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A bottle cap structure.

This invention relates to a bottle cap structure (1), wherein a swelling shaped circular cap (15) is set at the upper end plane (12) of the said bottle cap, having also two inverted U shaped branch feet (18, 19) extended and formed from the interior plane of the said circular cap, with four spaces formed by the said two inverted U shaped branch feet into which four straight shaped bodies (30) are separately placed. When the said bottle cap is being placed onto the mouth (3) of the bottle, a gap will be formed between the said two branch feet (18, 19) and the aluminium foil paper (2) which is set on the mouth (3) of the bottle. When the circular cap (15) is being pressed down and turned into a circular arc shape, first cause the two branch feet (18, 19) to pierce through the aluminium foil paper (2) by means of the upper end of the convex body, whereby the aluminium foil paper (2) which has been pierced through will be further expanded under the outward expanding of the two branch feet (18, 19) which is caused by the deformity of the circular shaped cap (15). At the same time, under an outward expansion motion conducted by the four straight shaped bodies (30), the hole which has been pierced through will be further expanded, so as to facilitate the smooth pouring out of the liquid contained in the bottle and achieve the object of providing a sanitary drinks.

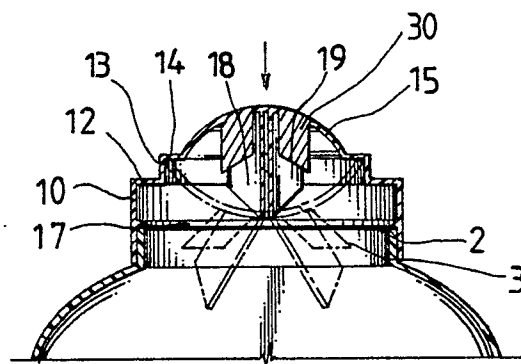


FIG. 4

A BOTTLE CAP STRUCTURE

BACKGROUND AND SUMMARY OF THE INVENTION

This invention is initiated in consideration of the defects found in the troublesome way of opening a bottle which is sealed by an aluminium foil paper, whereby such opening is usually made by using such table wares as a fork, a chopstick, a spoon or even a thumb to pierce through the aluminium foil paper. It is not only unsanitary, but will also easily lead to the rapid reproduction of germs. Moreover, sometimes the liquid contained in the bottle will be caused to jet out of the bottle by an excessive force being applied at the instance of opening the bottle and spray onto the body of the drinker.

Presently, the following two structures are involved in particular type of design of the said bottle cap: One is a turning type and the other is a pressing type which is similar to that of the present invention.

The most serious defect of the turning type lies in the complication of its structure and the inconvenience found in its utilization, wherein a pulling ring is set around the edge of the lower end of the bottle cap. In the event of piercing through the aluminium foil paper, the said pulling ring has first to be removed, so that a screw path can be reserved at a space between the cap and the bottle to serve as a path along which the cap can be turned toward to downward direction. In this way, it is readily understood that in the process of piercing through the aluminium foil paper, the pulling ring has first to be removed before proceeding with the piercing through process by means of a turning mode. This motion is both complicated and slow in operation. On the other hand, due to the complication of its structure, the production is also greatly increased. Furthermore, a moisture will be produced at the time of piercing through the aluminium foil paper which will cause a slippery effect at the time when the pulling ring is being removed and thus will hinder its smooth operation and will further increase the complication of the procedure of cap removing.

There are two types of structure categorized under the pressing type of bottle cap, of which the structure and defects are detailed as follow:

1. A plane surface pressing type, wherein the plane of the upper end of a bottle cap is of a plane surface shape, having a sharp awl body directly extended out of the upper end plane of the said plane surface shape. At the time when the aluminium foil which is being sealed on the mouth of the bottle cap, the upper end plane on the bottle cap has first to be pressed down. The pressing

stroke of this type of plane surface shaped upper end plane is rather short and its pressing distance is being limited. Therefore, sometimes it is impossible to easily pierce the aluminium foil through and is being regarded as not very practical for use.

2. A swelling pressing type, wherein the upper end plane of the bottle cap is of a swelling shape, having an awl body being extended from its interior and the expansion of the said swelling shaped upper end plane is being used to increase the pressing stroke of the awl body in piercing through the aluminium foil paper. The most serious defect of this type lies in the design of the awl body, wherein when the swelling shaped upper end plane is caused to become concave in shape, an outward tension will be produced at the time of its deformity.

The said outward tension will exert an effect over the awl body at the time when the awl body is moving downward to cause the swelling shaped upper end plane to deform and become concave in shape. However, in the absence of the design of the said awl body, the effect produced by the said tension will become weaken. In the case when the awl body is available, the concave shape which is produced under the deformity of the swelling upper end plane will also cause a change in the shape of the sharp awl body. However, the awl body itself which is integrally formed does not have such a design under which the said tension can be supported, consequently leading to the uneasy achieving of a smooth operation. Sometimes, a descending motion in the wrong direction will be produced if the awl body cannot move downward in a straight direction, that makes it uneasy to pierce through the aluminium foil.

Contrary to the above-mentioned design, a swelling shaped circular cap is being adopted by the present invention, having two inverted U shaped branch feet extended out of its interior toward a downward direction and, a gap is produced at the space between the cap and the mouth of the bottle. At the time when the circular cap is being pressed down to cause to become a circular arc shaped concave body, the two branch feet of which can move downward and, at the same time, can expand the hole which they have pierced through. The outward expansion motion of the said two branch feet is being produced by the deformity of the circular cap when it is being caused to become concave in shape and, in each of the four spaces formed by the two branch feet of the present invention, there is the arrangement of a straight shaped body or a cross shaped body, the

function of which is to further expand the hole under an outward expansion motion conducted by the four straight shaped bodies at the time when the two inverted U shaped branch feet is conducting a piercing through process over the aluminium foil to expand its hole.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a solid drawing of the present invention.

Figure 2 is a bottom view drawing of the present invention.

Figure 3 is a left side view cross-section drawing of the present invention.

Figure 4 is a motion indicative drawing of the present invention.

Figure 5 is a bottom view drawing of another preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Please refer to Figs. 1, 2 and 3 which disclosed the structure of the present invention, from which it can be seen that cap 1 is integrally formed into a body, having a cap body 10 as a main body, from the bottom end of which a projected body 11 is extended and also having a convex ring 17 set at the central part of its interior (as shown in Figs. 2 and 3). Another convex body 13 is projected at the upper end plane 12 of the cap body 10 and, at the surface 14 of the said convex body 13 there is the setting of a swelling shaped circular cap 15.

At the central part of the interior of the said circular cap 15 two pairs of symmetrical branch feet 18, 19 are set (as shown in Fig. 2) and they are an inverted U shape, having a gap existed between the backs 180, 190 of the said two branch feet 18, 19, with their openings 181, 191 both facing outward, by which four spaces are equally divided and a straight shaped body 30 is set at each of the said four spaces, in the interior of each of which a cross character bodies formation is formed, all of which are shorter in height than those of the inverted U shaped branch feet 18, 19. Both the two lateral sides of the bottom end of which are designed in such a way that a 45 degree slanting outward shape is formed, while the said four straight shaped bodies 30 are in a 45 degree slanting inward formation and the bottom plane of branch feet 18, 19 are so arranged that they fall coincidentally onto the upper direction of the convex ring 17.

Please refer to Fig. 4, wherein the said cap 1 is set at the mouth 3 of the bottle, having an alumin-

ium foil 2 set at its surface. The upper end of the mouth 3 of the bottle is so arranged that it coincidentally gets in touch and press against the convex ring 17 which lies in the interior of the cap 1 and to enable the existence of a gap to lie at the space between the two branch feet 18, 19 and the aluminium foil 2. At the time of drinking, press the swelling shaped circular cap 15 with a thumb and deform it into a concave circular shape, so as to cause the branch feet 18, 19 to move downward to get in touch with and pierce through the aluminium foil 2. At the same time, by means of the deformity of the circular cap 15, the two branch feet 18, 19 will be caused to produce a outward expanding motion, so as to further expand the cracking hole of the aluminium foil 2, which will still be further expanded by an outward moving motion which is produced by the four straight shaped bodies 30 under an influence produced by the deformity of the circular cap 15. Then, push the projected body 11 upward by the forefinger and the cap 1 will thus be easily open, so as to drink the liquid contained in the bottle.

Please refer to Fig. 4, wherein the outer appearance and structure are similar to those as indicated in Fig. 1. Their difference lie in the aspect of the two branch feet 40, 41 which are being extended out of the circular cap 4 to move downward and their motion is similar to that as shown in Fig. 4. When the circular cap 4 is being pressed down, the said two branch feet 40, 41 will be caused to expand outward.

The design and techniques of the present invention are detailed as follows:

1. Please refer to Fig. 4, wherein the surface 14 of the convex body 13 will be used as a buffer base when the swelling shaped circular cap 15 is being deformed at the time of its pressing downward. Therefore, when the swelling shaped circular cap 15 is pressing downward, the surface of which will also move downward and become deformed because it is being influenced by the deformity of the said swelling shaped circular cap 15, to the effect that the aluminium foil 2 will first be pierced through, so as to facilitate the actual performance of the outward expanding motion of the two branch feet 18, 19.

2. Please refer to Figs. 2 and 4, wherein the plane of contact between the two branch feet 18, 19 and the interior plane of the circular cap 15 is rather small in dimension, where a thread shaped contact can be conducted. Therefore, the limit exerted by the outward tension which is produced by the deformity of the circular cap 15 when it is pressing downward is rather small, which will result in the availability of a larger area of outward expansion for the two branch feet 18, 19 and con-

sequently allow a larger hole to be open on the aluminium foil to facilitate the smooth flowing out of the liquid contained in the bottle.

3. Please refer to Figs. 2 and 4, wherein the both the two branch feet 18, 19 are designed in the form of an inverted U shaped outward openings 181, 191. At the same time when the circular cap 15 is being pressed down and become deformed, the two branch feet 18, 19 will be hastened to conduct an outward expansion in an instance under the formation of the inverted U shaped bodies, so as to allow the aluminium foil 2 to be torn toward an outward direction, so as to further expand its mouth.

4. Please refer to Figs. 2 and 4, wherein the four straight shaped bodies 30 in a cross character formation are scattering inside the four spaces formed by the branch feet 18, 19 of the inverted U shaped bodies, the outward expansion motion of which will, under the deformity of the circular cap 15, further allow the hole which has been pierced through by the inverted U shaped branch feet 18, 19 to be further expanded, so as to facilitate the smooth pouring out of the liquid contained in the bottle.

interior plane of the circular cap are having the four spaces formed and in each of the said spaces will have the formation of a straight shaped body and contained therein is a cross-character shaped body, the height of which is shorter than that of the inverted U shaped branch feet and, as a consequence, its outward expanding motion will also be affected by the deformity of the circular cap and thus will further help to further expand the hole which has been pierced through by the inverted U shaped branch feet.

4. A bottle cap structure according to claim 1, wherein the two branch feet which are extending downward from the said swelling shaped circular cap can also be formed into two semi-circular shape.

Claims

1. A bottle cap structure which is integrally formed is having a cap body, on the upper end of which a convex body is set and, on the surface of the forementioned convex body, there is the setting of a swelling shaped circular cap, featuring in such aspects that a pair of symmetrical branch feet are being extended from the central part of the interior of the said circular cap, which are of an inverted U shape having a gap at its back and the opening of which tended to stretch outward, with the two lateral sides of its bottom end designed in the shape of a 45 degree slanting outward and the length of its being extended downward lies at the upper end of the aluminium foil, so as to facilitate the instant widespread tearing open of the aluminium foil when a pressing downward motion is being conducted.

2. A bottle cap structure according to claim 1, wherein the upper end plane of its convex body will serve as a buffer base when the said swelling shaped circular cap is pressing down to form a concave circular body and, at the same time, when the circular cap is being pressed down, the two branch feet will first be caused to move downward to pierce through the aluminium foil.

3. A bottle cap structure according to claim 1, wherein the two inverted U shaped branch feet which are extending from the central part of the

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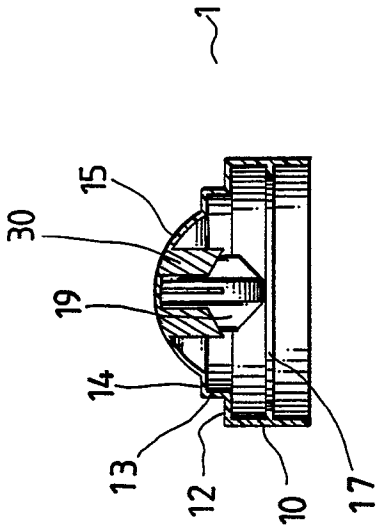


FIG. 1

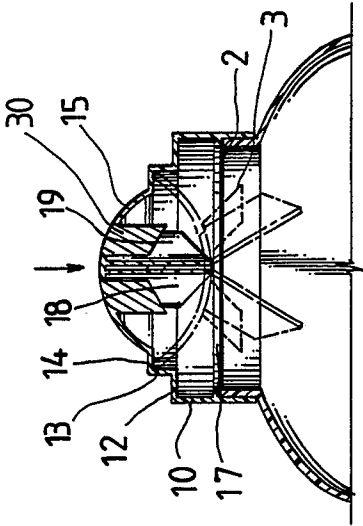


FIG. 2

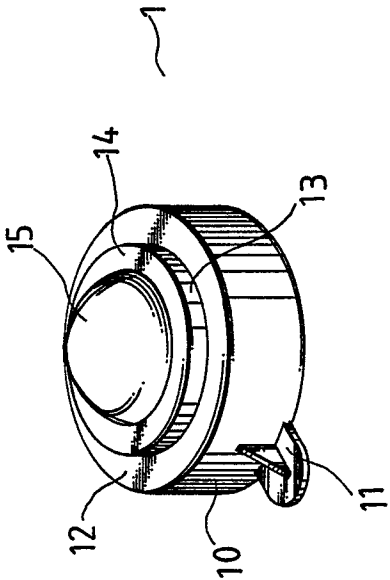


FIG. 3

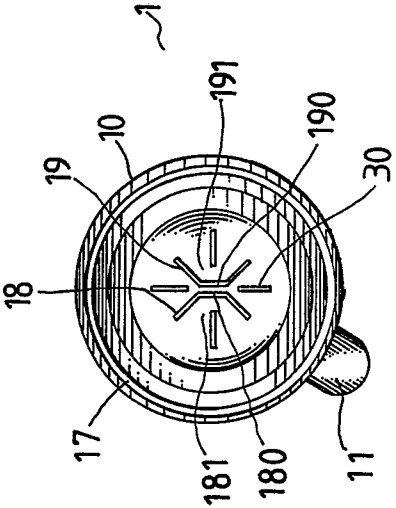


FIG. 4

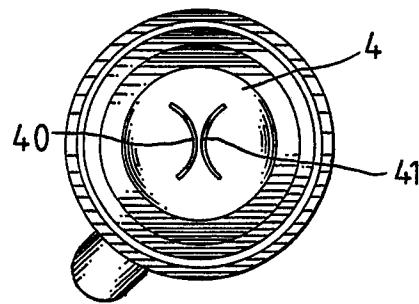


FIG. 5



EP 88 10 9123

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	GB-A-1 152 931 (SOCIETE D'APPLICATIONS TECHNIQUES ET INDUSTRIELLES SATI) * page 1, lines 34 - 66; page 2, lines 3 - 26; figures 1 - 2 * ---	1	B 65 D 51/22
A	EP-A-0 268 538 (ASTRA) * claims 1, 2, 8 - 12; figures 2 - 3, 6 - 9 * -----	1, 2	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B 65 D 51/00
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 31-01-1989	Examiner NOVELLI B.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			