends from the upper end of the seal surface 17 up to the upper end of the bill 20. Since the above groove 30 is formed in the cap, the liquid that is poured is squeezed through the bill 20. Therefore, even when the degree of inclination of the container is varied to some extent in pouring the content liquid by inclining the container, the bill 20 works to maintain constant the width of

the liquid that is poured and, therefore, to maintain nearly constant the area of a point on where the liquid falls effectively avoiding such an inconvenience that the surrounding is contaminated by an increased area of the point on where the liquid falls and making it easy to adjust the amount that is poured.

[0040] Further, the above groove 30 is formed in the tilted surface 20b (inner surface of the bill 20) that is inclined outward from the upper end of the nearly vertical seal surface 17 offering such an advantage that the content liquid can be poured without the need of greatly inclining the container.

[0041] In the present invention, it is desired that the inner surface of the bill 20 in which the groove 30 is formed, i.e., the tilted surface 20b, is formed up to at least not less than a half of the height h of the pouring cylinder 11 as shown in a side sectional view of Fig. 6. This is because if a region of the inclined surface 20b is short, there occurs such an inconvenience that the container must be greatly inclined for pouring the liquid. Besides, the length of the groove 30 formed in the inclined surface 20b decreases, and the squeezing effect of the groove 30 decreases down to a half.

[0042] It is, further, desired that the angle θ of inclination of the inclined surface 20a (see Fig. 6) is about 10 to about 55 degrees by taking into consideration the easiness of pouring the liquid and removal from the mold after the cap has been molded.

[0043] Referring to Figs. 1 and 5, further, it is desired that a predetermined opening area (corresponds to the opening designated at Z in the drawing) sectionalized by the score 12 formed in the top panel 5 is of a shape having a pouring liquid-squeezing region Z1 of a small width in a portion on the side facing the bill 20 and that the groove 30 has a width w nearly the same as the pouring liquid-squeezing region Z1. Upon forming the pouring liquid-squeezing region Z1, the pouring liquid is squeezed from the opening formed by tearing apart the score 12 up to the groove 30 and, therefore, the squeezing effect is further enhanced.

[0044] In the example shown in Figs. 1 and 5, further, the predetermined opening area (or the opening) Z is formed by the score 12 in the cup-like dented portion, and the pouring liquid-squeezing region Z1 is extending being tapered to become narrow toward the root portion of the pouring cylinder 11 being more dented than other portions to form a groove. Besides, the end portion 20a (center of the groove 30) of the bill 20 is positioned on an extension of the pouring liquid-squeezing region Z1. When the container is inclined, therefore, a pouring flow passage is formed straight from the pouring liquid-squeezing region Z1 up to the end portion 20a of the bill 20 to effectively pour the liquid contained in the container in a squeezed manner.

[0045] Referring to a partly enlarged plan view of Fig. 7 showing another example, the groove 30 is desirably formed in a multiplicity of steps. That is, in Fig. 7, in the greatest groove 30a (hereinafter called a large groove portion for guiding large amount pouring), there is formed a groove 30b (hereinafter called an intermediate groove portion for guiding intermediate amount pouring) having a width smaller than, and is deeper than, the above large groove portion 30a. In the intermediate groove portion 30b, there is, further, formed a groove 30c (hereinafter called a small groove portion for guiding small amount pouring) having a width smaller than, and is deeper than, the above intermediate groove portion 30b. These groove portions 30a to 30c are all extending from the upper end of the seal surface 17 up to the upper end of the bill 20. Upon forming the groove 30 in the multi-step constitution as described above, users, in general, are allowed to easily adjust the amount of the liquid that is poured. Concretely, if the container is greatly inclined, the liquid is poured through the large groove portion 30a of a large width. If the inclination of the container is decreased, the liquid is poured through the intermediate groove portion 30b of an intermediate width. If the degree of inclining the container is further decreased, the liquid is poured through the small groove portion 30c of the smallest width. That is, by watching the width of liquid poured from the bill 20, the users, in general, are allowed to adjust the degree of inclination of the container and to correctly adjust the amount of liquid that is poured.

[0046] In the examples described above, the bill 20 greatly protrudes outward. Therefore, though not shown, it is desired to provide a rib for correcting deformation on the inner surface of the upper lid 2 as disclosed in JP-A-2004-352284. It is probable that the bill is deformed at the time of being removed from the mold. Upon closing the upper lid after the cap is molded, therefore, deformation of the bill 20 can be corrected by the rib for correcting deformation.

[0047] In the example concretely described above, further, the predetermined opening area Z is formed by the score 12, and the opening for pouring is formed by tearing the score 12. It is, however, allowable to form the opening for pouring from the first time (i.e., state of Fig. 4) instead of forming the score 12, as a matter of course.

[0048] Further, though the upper lid 2 is coupled by hinge to the cap body 1, what is needed in the invention is to form a groove 30 in the inner surface of the bill 20. Therefore, people skilled in the art will be able to easily understand that the present invention is also applicable to the caps in which the upper lid 2 is fastened to the cap body 1 by screw.

[0049] The plastic cap described above can assume a variety of structures in addition to the embodiment shown in the drawings described above. With the bill 20 being formed at the upper end of the pouring cylinder 11, for instance, a finger may come in contact with the sharp end of the bill 20 when it is attempted to open the upper lid 2 by lifting it up by finger and a user may find it uncomfortable. Such an uncomfortable feeling, however, can be eliminated by providing a buffer protrusion. An example of the cap provided with the buffer protrusion is shown in Figs. 8 to 12.

[0050] The cap of Figs. 8 to 12 has a basic structure which is the same as that of the cap shown in Figs. 1 to 4. Therefore, reference numerals the same as those of Figs. 1 to 4 are quoted in Figs. 8 to 12, too.

[0051] The cap of the embodiment of Figs. 8 to 12 forms a pouring protrusion 110 of an arcuate shape instead of forming the pouring cylinder 11. That is, the pouring protrusion 110 is formed in an arcuate shape by cutting away a portion of a small height of the pouring cylinder 11 on the side of the hinge-coupling portion 7. Namely, the content liquid is poured from the portion on the side opposite to the hinge-coupled portion 7. Therefore, no guide wall is necessary in this portion. Upon cutting away this portion, therefore, no part is hindered by the pouring protrusion 11 at the time of closing the upper lid 2.

[0052] Like in the pouring cylinder 110, the bill 20 is formed in the central portion of the pouring protrusion 110 in the circumferential direction, and a groove 20 is formed in the inner surface (inclined surface 20b) of the bill 20. As will be understood from Fig. 9, further, the top panel 5 is so inclined that the side of the hinge-coupled portion 7 becomes low in the portion on the inside of the pouring protrusion 110.

[0053] The lower end portion on the inner surface of the pouring protrusion 110 is flat over the whole areas and is forming a nearly vertical seal surface 17 (particularly, see Fig. 9). In the notch (i.e., the region where the pouring protrusion 110 is cut and is not existing) on the side of the hinge-coupling portion 7, the top panel 5 is forming a surface that falls down toward the endless score 12. The lower portion of the surface is forming a tapered surface extending up to the endless score 12, and an upper portion that continues to the tapered surface is forming the nearly vertical seal surface 17a which is continuous to the seal surface 17 at the lower part of the pouring protrusion 110. That is, when the upper lid 2 is closed, the seal ring 29 of the upper lid 2 comes into close contact with the seal surfaces 17, 17a formed in the pouring protrusion 110 and in the top panel 5 to maintain the sealing after the opening for pouring is formed by breaking the score 12. As will be understood from Fig. 9, therefore, the seal ring 29 formed on the upper lid 2 is elongated at a portion that comes into close contact with the seal surface 17a.

[0054] Referring to Figs. 8 and 9, further, a vertical groove 40 is formed by thinning the inner surface of the cylindrical side wall 27 of the upper lid 2 of the cap at a portion on the side opposite to the hinge-coupled portion 7 (inside of the portion where the flange 25b is formed). Upon forming the vertical groove 40, the bill 20 of the pouring protrusion 110 does not come in contact with the inner surface of the cylindrical side wall 27 of the upper lid when the upper lid 2 is closed; i.e., the upper lid 2 can be smoothly closed.

[0055] In the above plastic cap, a buffer protrusion 50 is formed on the outer surface of the pouring protrusion 110 to protrude outward at a portion on the lower side of the bill 20. The buffer protrusion 50 is positioned at a portion higher than the annular small protrusion 21 for engagement with the upper lid 2, and its outer end in the direction of diameter is positioned slightly on the outer side of the outer end 20a of the bill in the direction of diameter. As shown in Figs. 10 and 11, further, the upper surface 50a of the buffer protrusion 50 extends in a horizontal direction, its outer circumferential edge extends in an arcuate shape, and the side surface 50b of the buffer protrusion 50 forms such a curve that the length of protrusion gradually decreases toward the lower side facilitating the removal from the mold at the time of molding.

[0056] According to the present invention, uncomfortable feeling that stems from when the finger hits the end 20a of the bill 20 when the upper lid 2 is to be opened, is effectively prevented by the formation of the buffer protrusion 50 as described above.

[0057] Reference should be made, for example, to Fig. 13 showing a state where the upper lid is opened in the cap in which no buffer protrusion 50 is formed on the pouring protrusion 110. That is, the upper lid 2 that has been closed is opened by pushing the above flange 25b up by a finger P. In this case, the finger P may strongly hit the bill 20 that has a sharp end formed on the pouring protrusion 110. In such a case, a person who attempts to open the upper lid 2 may feel uncomfortable.

[0058] Reference should, further, be made to Fig. 14 showing a state where the upper lid is opened in the cap of the invention that is forming the above-mentioned buffer protrusion 50. According to the present invention as will be understood from Fig. 14, the finger P hits the buffer protrusion 50 when it is attempted to open the upper lid 2 by pushing it up with the finger P. Therefore, even if the finger P hits the end portion 20a of the bill 20, the degree of hitting the bill 20 is reduced making it possible to effectively avoid uncomfortable feeling caused by the hitting.

[0059] As will be understood from the above description, the buffer protrusion 50 is positioned near the lower end of the end 20a of bill 20, and its upper end 50a desirably protrudes to an axis L that passes through the end of bill 20 or protrudes slightly beyond the axis L (see Fig. 10). This is because if the protruded position is on the inside of the axis L, the effect is not fully exhibited for reducing the hitting of bill 20 by the finger P.

[0060] Upon providing the buffer protrusion 50 as described above, the degree of hitting the bill 20 by the finger P can be effectively decreased at the time of opening the upper lid 2 even when, for example, the end 20a of bill 20 is so protruding as to approach, without contacting thereto, the inner circumferential surface at the lower end of the cylindrical side wall 27 at the time when the upper lid 2 is closed.

[0061] Further, the cap of the present invention can be advantageously used for easily transferring the liquid in the container into a small container.

[0062] Fig. 15 is a view showing a state of the cap of,

for example, when the liquid contained in the container is transferred into a small container using the plastic cap of Fig. 13 without the buffer protrusion. As will be understood from this drawing, if the container is inclined while bringing the outer surface of the pouring protrusion 110 of the cap into contact with the upper end of the mouth portion 100 of the small container into which the liquid is to be poured, the end portion of bill 20 at the upper end of the pouring protrusion 110 is so positioned as to come in contact with the upper end of the mouth wall 100 of the small container or not to come in contact with the mouth wall 100 of the small container. In this state, the content liquid is poured. In this case, therefore, the content liquid that is poured flows in while contacting the upper end surface of the mouth wall 100 of the small container causing such an inconvenience that part of the liquid flows and spills to the outer surface side of the mouth portion 100 of the container.

[0063] By using the cap of the present invention having the buffer protrusion 50 as shown in Fig. 16, on the other hand, if the container containing the liquid is inclined while bringing the mouth wall 100 of the small container into contact with the buffer protrusion 50 formed on the outer surface of the pouring protrusion 110, the bill 20 of the pouring protrusion 110 is positioned slightly over the mouth wall 100 of the small container. As a result, the liquid can be directly poured into the small container without coming in contact with the upper end of the mouth wall 100 of the small container. That is, upon inclining the container while bringing the buffer protrusion 50 into contact with the mouth wall 100 of the small container, unintentional movement of the container can be avoided at the time of pouring and, besides, the liquid can be poured without coming in contact with the container wall 100 of the small container into which the liquid is to be poured making it possible to reliably pour the content liquid into the small container without spilling the content liquid.

[0064] Reverting to Figs. 9 to 12, the endless score 12 formed in the top panel 5 of the cap body 1 has a shape that is narrow at a portion on the side of the hinge-coupling portion 7 and at a portion on the side opposite to the hinge-coupling portion 7 as shown, particularly, in Fig. 12, and is forming narrow portions 12a and 12b. That is, the endless score 12 is torn apart to form the opening for pouring, and the container is inclined to pour the content liquid from the opening for pouring. In this case, the content liquid concentrates on the inner surface of the bill 20 of the pouring protrusion 11 from the narrow portion 12b formed on the side opposite to the hinge-coupling portion 7, and quickly flows out. After the end of pouring, further, the liquid adhered and remaining on the wall surface on the side of the hinge-coupling portion 7 quickly returns into the container from the narrow portion 12a. This is because the surface in which the endless score 12 is formed is inclined to be higher toward the side on where the bill 20 is formed and lower toward the side of the hinge-coupling portion 7.

[0065] As shown in Fig. 12, further, small ribs 60, 60 are formed extending downward at the portions where the narrow portions 12a, 12b are formed in the back surface of the top panel 5. Being guided by the ribs 60, the liquid adhered and remaining on the wall surface on the side of the hinge-couling portion 7 does not stay on the wall surface near the narrow portion 12a but effectively returns into the container.

[0066] In the caps shown in Figs. 1 to 4 and Figs. 8 to 12 though described with reference to the cap of Figs. 1 to 4, the skirt 6 assumes the double wall structure being sectionalized by the slit S into the inner wall 6a and the outer wall 6b which are coupled together at their lower ends. By forming the skirt 6 in the double wall structure, the cap can be easily removed from the mouth portion of the container at the time of sorted disposal of caps. When the above double wall structure is employed, the outer side wall 6b is desirably provided, for example, with a score 65 as shown in Fig. 10.

[0067] The score 65 is formed in the outer side wall 6b at a position near the hinge-coupling portion 7 (hinge band 7b), and extends in the axial direction. That is, by pulling down the upper lid 2 which is in the state of being opened, the score 65 is torn apart and the outer side wall 6b is broken, permitting the cap body 1 to be easily removed from the container

[0068] When the outer side wall 6b is to be torn apart by utilizing the score 65, it is desired to form notches 67 at both the upper end and the lower end of the score 65 as shown in Fig. 10. Formation of the notches 67 facilitates the tearing along the score 65. The outer side wall 6b is torn apart along the score 65, usually, by pulling down the upper lid 2 that is opened. General consumers, however, may often try to remove the cap body 1 from the container by pulling the upper lid 2 up. By forming the notch 67 at the lower end of the score 65, too, however, the score 65 can be torn apart when the upper lid 2 is pulled up, too, and the cap body 1 can be removed from the container.

[0069] In the example of Fig. 10, a rib 70 is extending in the axial direction being formed on the outer surface of the outer side wall 6b near the score 65 (near the hinge-coupling portion 7). The rib 70 is used as a positioning member at the time of fitting and fixing the cap body 1 to the mouth portion of the container.

[0070] Further, when the skirt 6 is constituted in the double wall structure by utilizing the slit S, it is desired that the inner wall 6a and the outer wall 6b are coupled together at their lower ends through breakable bridge portions so that the cap body 1 can be very easily removed from the mouth portion of the container without using any particular tool.

[0071] Further, when the inner wall 6a and the outer wall 6b are coupled together through breakable bridge portions, the sorted disposability can be enhanced by adjusting the strength of coupling. An example of such a cap is shown in Fig. 17.

[0072] Fig. 17 is a bottom view of the plastic cap in a

state where the upper lid 2 is opened. In this cap, the inner wall 6a and the lower end portion of the outer wall 6b sectionalized by the slit S are coupled together at their lower end portions through a weakened portion (score and a plurality of bridge portions 75). The bridge portions 75 can be easily torn apart.

[0073] In Fig. 17, further, the lower end portions of the inner wall 6a and the outer wall 6b are sectionalized into a tear start region Q1, a tear proceed region Q2 and a tear impossible region Q3. Namely, in the tear start region Q1, the inner wall 6a and the outer wall 6b are coupled together maintaining the smallest strength which is lower than that of, for example, the tear proceed region Q2. In the tear impossible region Q3, the strength of coupling is the highest, and it is difficult to tear them apart.

[0074] As will be understood from Fig. 17, the tear start region Q1 starts from the lower end of the axial score 65 provided on the outer side of the one end of the hinge-coupling portion 7 of the outer wall 6b, and extends in the circumferential direction toward the side where the other end of the hinge-coupling portion 7 is positioned. The tear proceed region Q2 is continuous to the tear start region Q1. The tear impossible region Q3 is continuous to the tear proceed region Q2 and is, further, continuous to the tear start region Q1.

[0075] The coupling strengths in the above regions Q1 to Q3 can be easily realized by adjusting the depth of the slit S.

[0076] In the tear start region Q1, for example, the slit S completely pierces through the skirt 6 from the upper end thereof to the lower end thereof. In this region Q1, the inner wall 6a is completely separated from the outer wall 6b. Therefore, this region Q1 possesses the smallest coupling strength. In this case, the coupling strength is zero, and no weakened portion is formed. Further, the completely divided slit S may be coupled with the bridge portions 75 having the smallest coupling strength.

[0077] In the tear proceed region Q2, on the other hand, the coupling strength can be increased to be larger than that of the tear start region Q1 by increasing the thickness of the breakable bridge portions 75 to be larger than that of the bridge portions 75 in the tear start region Q1 in a range which permits the tear apart or by shortening the gaps among the bridge portions 75 to be smaller than the gaps thereof in the tear start region Q1. In the tear proceed region Q2, further, the coupling strength can be adjusted relying upon the score by deeply forming the slit S instead of providing the breakable bridge portions 75.

[0078] In the tear impossible region Q3, further, the coupling strength which does not permit tear apart can be attained by forming the slit S most shallowly or without forming the slit S at all.

[0079] The regions Q1 to Q3 having the thus adjusted coupling strengths are formed in the lower end portions of the inner wall 6a and the outer wall 6b contributing to further enhancing the sorted disposability. Figs. 18 and 19 show a state where the cap forming the above regions is removed from the mouth portion of the container.

[0080] In the example of Figs. 18 and 19, no breakable bridge portion 75 is formed in a portion corresponding to the tear start region Q1, and breakable bridge portions 75 are formed maintaining a constant gap in only a portion that corresponds to the tear proceed region Q2.

[0081] As will be understood from Figs. 18 and 19, after the upper lid 2 is pulled down to tear the score 65 apart, the outer wall 6b is stripped off in the circumferential direction by gripping the upper lid 2, whereby the bridge portions 75 are torn apart, the outer wall 6b is completely separated from the inner wall 6a, and the outer wall 6b and the inner wall 6a remain coupled together in only the region Q3 which does not permit tear apart. As a result, the engaging force between the cap body 1 and the mouth portion of the container greatly decreases, and the cap body 1 can be easily removed from the mouth portion of the container by pulling up the cap body 1 by holding by hand the outer wall 6b that is stripped off.

[0082] In effecting the tear apart as described above, a portion of the outer wall 6b where the hinge-coupling portion 7 is provided for connecting the upper lid 2 serves as a start point of the tear start region Q1 of bridge portions 75 and where the inner wall 6a and the outer wall 6b are coupled together with the smallest strength (zero in this case). Therefore, the tearing attempt can be quickly commenced followed by the tearing of the tear proceed region Q2. Thus, the cap body 1 can be removed from the mouth portion of the container without at all using any particular tool.

[0083] In this case, further, the notch 67 is provided at the lower end, too, in addition to the upper end of the axial score 65. Therefore, when it is attempted to remove the cap body 1 from the mouth portion of the container by pulling the upper lid 2 up, too, the cap body 1 can be removed from the mouth portion of the container due to the action of the notch 67 at the lower end of the axial score 65 and the tear start region Q1.

[0084] The lengths of the regions Q1 to Q3 may be so set that the engaging force between the cap body 1 and the mouth portion of the container is not lost, a constant sealing is maintained, breakable bridge portions 75 are smoothly torn apart, and the cap body 1 can be easily removed from the mouth portion of the container. For example, if the length of the tear start region Q1 is unnecessarily increased, the engaging force decreases between the cap body 1 and the mouth portion of the container, and sealing performance is impaired. Therefore, this length is, usually, set to be nearly equal to the circumferential length of the hinge band portion 7. Further, the length of the tear proceed region Q2 may be so set that the cap body 1 can be easily removed from the mouth portion of the container when the bridge portions 75 in this region are torn apart. For instance, the length thereof will be sufficient if the total length of the tear start region Q1 and the tear proceed region Q2 is not less than about a half of the whole circumferential length of the skirt 6. The tear impossible region Q3 does not necessarily have

to be provided.

[0085] As will be understood from the above description, the cap in which the inner wall 6a and the outer wall 6b are coupled together through breakable bridge portions 75 features very excellent sorted disposability.

[0086] The above-mentioned cap of the present invention can be effectively used as a cap of the containers filled with various beverages and seasoning liquids such as soy sauce and the like.

Claims

1. A plastic cap including a cap body (1) fixed to a mouth portion (100) of a container and an upper lid (2) mounted on said cap body (1) so as to be opened and closed, said cap body (1) having a top panel (5) and a skirt (6) falling down from a circumferential edge of the top panel (5), said top panel (5) having an opening or a predetermined opening area (Z) for pouring the liquid in the container, and on an outer side of said opening or the predetermined opening area (Z) in the upper surface of said top panel (5), a pouring protrusion (11; 110) and an annular small protrusion (21) for engagement with the upper lid (2) being formed, said pouring protrusion (11; 110) serving as a guide for pouring the liquid in the container, and said annular small protrusion (21) being positioned on an outer side of said pouring protrusion (11; 110) wherein:

a bill (20) is formed at an upper end portion of said pouring protrusion (11; 110), the bill (20) protruding outward in an inclined manner and assuming a triangular shape as viewed from the upper surface thereof;
a lower end portion of an inner surface of said pouring protrusion (11; 110) is a seal surface (17) that extends in a vertical direction;
a groove (30) is formed in the inner surface of said pouring protrusion (11; 110) extending from an upper end portion of said bill (20) up to an upper end portion of said seal surface (17); and
a seal ring (29) is formed on an inner surface of said upper lid (2) so as to come into close contact with said seal surface (17) when said upper lid (2) is closed,
characterized in that a buffer protrusion (50) is formed protruding outward on the outer surface of said pouring protrusion (11; 110), and the buffer protrusion (50) is positioned on a lower portion than said bill (20) and on a higher portion than said annular small protrusion (21) for engagement with the upper lid (2).

2. The plastic cap according to claim 1, wherein said pouring protrusion (11; 110) has a cylindrical shape.

3. The plastic cap according to claim 1, wherein the inner surface of said bill (20) of said pouring protrusion (11; 110) is forming an inclined surface that is inclined upward and outward from an upper end of said seal surface (17), said inclined surface being formed to a height of at least not less than a half that of said pouring protrusion (11; 110) as viewed on a side section at the center of said bill (20) in the circumferential direction.

4. The plastic cap according to claim 1, wherein said opening or the predetermined opening area (Z) is formed in a shape in which a portion thereof on a side facing said bill (20) has a pouring liquid-squeezing region (Z1) of a small width.

5. The plastic cap according to claim 1, wherein said groove (30) includes, as viewed from the upper direction, a large groove portion (30a) for guiding a large amount pouring extending from the upper end portion of said seal surface (17) up to the upper end of the bill (20), and a small groove portion (30c) or a intermediate groove portion (30b) for guiding a small amount or intermediate amount pouring, the small groove portion (30c) or the intermediate groove portion (30b) being positioned on an inside of the large groove portion (30a), having a width smaller than that of the large groove portion (30a), and being deeper than the large groove portion (30a), and being extending from the upper end portion of the seal surface (17) up to the upper end of the bill (20).

6. The plastic cap according to claim 5, wherein on the inside of the large groove portion (30a) in said groove (30), there are formed the intermediate groove portion (30b) and the small groove portion (30c), the small groove portion (30c) has a width smaller than, and is deeper than, said intermediate groove portion (30b), and is extending from the upper end portion of said seal surface (17) up to the upper end of the bill (20).

7. The plastic cap according to claim 4, wherein a dented portion that is most dented at the central portion thereof is formed on the inner side of the pouring protrusion (11; 110) of said top panel (5), said opening or said predetermined opening area (Z) is positioned in said dented portion, a pouring passage that is tapered to become narrow toward the end thereof is formed from the pouring liquid-squeezing region (Z1) in the opening or in the predetermined opening area (Z) toward a root portion of said pouring protrusion (11; 110), and the central portion of said groove (30) is positioned on an extension of the pouring flow passage.

8. The plastic cap according to claim 1, wherein said buffer protrusion (50) is positioned near a lower end

of the bill (20), and an outer end of said buffer protrusion (50) in the direction of diameter is located at a position the same as, or slightly on the outer side of, the outer end of the bill (20) in the direction of diameter.

9. The plastic cap according to claim 1, wherein said upper lid (2) is coupled by hinge (7) to the upper end portion of said skirt (6), and said bill (20) is formed on an opposite side to a portion where said upper lid (2) and the skirt (6) are coupled together by hinge (7).

10. The plastic cap according to claim 9, wherein the outer end of said bill (20) in the direction of diameter is so protruding as to approach the inner circumferential surface of the lower end of said upper lid (2) but so as not to contact thereto when said upper lid (2) is closed.

11. The plastic cap according to claim 9, wherein a double wall structure comprising an inner wall (6a) and an outer wall (6b) is formed in at least a portion of said skirt (6), said inner wall (6a) and said outer wall (6b) being coupled together at their lower ends through a weakened portion that can be torn apart, and said hinge-coupled portion (7) is formed on said outer wall (6b).

12. The plastic cap according to claim 10, wherein:

an axial score (65) is formed in said outer wall (6b) on the outer side of one end of said hinge-coupling portion (7) and extends in the axial direction so as to be torn apart;
notches (67) are formed at an upper end and at a lower end of said outer wall (6b), respectively, in the portion where said axial score (65) is formed;
at the lower ends of said inner wall (6a) and said outer wall(6b), there are formed a tear start region (Q1) that starts with the lower end of said axial score (65) and extends in the circumferential direction toward the side on where the other end portion of said hinge-coupling portion (7) is positioned and a tear proceed region (Q2) continuous to said tear start region (Q1); and
a strength of coupling the inner wall (6a) with the outer wall (6b) in said tear start region (Q1) is set to be relatively smaller than a strength of coupling in said tear proceed region (Q2).

Patentansprüche

1. Kunststoffkappe umfassend einen Kappenkörper (1), der an einen Mündungsabschnitt (100) eines Behälters befestigt ist, und einen oberen Deckel (2), der so an den Kappenkörper (1) montiert ist, um geöffnet und geschlossen zu werden, wobei der Kappenkörper (1) eine Deckplatte (5) und einen Saum (6) aufweist, der von einer Umgebungskante der Deckplatte (5) abfällt, wobei die Deckplatte (5) eine Öffnung oder einen vorbestimmten Öffnungsbereich (Z) zum Ausgießen der Flüssigkeit im Behälter aufweist, und wobei auf einer Außenseite der Öffnung oder des vorbestimmten Öffnungsbereichs (Z) in der oberen Fläche der Deckplatte (5) ein Ausgussvorsprung (11; 110) und ein ringförmiger kleiner Vorsprung (21) zum Eingriff in den oberen Deckel (2) geformt werden, wobei der Ausgussvorsprung (11; 110) als eine Führung zum Ausgießen der Flüssigkeit im Behälter dient und wobei der ringförmige kleine Vorsprung (21) an einer Außenseite des Ausgussvorsprungs (11; 110) positioniert ist, wobei:

ein Schnabel (20) an einem oberen Endabschnitt des Ausgussvorsprungs (11; 110) gebildet ist, wobei der Schnabel (20) nach außen in einer geneigten Weise vorspringt und eine dreieckige Form annimmt, bei Betrachtung von der oberen Fläche davon;
ein unterer Endabschnitt einer inneren Fläche des Ausgussvorsprungs (11; 110) eine Siegelfläche (17) ist, die sich in einer vertikalen Richtung erstreckt;
eine Nut (30) in der inneren Fläche des Ausgussvorsprungs (11; 110) gebildet ist, die sich von einem oberen Endabschnitt des Schnabels (20) bis zu einem oberen Endabschnitt der Siegelfläche (17) erstreckt; und
ein Siegelring (29) auf einer inneren Fläche des oberen Deckels (2) so gebildet ist, dass er in engen Kontakt mit der Siegelfläche (17) kommt, wenn der obere Deckel (2) geschlossen wird,
dadurch gekennzeichnet, dass ein Puffervorsprung (50) gebildet ist, der nach außen auf der äußeren Fläche des Ausgussvorsprungs (11; 110) hervorspringt, und der Puffervorsprung (50) an einem niedrigeren Abschnitt als der Schnabel (20) und an einem höheren Abschnitt als der ringförmige kleine Vorsprung (21) zum Eingriff in den oberen Deckel (2) positioniert ist.

2. Kunststoffkappe nach Anspruch 1, wobei der Ausgussvorsprung (11; 110) eine zylindrische Form aufweist.

3. Kunststoffkappe nach Anspruch 1, wobei die innere Fläche des Schnabels (20) des Ausgussvorsprungs (11; 110) eine geneigte Fläche bildet, die nach oben und nach außen von einem oberen Ende der Siegelfläche (17) geneigt ist, wobei die geneigte Fläche bis zu einer Höhe gebildet ist, die mindestens nicht weniger als eine Hälfte des Ausgussvorsprungs (11; 110) ist, bei Betrachtung von einem Seitenschnitt im Zentrum des Schnabels (20) in der Umfangsrich-

tung.

4. Kunststoffkappe nach Anspruch 1, wobei die Öffnung oder der vorbestimmte Öffnungsbereich (Z) in einer Form gebildet ist, in der ein Abschnitt davon auf einer Seite, die dem Schnabel (20) zugewandt ist, einen Flüssigkeitsausguss-Quetsch-Bereich (Z1) mit kleiner Breite aufweist.

5. Kunststoffkappe nach Anspruch 1, wobei die Nut (30) bei Betrachtung von der oberen Richtung einen großen Nutabschnitt (30a) zum Führen einer großen Menge, die ausgegossen wird, der sich von dem oberen Endabschnitt der Siegelfläche (17) bis zum oberen Ende des Schnabels (20) erstreckt, und einen kleinen Nutabschnitt (30c) oder einen mittleren Nutabschnitt (30b) zum Führen einer kleinen Menge oder mittleren Menge, die ausgegossen wird, umfasst, wobei der kleine Nutabschnitt (30c) oder der mittlere Nutabschnitt (30b), der auf einer Innenseite des großen Nutabschnitts (30a) positioniert ist, eine Breite aufweist, die kleiner als die des großen Nutabschnitts (30a) ist und tiefer als der große Nutabschnitt (30a) ist und sich von dem oberen Endabschnitt der Siegelfläche (17) bis zum oberen Ende des Schnabels (20) erstreckt.

6. Kunststoffkappe nach Anspruch 5, wobei auf der Innenseite des großen Nutabschnitts (30a) in der Nut (30) der mittlere Nutabschnitt (30b) und der kleine Nutabschnitt (30c) gebildet sind, wobei der kleine Nutabschnitt (30c) eine Breite aufweist, die kleiner und tiefer ist als der mittlere Nutabschnitt (30b), und er sich von dem oberen Endabschnitt der Siegelfläche (17) bis zum oberen Ende des Schnabels (20) erstreckt.

7. Kunststoffkappe nach Anspruch 4, wobei ein eingedellter Abschnitt, der am meisten an seinem zentralen Abschnitt eingedellt ist, auf der Innenseite des Ausgussvorsprungs (11; 110) der Deckplatte (5) gebildet ist, die Öffnung oder der vorbestimmte Öffnungsbereich (Z) in dem eingedellten Abschnitt positioniert ist, ein Ausgussdurchlass, der zulaufend ist, sodass er zu seinem Ende hin eng wird, aus dem Flüssigkeitsausguss-Quetsch-Bereich (Z1) in der Öffnung oder dem vorbestimmten Öffnungsbereich (Z) hin zu einem Grundabschnitt des Ausgussvorsprungs (11; 110) gebildet ist, und der zentrale Abschnitt der Nut (30) an einer Erweiterung des Ausgussflussdurchlasses positioniert ist.

8. Kunststoffkappe nach Anspruch 1, wobei der Puffervorsprung (50) nahe einem niedrigeren Ende des Schnabels (20) positioniert ist, und sich ein äußeres Ende des Puffervorsprungs (50) in der Richtung des Durchmessers an einer gleichen Position wie oder geringfügig auf der Außenseite von dem äußeren Ende des Schnabels (20) in der Richtung des Durchmessers befindet.

9. Kunststoffkappe nach Anspruch 1, wobei der obere Deckel (2) über ein Scharnier (7) an den oberen Endabschnitt des Saums (6) gekoppelt ist, und der Schnabel (20) auf einer einem Abschnitt gegenüberliegenden Seite gebildet ist, an dem der obere Deckel (2) und der Saum (6) über das Scharnier (7) aneinander gekoppelt sind.

10. Kunststoffkappe nach Anspruch 9, wobei das äußere Ende des Schnabels (20) in der Richtung des Durchmessers so hervorsteht, dass es sich an die innere Umfangsfläche des unteren Endes des oberen Deckels (2) annähert, aber so, dass es nicht damit in Kontakt kommt, wenn der obere Deckel (2) geschlossen ist.

11. Kunststoffkappe nach Anspruch 9, wobei eine doppelte Wandstruktur, die eine Innenwand (6a) und eine Außenwand (6b) umfasst, in mindestens einem Abschnitt des Saums (6) gebildet ist, wobei die Innenwand (6a) und die Außenwand (6b) an ihren niedrigeren Enden durch einen geschwächten Abschnitt, der auseinandergerissen werden kann, zusammengekoppelt sind, und der scharniergekoppelte Abschnitt (7) an der Außenwand (6b) gebildet ist.

12. Kunststoffkappe nach Anspruch 10, wobei:

eine axiale Rille (65) in der Außenwand (6b) auf der Außenseite von einem Ende des scharniergekoppelten Abschnitts (7) gebildet ist und sich in der axialen Richtung erstreckt, um so auseinandergerissen zu werden;
Kerben (67) an einem oberen Ende und an einem unteren Ende der Außenwand (6b) gebildet sind, beziehungsweise in dem Abschnitt, wo die axiale Rille (65) gebildet ist;
an den unteren Enden der Innenwand (6a) und der Außenwand (6b) ein Riss-Beginnbereich (Q1), der an dem unteren Ende der axialen Rille (65) beginnt und sich in der Umfangsrichtung zu der Seite erstreckt, auf der der andere Endabschnitt des scharniergekoppelten Abschnitts (7) positioniert ist, und ein Riss-Fortsetzungsbereich (Q2) gebildet sind, der den Riss-Beginnbereich (Q1) fortsetzt; und
eine Stärke des Koppelns der Innenwand (6a) mit der Außenwand (6b) in dem Riss-Beginnbereich (Q1) eingestellt ist, relativ geringer zu sein als eine Stärke des Koppelns in dem Riss-Fortsetzungsbereich (Q2).

Revendications

1. Bouchon en plastique comprenant un corps de bouchon (1) fixé à une partie d'embouchure (100) d'un récipient et un couvercle supérieur (2) monté sur ledit corps de bouchon (1) de manière à pouvoir être ouvert et fermé, ledit corps de bouchon (1) présentant un panneau supérieur (5) et une jupe (6) tombant à partir d'un bord circonférentiel du panneau supérieur (5), ledit panneau supérieur (5) présentant une ouverture ou une zone d'ouverture prédéterminée (Z) destinée à verser le liquide dans le récipient, et une saillie de versement (11 ; 110) et une petite saillie annulaire (21) destinée à s'engager avec le couvercle supérieur (2) étant formées sur un côté extérieur de ladite ouverture ou zone d'ouverture prédéterminée (Z) dans la surface supérieure dudit panneau supérieur (5), ladite saillie de versement (11 ; 110) servant de guide pour verser le liquide dans le récipient, et ladite petite saillie annulaire (21) étant positionnée sur un côté extérieur de ladite saillie de versement (11 ; 110), dans lequel :

   un bec (20) est formé sur une partie d'extrémité supérieure de ladite saillie de versement (11 ; 110), le bec (20) faisant saillie vers l'extérieur de façon inclinée et prenant une forme triangulaire, vu depuis la surface supérieure de celui-ci ;
   une partie d'extrémité inférieure d'une surface intérieure de ladite saillie de versement (11 ; 110) est une surface d'étanchéité (17) s'étendant dans une direction verticale ;
   une rainure (30) est formée dans la surface intérieure de ladite saillie de versement (11 ; 110) s'étendant à partir d'une partie d'extrémité supérieure dudit bec (20) jusqu'à une partie d'extrémité supérieure de ladite surface d'étanchéité (17) ; et
   une bague d'étanchéité (29) est formée sur une surface intérieure dudit couvercle supérieur (2), de manière à entrer en contact étroit avec ladite surface d'étanchéité (17) lorsque ledit couvercle supérieur (2) est fermé,
   caractérisé en ce qu'une saillie d'amortissement (50) est formée de manière à faire saillie vers l'extérieur sur la surface extérieure de ladite saillie de versement (11 ; 110), et **en ce que** la saillie d'amortissement (50) est positionnée sur une partie inférieure dudit bec (20) et sur une partie plus élevée que ladite petite saillie annulaire (21) pour s'engager avec le couvercle supérieur (2).

2. Bouchon en plastique selon la revendication 1, dans lequel ladite saillie de versement (11 ; 110) présente une forme cylindrique.

3. Bouchon en plastique selon la revendication 1, dans lequel la surface intérieure dudit bec (20) de ladite saillie de versement (11 ; 110) forme une surface inclinée, laquelle est inclinée vers le haut et vers l'extérieur à partir d'une extrémité supérieure de ladite surface d'étanchéité (17), ladite surface inclinée étant formée jusqu'à une hauteur au moins supérieure à une moitié de ladite saillie de versement (11 ; 110), vue depuis une section latérale au centre dudit bec (20) dans la direction circonférentielle.

4. Bouchon en plastique selon la revendication 1, dans lequel ladite ouverture ou zone d'ouverture prédéterminée (Z) présente une forme dans laquelle une partie de celle-ci sur un côté tourné vers ledit bec (20) présente une région de compression de liquide à verser (Z1) d'une largeur réduite.

5. Bouchon en plastique selon la revendication 1, dans lequel ladite rainure (30) comprend, vue depuis la direction vers le haut, une partie de grande rainure (30a) destinée à guider un versement en grande quantité, s'étendant à partir d'une partie d'extrémité supérieure de ladite surface d'étanchéité (17) jusqu'à l'extrémité supérieure du bec (20), et une partie de petite rainure (30c) ou une partie de rainure moyenne (30b) destinée à guider un versement en petite quantité ou en quantité moyenne, la partie de petite rainure (30c) ou la partie de rainure moyenne (30b) étant positionnée sur un côté intérieur de la partie de grande rainure (30a), présentant une largeur inférieure à celle de la partie de grande rainure (30a), et étant plus profonde que la partie de grande rainure (30a), tout en s'étendant à partir de la partie d'extrémité supérieure de la surface d'étanchéité (17) jusqu'à l'extrémité supérieure du bec (20).

6. Bouchon en plastique selon la revendication 5, dans lequel la partie de rainure moyenne (30b) et la partie de petite rainure (30c) sont formées sur le côté intérieur de la partie de grande rainure (30a) dans ladite rainure (30), la partie de petite rainure (30c) présentant une largeur inférieure à celle de ladite partie de rainure moyenne (30b) tout en étant plus profonde que celle-ci, et s'étendant à partir de la partie d'extrémité supérieure de ladite surface d'étanchéité (17) jusqu'à l'extrémité supérieure du bec (20).

7. Bouchon en plastique selon la revendication 4, dans lequel une partie bosselée, laquelle est davantage bosselée dans la partie centrale de celle-ci, est formée sur le côté intérieur de la saillie de versement (11 ; 110) dudit panneau supérieur (5), ladite ouverture ou zone d'ouverture prédéterminée (Z) étant positionnée dans ladite partie bosselée, un passage de versement effilé de manière à se rétrécir vers l'extrémité de celui-ci étant formé à partir de la région de compression de liquide à verser (Z1) dans l'ouver-

ture ou la zone d'ouverture prédéterminée (Z), vers une partie de base de ladite saillie de versement (11 ; 110), et la partie centrale de ladite rainure (30) étant positionnée sur une extension du passage d'écoulement de versement.

8. Bouchon en plastique selon la revendication 1, dans lequel ladite saillie d'amortissement (50) est positionnée à proximité d'une extrémité inférieure du bec (20), et une extrémité extérieure de ladite saillie d'amortissement (50) dans la direction du diamètre est placée au même endroit que l'extrémité extérieure du bec (20) dans la direction du diamètre, ou légèrement sur le côté extérieur de celle-ci.

9. Bouchon en plastique selon la revendication 1, dans lequel ledit couvercle supérieur (2) est accouplé par une charnière (7) à la partie d'extrémité supérieure de ladite jupe (6), et ledit bec (20) est formé sur un côté opposé à une partie où ledit couvercle supérieur (2) et ladite jupe (6) sont accouplés ensemble par la charnière (7).

10. Bouchon en plastique selon la revendication 9, dans lequel l'extrémité extérieure dudit bec (20) dans la direction du diamètre fait saillie de manière à se rapprocher de la surface circonférentielle intérieure de l'extrémité inférieure dudit couvercle supérieur (2), mais sans toucher celle-ci lorsque ledit couvercle supérieur (2) est fermé.

11. Bouchon en plastique selon la revendication 9, dans lequel une structure de double paroi comprenant une paroi intérieure (6a) et une paroi extérieure (6b) est formée au moins dans une partie de ladite jupe (6), ladite paroi intérieure (6a) et ladite paroi extérieure (6b) étant accouplées ensemble à leurs extrémités inférieures par une partie affaiblie susceptible d'être déchirée, et ladite partie accouplée par charnière (7) étant formée sur ladite paroi extérieure (6b).

12. Bouchon en plastique selon la revendication 10, dans lequel :

une entaille axiale (65) est formée dans ladite paroi extérieure (6b) sur le côté extérieur d'une extrémité de ladite partie d'accouplement par charnière (7) et s'étend dans la direction axiale de manière à être déchirée ;
des encoches (67) sont formées à une extrémité supérieure et à une extrémité inférieure de ladite paroi extérieure (6b), respectivement, dans la partie où ladite entaille axiale (65) est formée ;
aux extrémités inférieures de ladite paroi intérieure (6a) et de ladite paroi extérieure (6b) sont formées une région de début de déchirure (Q1) débutant avec l'extrémité inférieure de ladite entaille axiale (65) et s'étendant dans la direction circonférentielle vers le côté où est positionnée l'autre partie d'extrémité de ladite partie d'accouplement par charnière (7), ainsi qu'une région de suite de déchirure (Q2) dans le prolongement de ladite région de début de déchirure (Q1) ; et
une force d'accouplement de la paroi intérieure (6a) avec la paroi extérieure (6b) dans ladite région de début de déchirure (Q1) est réglée de manière à être relativement inférieure à une force d'accouplement dans ladite région de suite de déchirure (Q2).

Fig. 1

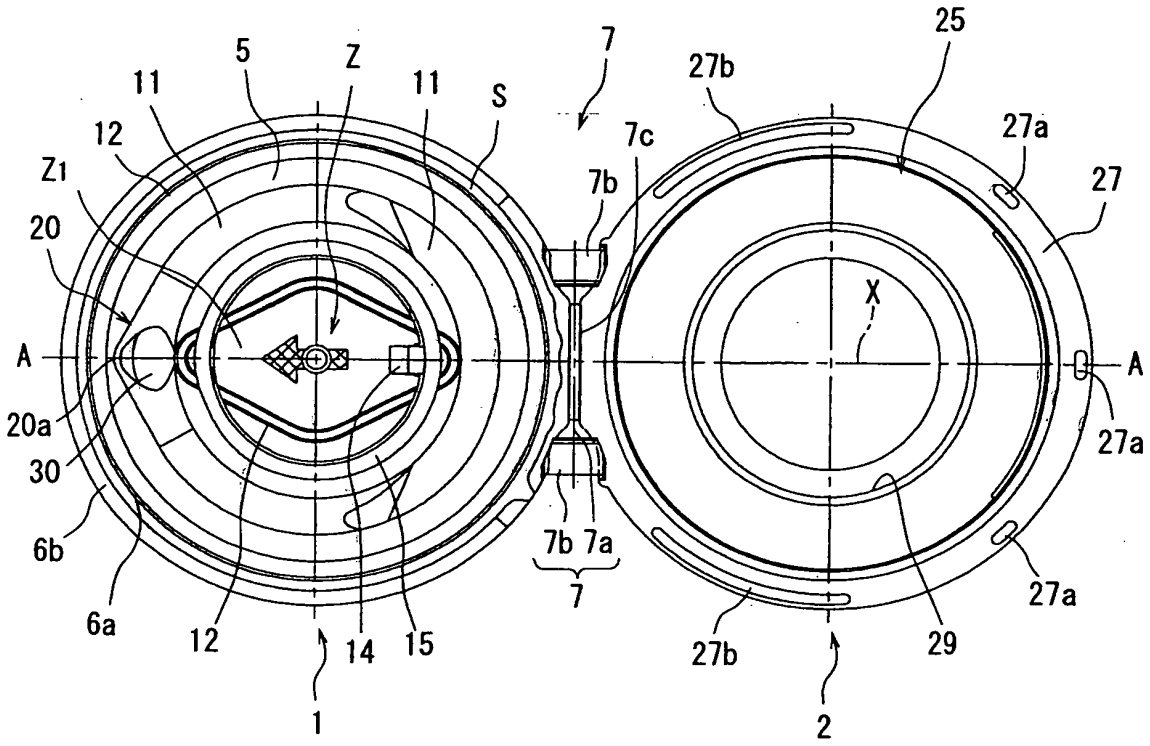

5
Z
11
11
S
7
25
27b
12
7c
27a
Z1
7b
27
20
X
A
A
20a
27a
30
6b
7b 7a
7
27a
6a
12
14
15
27b
29
1
2

Fig. 2

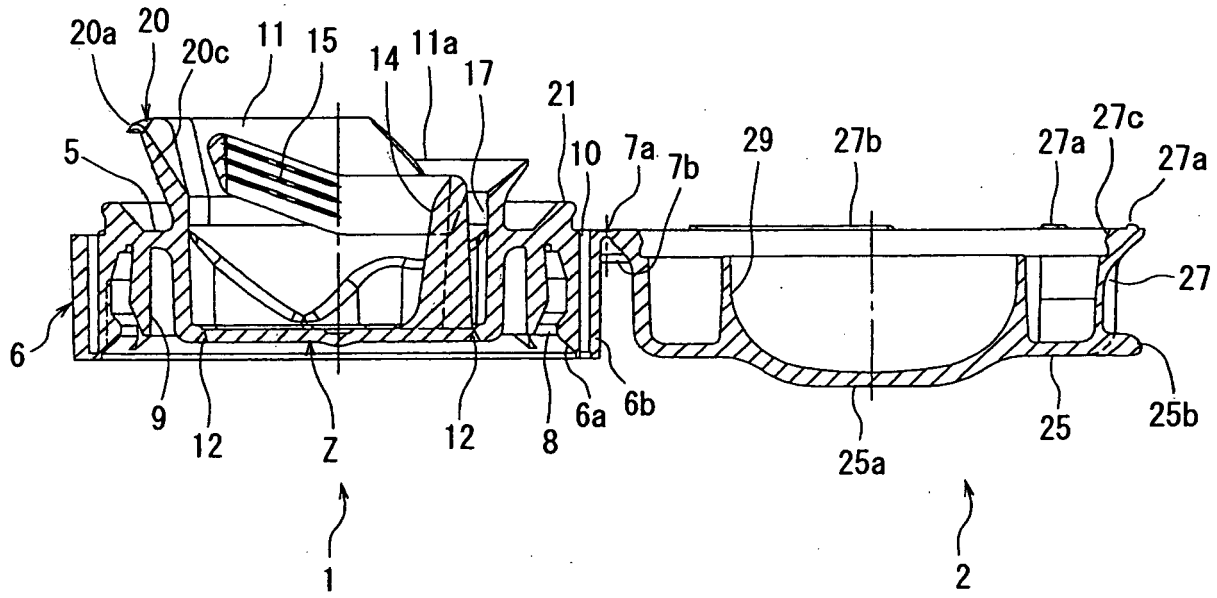

20a
20
20c
11
15
14
11a
17
21
10
7a
7b
29
27b
27a
27c
27a
27
5
6
9
12
Z
12
8
6a
6b
25a
25
25b
1
2

Fig. 3

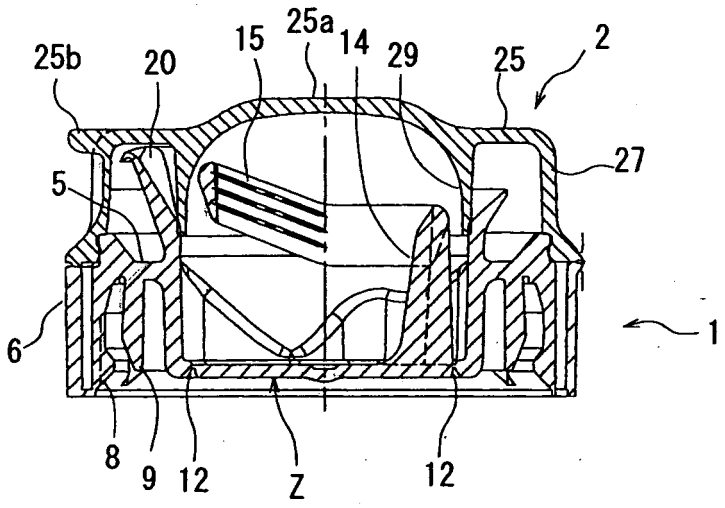


Fig. 4

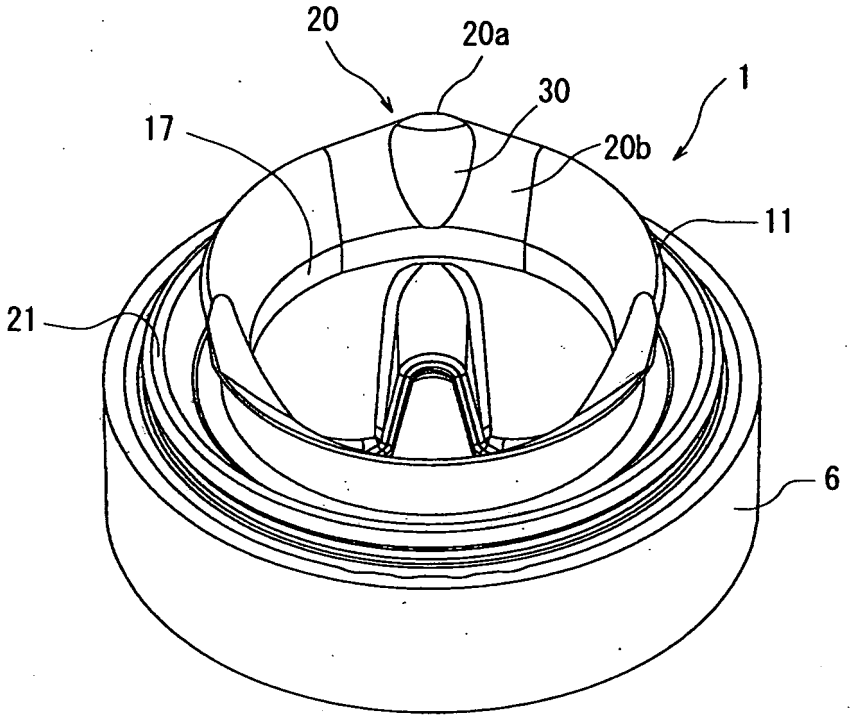


Fig. 5

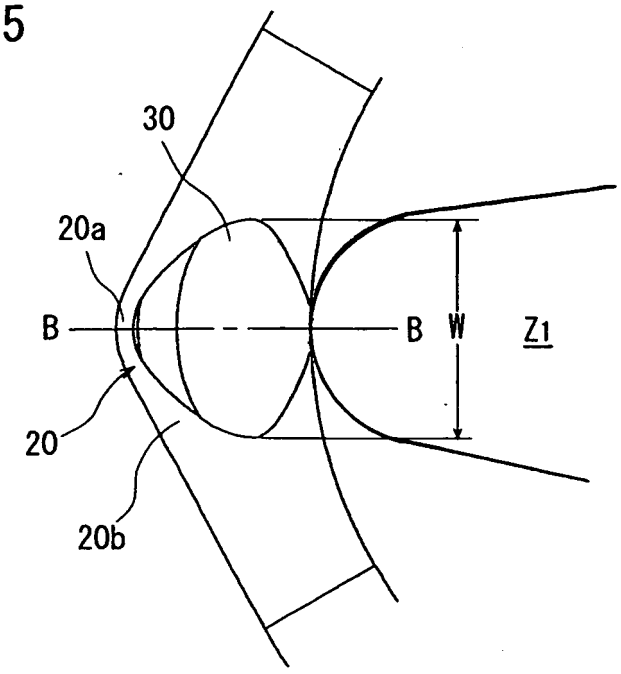


Fig. 6

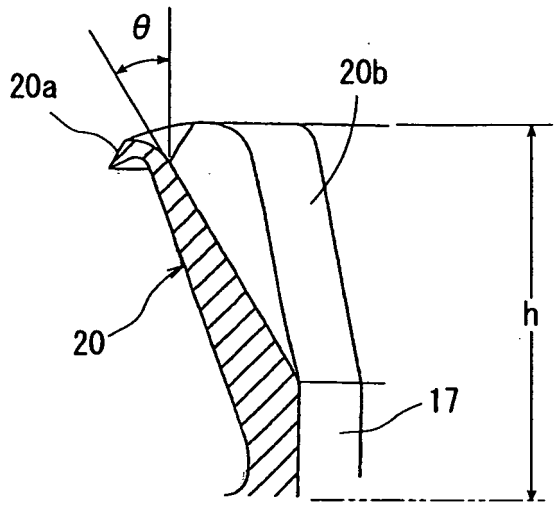


Fig. 7

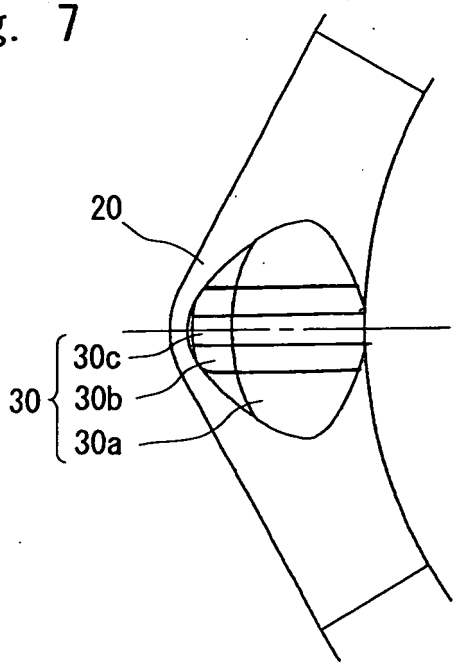


Fig. 8

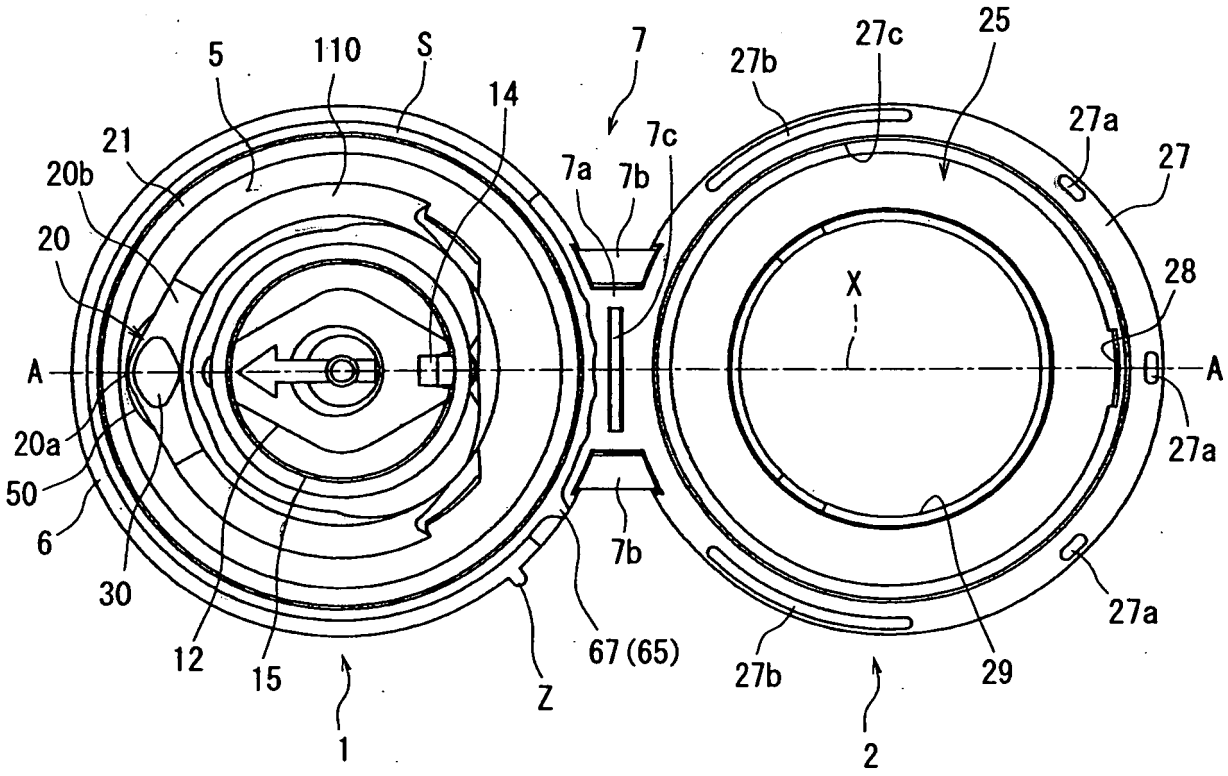

5
110
S
7
14
27b
27c
25
21
7c
27a
20b
7a
7b
27
20
X
28
A
A
20a
27a
50
6
7b
30
27a
12
15
67 (65)
27b
29
Z
1
2

Fig. 9

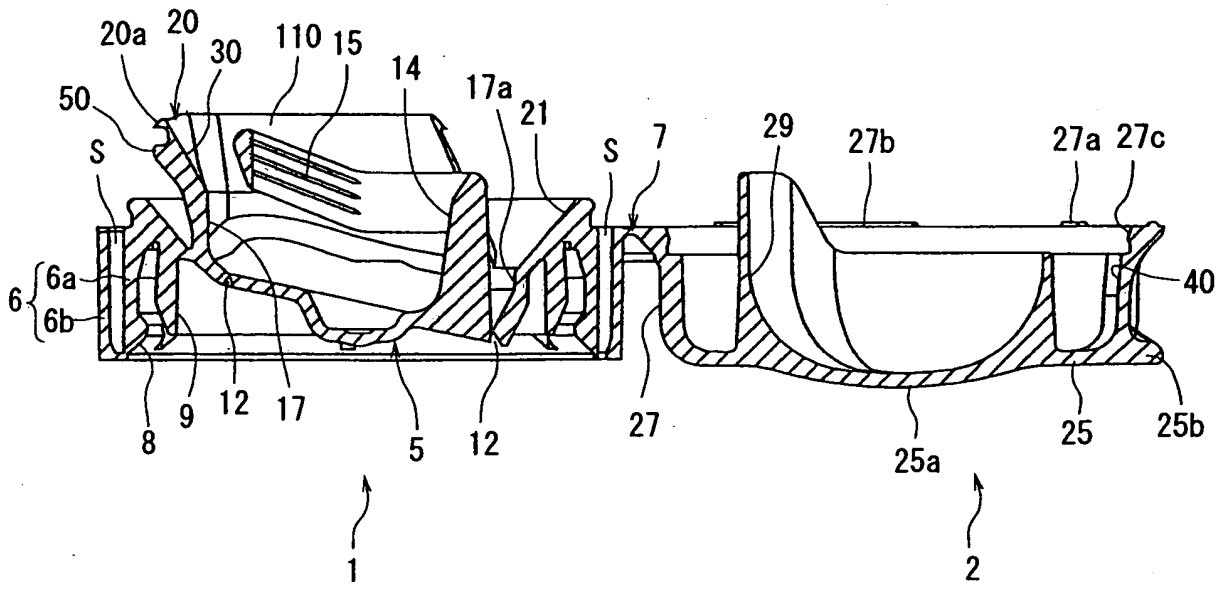

20a
20
30
110
15
14
17a
21
50
S
S
7
29
27b
27a
27c
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6a
6b
40
8
9
12
17
5
12
27
25a
25
25b
1
2

Fig. 10

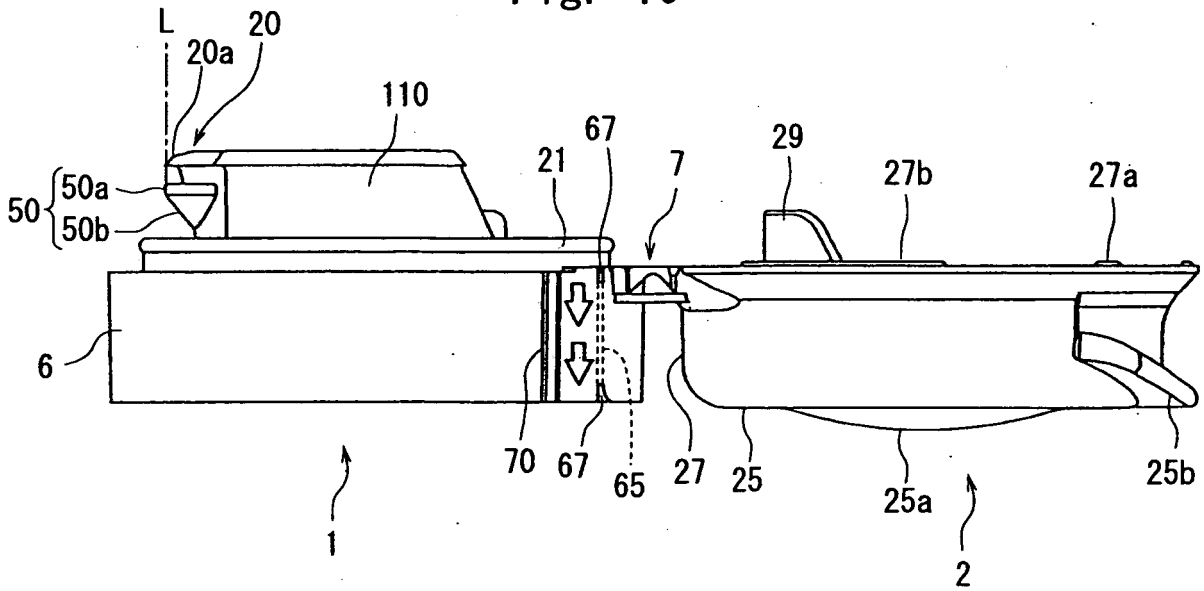

L
20
20a
110
67
21
7
29
27b
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50
50a
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6
70
67
65
27
25
25a
25b
1
2

Fig. 11

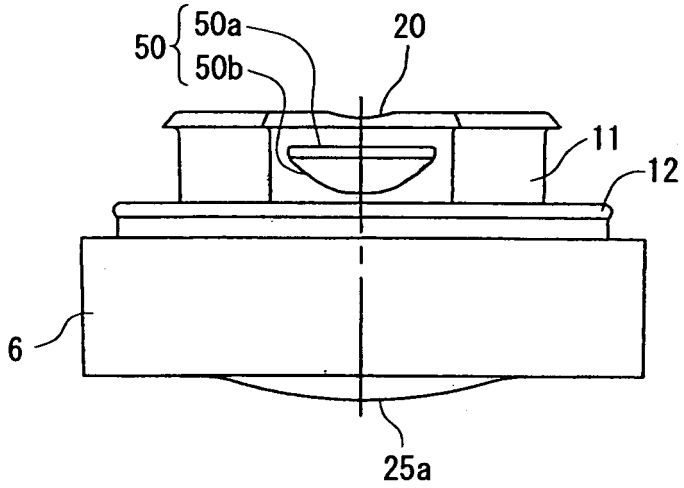

50
50a
50b
20
11
12
6
25a

Fig. 12

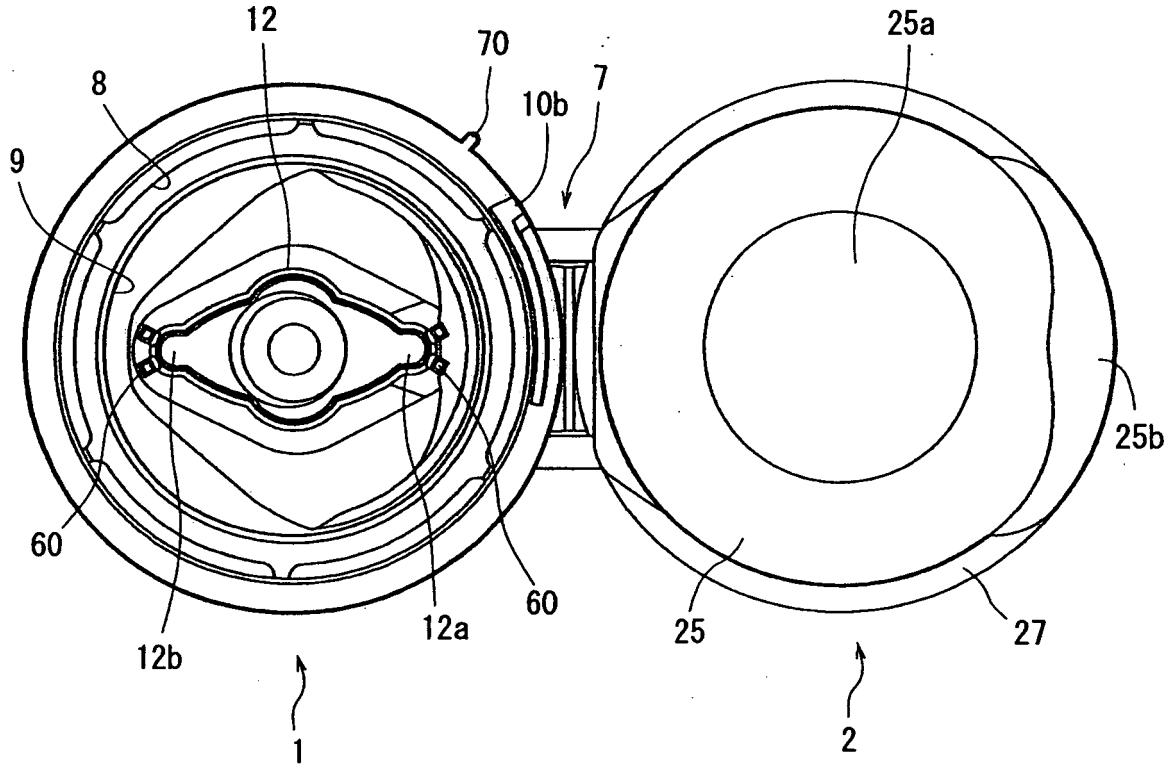


Fig. 13

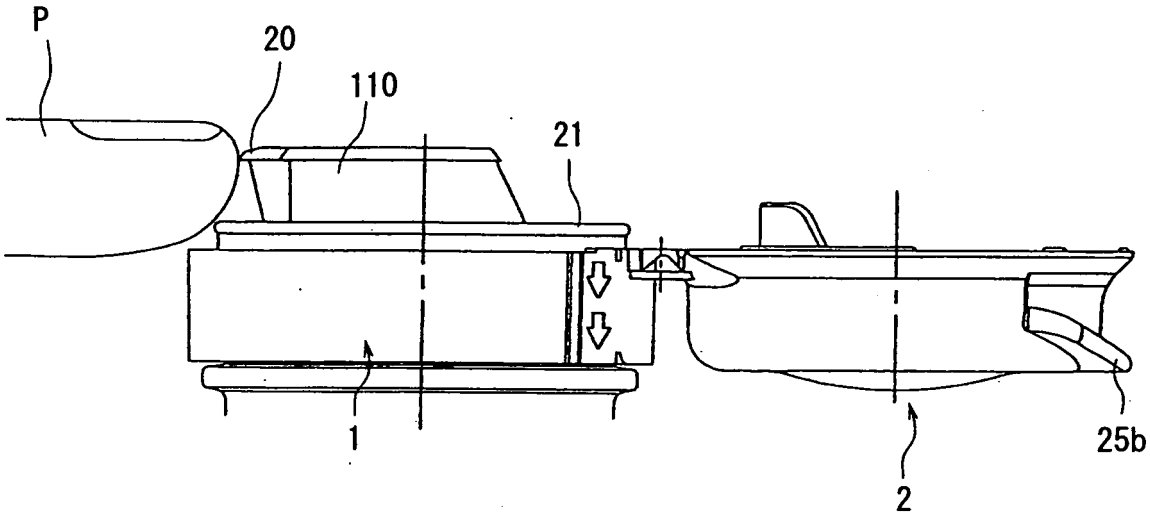


Fig. 14

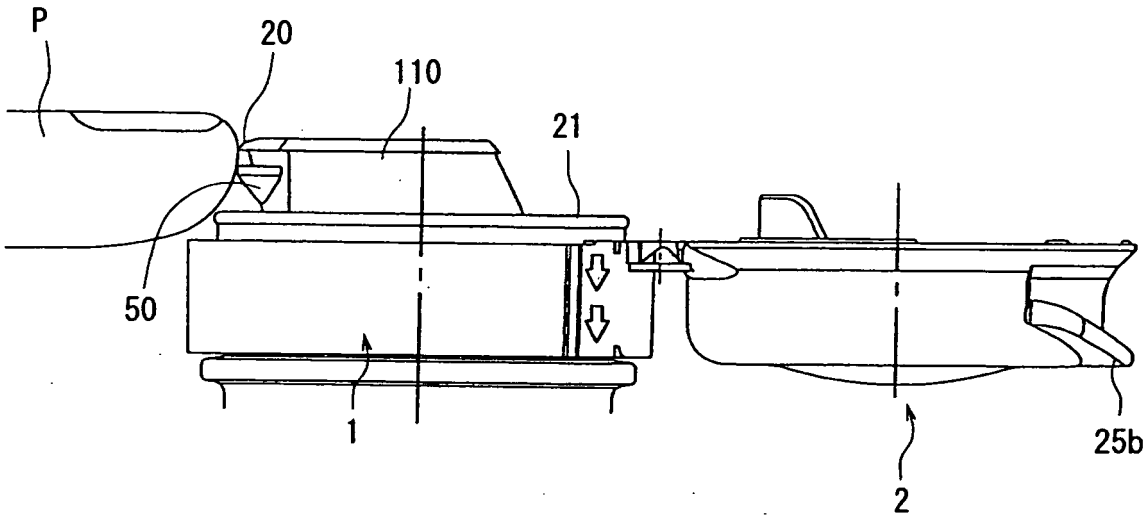


Fig. 15

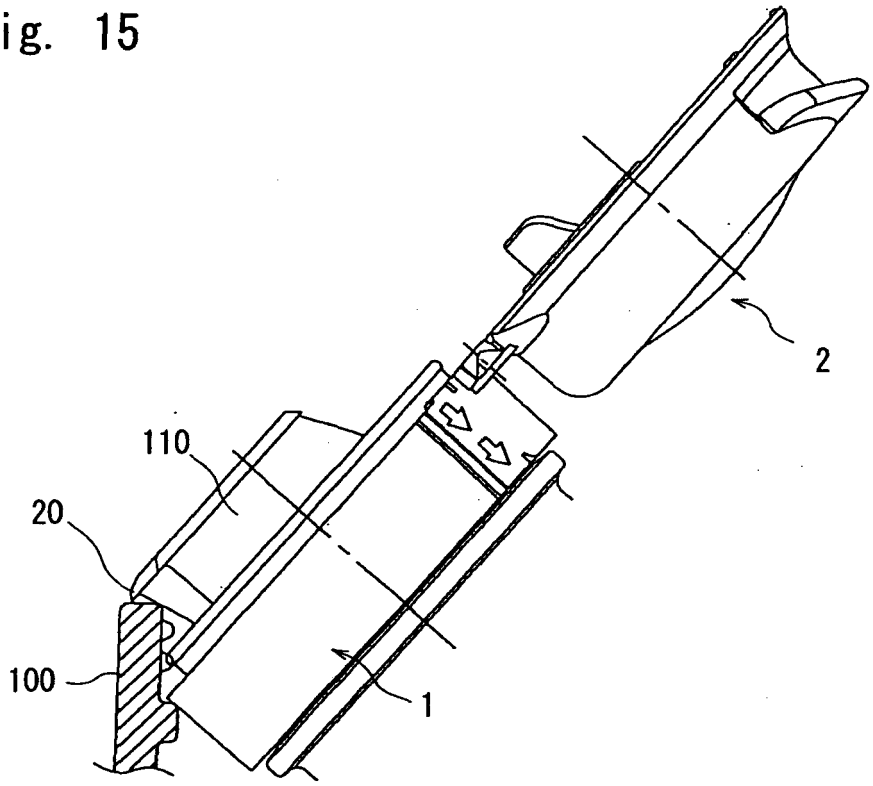


Fig. 16

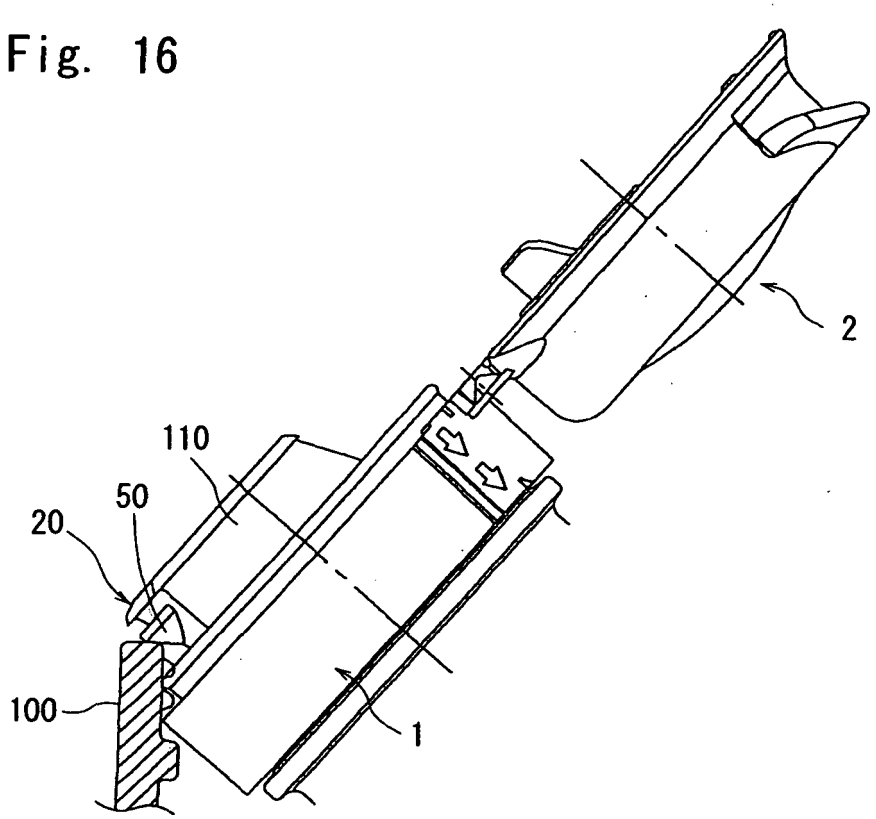


Fig. 17

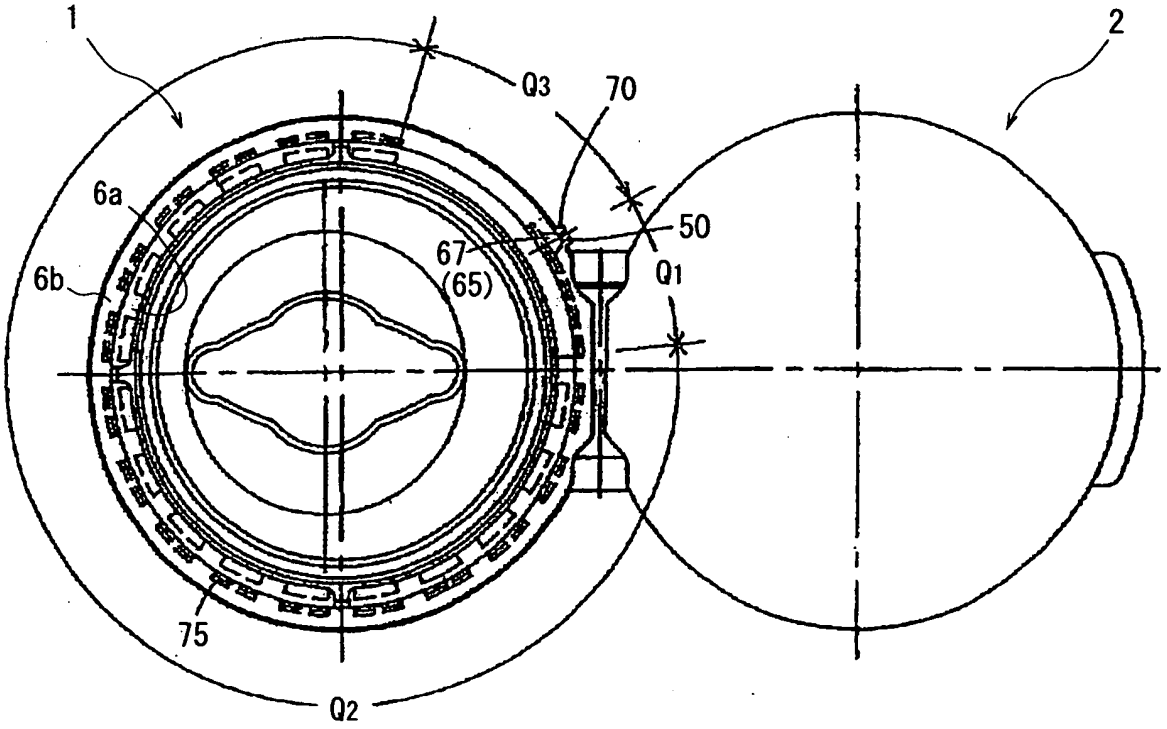


Fig. 18

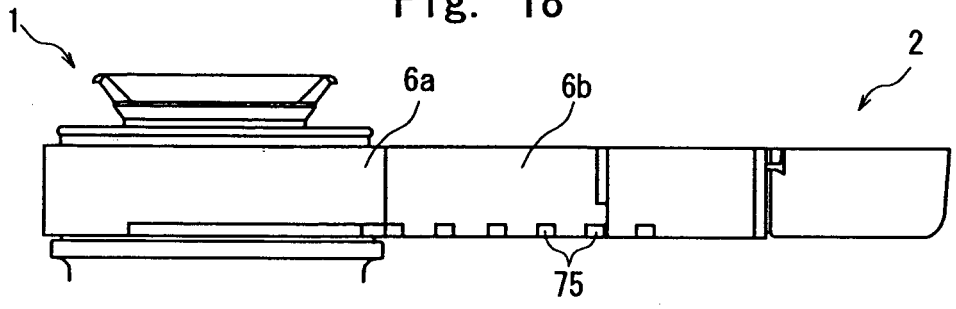
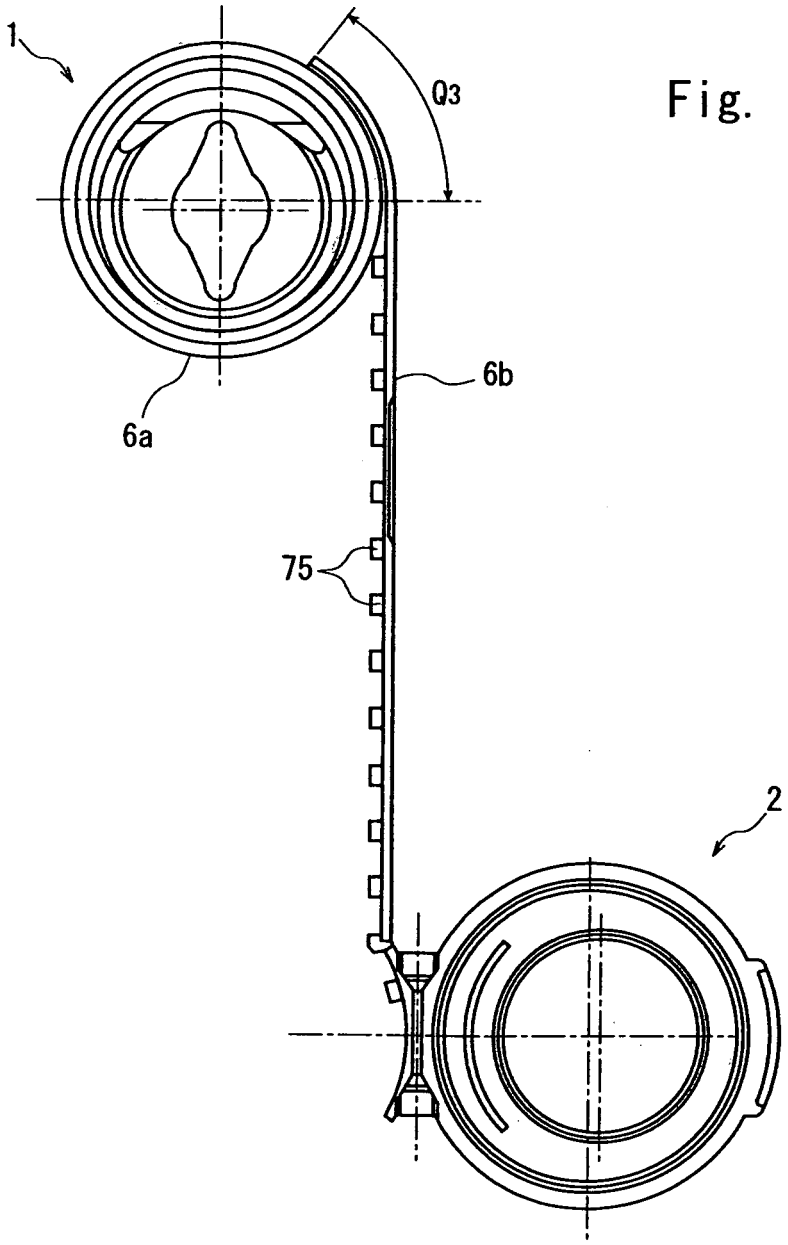


Fig. 19



REFERENCES CITED IN THE DESCRIPTION

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