

[DESCRIPTION]**[Invention Title]****BOTTLE CAP****[Technical Field]**

5 The present invention relates to a bottle cap, including a lower cap, a pusher and an upper cap. The lower cap is coupled to the inlet of a bottle, and has a holding part which enters the inlet of the bottle, accommodates a pusher containing an additive therein, and includes on a
10 center of a bottom thereof a sharp pushing needle and a needle support rib provided around the pushing needle, with a jet hole formed in the support rib.

 The pusher is accommodated in the holding part to operate in conjunction with the upper cap, and includes an
15 inclined surface which is provided on the upper end of the pusher and an upper partition wall which is provided under the inclined surface. The internal space is defined by the upper partition wall containing the additive therein, and the lower end of the pusher is sealed by a sealing film
20 which is torn when the sealing film comes into contact with the pushing needle.

 The upper cap is coupled to the extension tube of the holding part, and includes an inner flange which has on a lower end thereof an inclined pushing surface which comes

into contact with and pushes downwards the inclined surface of the pusher when the upper cap is rotated.

Further, the present invention relates to a bottle cap, including a lower cap, a pusher and an upper cap. The lower cap is coupled to the inlet of a bottle, and has a holding part which contains an additive therein and enters the inlet of the bottle.

The pusher is accommodated in the holding part to operate in conjunction with the upper cap, and is moved downwards by the pushing operation of an inclined surface provided on the upper end of the pusher, thus pushing the bottom plate of the holding part.

The upper cap is coupled to the extension tube of the holding part of the lower cap, and includes an inner flange which has on a lower end thereof an inclined pushing surface which comes into contact with and pushes downwards the inclined surface of the pusher when the upper cap rotates on the lower cap.

[Background Art]

Generally, a bottle cap is opened when a person desires to drink the contents of a bottle. Recently, as concern about health has been increasing, a bottle cap has been competitively developed, which is constructed so that the cap holds an undiluted solution or powder containing the original elements and is destroyed when the solution or

powder is desired to be used, thus adding the solution or powder to the contents of a bottle, because the contents are perishable or nutrients are apt to degrade over time.

In the bottle cap constructed as described above, a lower cap having a holding part which holds an additive therein or an additional container is coupled to the inlet of a bottle. When an upper cap is turned and opened, a pusher moves downwards to open the bottom of the holding part, thus adding an additive to the contents of the bottle.

However, such a bottle cap is problematic in that the holding part does not fully prevent the permeation of moisture into the holding part, so that the additive may be hardened or nutrients may be destroyed or deteriorate, and thus the bottle cap is not commercially viable.

[Disclosure]

[Technical Problem]

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a bottle cap, which has a sealing capacity which prevents moisture from permeating into a holding part for holding an additive therein or a pusher held in the holding part.

Another object of the present invention is to provide a bottle cap, which includes a sounding means to make a

sound when the addition of an additive contained in a holding part has been completed, thus allowing a user to recognize when the addition of the additive is finished.

5 A further object of the present invention is to provide a bottle cap, in which an inner flange having an inclined pushing surface formed such that its lower end is inclined is provided on an upper cap, and the inclination angle of the inclined pushing surface is larger than that between fastening threads provided on an upper extension
10 tube of a holding part, so that the bottle cap may move downwards a long distance even if the rotating degree of the bottle cap is small, thus making it easy to add the additive to the contents of a bottle, in addition to facilitating the coupling of the bottle cap.

15 In order to accomplish the above objects, the present invention provides a bottle cap, in which the lower end of the inner flange of an upper cap forms an inclined pushing surface, a holding part is provided in a lower cap which is coupled to the upper cap and is directly coupled to the
20 bottle, an additive and a pusher are provided in the holding part, an inclined surface is integrally provided on the upper end of the pusher to perform a pushing operation in cooperation with the inclined pushing surface, and the inclination angle of the inclined surface is larger than
25 the inclination angle between fastening threads of an upper extension tube of the holding part, so that the pusher is

moved downwards by the rotation of the upper cap, and the pusher and the upper cap are simply in surface contact with each other, thus allowing the bottle cap to be easily assembled.

5 **[Description of Drawings]**

FIG. 1 is a sectional view illustrating a bottle cap according to the first embodiment of the present invention,

FIG. 2 is a sectional view illustrating the use of the bottle cap of FIG. 1,

10 FIG. 3 is a sectional view illustrating a bottle cap according to the second embodiment of the present invention,

FIG. 4 is a perspective view illustrating a pusher according to the present invention,

15 FIG. 5 is a plan view of FIG. 4,

FIG. 6 is a bottom perspective view of FIG. 4,

FIG. 7 is a bottom perspective view illustrating an upper cap according to the present invention,

20 FIG. 8 is a bottom perspective view illustrating a lower cap according to the present invention,

FIG. 9 is a perspective view illustrating the state in which a bottom plate of the lower cap of the present invention is closed,

25 FIG. 10 is a front perspective view illustrating the lower cap according to the present invention,

FIG. 11 is a perspective view illustrating the upper portion of the lower cap,

FIG. 12 is a sectional view illustrating a bottle cap according to the third embodiment of the present invention,

5 FIG. 13 is a sectional view illustrating the use of the bottle cap of FIG. 12, and

FIG. 14 is a sectional view taken along line A-A of FIG. 13, in which the bottom plate is opened.

[Best Mode]

10 Hereinafter, the preferred embodiments of the present invention will be described in detail with reference to the accompanying drawings.

FIGS. 1 and 2 are views illustrating a bottle cap according to the first embodiment of the present invention.
15 The bottle cap includes a lower cap 100, a pusher 200 and an upper cap 300. The lower cap is coupled to the inlet of a bottle 10, and has a holding part 110 which enters the inlet of the bottle and accommodates the pusher 200 containing an additive W therein. A sharp pushing needle
20 150 is provided on the center of the bottom of the holding part, and needle support ribs 152 are provided around the pushing needle 150, with a jet hole 154 formed in each support rib 152.

 The pusher is accommodated in the holding part 110 to
25 operate in conjunction with the upper cap 300. An inclined

surface 220 is provided on the upper end of the pusher and an upper partition wall 210 is provided under the inclined surface 220. The internal space defined by the upper partition wall 210 contains the additive W therein, and the lower end of the pusher is sealed by a sealing film 240 which is torn when the sealing film comes into contact with the pushing needle 150.

The upper cap is coupled to an extension tube 120 of the holding part 110 of the lower cap, and has an inner flange 320 which has on a lower end thereof an inclined pushing surface 310 which comes into contact with and pushes downwards the inclined surface 220 of the pusher 200 when the upper cap 300 is rotated.

FIGS. 4 to 6 are a top perspective view, a plan view and a bottom perspective view illustrating the pusher 200 used in each embodiment of the present invention. The pusher has on its upper end the inclined surface 220. Under the inclined surface 220 is formed the upper partition wall 210. The internal space 212 defined by the upper partition wall 210 contains the additive W therein. The lower end of the pusher is sealed by the sealing film 240 which is torn when it comes into contact with the pushing needle 150 and is shown in FIGS. 1 to 3.

According to the first embodiment of the present invention constructed as such, in the state where the pusher shown in FIGS. 4 to 6 is turned up, the additive

(powder or additive liquid, etc.) is put into the internal space 212. The sealing film 240 is placed on the pusher and seals the internal space of the pusher through high-frequency fusion, so that the pusher 200 serves as a container for containing the additive therein. Subsequently, the pusher is turned up and inserted into the holding part 110 of the lower cap 100. As shown in FIG. 1, the upper cap 300 is fastened to the fastening threads 121 provided on the outer surface of the extension tube 120 of the lower cap 100. Next, this assembly is coupled to the inlet of the bottle 10 containing the contents through fitting. Of course, in this case, a locking hook 105 provided on the edge of the lower cap 100 is hooked to a locking projection 14 which is provided on the inlet side of the bottle 10.

The locking hook 105 of the lower cap 100 is hooked to the locking projection 14 which is provided on the inlet of the bottle 10 containing the contents, while the holding part 110 of the lower cap 100 is positioned in the inlet of the bottle. In such a state, the pusher 200 containing the additive may be inserted into the holding part 110. Thereafter, the upper cap 300 is coupled to the lower cap, as shown in FIG. 1.

In this state, when the upper cap 300 is turned to be open, a forgery prevention skirt 301 is coupled to a skirt support projection 101 shown in FIGS. 10 and 11, so that

the forgery prevention skirt 301 is separated from the upper cap 300. Simultaneously, the lower end of the inner flange 320 integrated with the upper cap 300 forms the inclined pushing surface 310. The inclination angle $\theta 1$ of the inclined pushing surface 310 is larger than the inclination angle $\theta 2$ between the fastening threads 121 of the extension tube 120. Thus, the rotating force for loosening the upper cap leads to the pushing operation of the inclined pushing surface 310 and the inclined surface 220 (moreover, a guide groove 230 is formed in the pusher 200 as shown in FIGS. 4 to 6 and a guide projection 114 is provided on the holding part 110 to correspond to the guide groove, thus leading to the vertical movement of the pusher), so that the sealing film 240 is pushed by the pushing needle 150 as shown in FIG. 2 and thus the additive is added to the interior of the bottle.

Of course, in this case, the torn sealing film 240 is fitted into a film edge fitting groove 156 formed in the lower end of the holding part 110, together with the lower end of the pusher 200, so that the torn sealing film 240 is not mixed with the contents. Simultaneously, openings 158 are formed in the inner wall of the film edge fitting groove 156, thus allowing the additive to be easily discharged. Further, a seal packing 324 is provided between the upper cap 300 and the upper end of the extension tube 120 of the lower cap 100 as shown in FIGS. 1 and 2, thus

sealing a gap between the upper cap and the upper end of the extension tube of the lower cap.

Further, after the additive has been added as shown in FIG. 2, the upper cap 300 is separated. In this state, a person can drink the contents from the bottle 10. In this case, the pusher 200 has a discharge hole 214 in the upper partition wall 210 as shown in FIGS. 4 and 5, so that a person may drink the contents through the extension tube 120 of the lower cap 100. Of course, when the discharge hole 214 of FIGS. 4 and 5 is closed and the upper partition wall of the pusher has a C shape, a vertical through hole is formed in the central portion of the pusher. In this case, the contents may be discharged through the through hole. Further, the internal space of the pusher may be divided into two vertical spaces. Here, one of the vertical spaces is used as the additive discharging hole, while the other is used as the contents discharging hole. Of course, in this case, two pushing needles 150 are required.

FIG. 3 is a sectional view illustrating a bottle cap according to the second embodiment of the present invention. The bottle cap includes a lower cap 100, a pusher 200, an upper cap 300 and a sealing plate 330. The lower cap is coupled to the inlet of a bottle 10, and has a holding part 110 which enters the inlet of the bottle 10 and accommodates the pusher 200 containing an additive therein. A sharp pushing needle 150 is provided on the

center of the bottom of the holding part, with needle support ribs 152 and a jet hole 154 provided around the pushing needle 150.

5 The pusher is accommodated in the holding part 110 to operate in conjunction with the upper cap 300. An inclined surface 220 is provided on the upper end of the pusher and an upper partition wall 210 is provided under the inclined surface 220. An internal space defined by the upper partition wall 210 contains the additive therein, and the
10 lower end of the pusher is sealed by a sealing film 240 which is torn when the sealing film comes into contact with the pushing needle 150.

The upper cap 300 is coupled to an extension tube 120 of the holding part 110 of the lower cap, and rotatably has
15 an inner flange 320 which has on a lower end thereof an inclined pushing surface 310 which comes into contact with and pushes downwards the inclined surface 220 of the pusher 200 when the upper cap 300 is rotated.

The sealing plate 330 extends integrally from an
20 upper edge of the inner flange 320 in a doughnut shape, and is seated on the inner wall of the upper end of the upper cap 300 to seal the upper end of the extension tube 120.

A one-way gear 326 is provided on the upper end of the inner flange 320, and a corresponding gear 302
25 rotatable in one direction is provided on the lower surface of the upper cap 300 such that the gear is subjected to a

rotating force in only one direction when the upper cap is loosened.

Since the general operation of the second embodiment remains the same as the first embodiment, the coupling and use of the second embodiment are equal to those of the first embodiment and thus the detailed description will be omitted. However, unlike the first embodiment, the inner flange 320 and the sealing plate 330 are integrated with each other in such a way as to be separated from the upper cap 300, and the upper end of the inner flange and a corresponding surface of the upper cap 300 comprise a one-way gear 326 which is subjected to a force only in a loosening direction and a corresponding gear 302 which engages with the one-way gear. Thus, when the upper cap 300 is loosened, the inner flange 320 is rotated in the same direction and under the same force as the upper cap even though the inner flange is separated from the upper cap. Such a structure is different from the first embodiment in that a sealing plate holding groove 305 is formed along the edge of the sealing plate 330, so that the inner flange performs the sealing and pushing operation without being separated from the upper cap 300. Further, the inner flange 320 and the upper cap 300 are coupled to each other in one direction via the one-way gear 326 and the corresponding gear 302. Thus, even if the inclined surface 220 of the pusher 200 and the inclined pushing surface 310 of the

inner flange 320 are not arranged to correspond to each other, as shown in FIG. 3, the inner flange 320 is naturally rotated, so that the coupling is always performed at the same position.

5 As shown in FIGS. 12 to 14, the pusher is operated in conjunction with the upper cap 300 and has on the upper end thereof the inclined surface 220. Under the inclined surface 220 is formed the upper partition wall 210. The internal space defined by the upper partition wall 210
10 contains the additive W therein. By the pushing operation of the inclined surface 220 provided on the upper end of the pusher, the pusher is moved downwards, thus pushing the bottom plate 130 of the holding part.

 FIGS. 4 to 14 are views illustrating a bottle cap
15 according to the third embodiment of the present invention. The bottle cap includes a lower cap 100, a pusher 200 and an upper cap 300. The lower cap is coupled to the inlet of a bottle 10, and has a holding part 110 which contains an additive therein and enters the inlet of the bottle 10.

20 The pusher is accommodated in the holding part 110 to operate in conjunction with the upper cap 300, and is moved downwards by the pushing operation of an inclined surface 220 provided on the upper end of the pusher, thus pushing a bottom plate 130 of the holding part.

25 The upper cap is coupled to an extension tube of the holding part 110 of the lower cap 100, and includes an

inner flange 320 which has on a lower end thereof an inclined pushing surface 220 which comes into contact with and pushes downwards the inclined surface 220 of the pusher 200 when the upper cap rotates on the lower cap 100.

5 In the first to third embodiments, the inclination angle $\theta 1$ of each of the inclined pushing surface 310 and the inclined surface 220 is larger than the inclination angle $\theta 2$ between the fastening threads 121 of the extension tube 120.

10 According to the first and second embodiments, a sealing film edge fitting groove 156 is formed in the inner wall of the lower end of the holding part 110 so that the torn sealing film 240 is fitted into the sealing film edge fitting groove.

15 As shown in FIGS. 1 and 2, the sealing film edge fitting groove 156 is open in the inner circumference or lower end thereof at predetermined intervals, thus forming openings 158 which allow the additive to be easily discharged downwards.

20 According to the first to third embodiments, a friction protrusion 123 is provided on the inner surface of the upper end of the extension tube 120. A sounding protrusion 322 is provided on the lower end of the inner flange 320 to correspond to the friction protrusion 123 and
25 is in friction contact with the friction protrusion 123 to inform a user when the bottom of the holding part is

opened.

The lower end of the bottle coupling edge of the lower cap 100 includes a locking hook 105, and a locking projection 14 is provided at a predetermined position on the bottle 10 to which the locking hook 105 is locked. The lower end of the locking projection 14 has an uneven part, thus preventing the lower cap from rotating.

According to the third embodiment, the bottom of the holding part 110 includes a bottom plate 130 which has a diameter smaller than that of the holding part and forms an edge hole 132 between the bottom plate and the inner circumference of the holding part. The bottom of the holding part also includes a coupling bridge 131 for coupling the bottom plate 130 with the lower end of the holding part, and a sealing film 140 for simultaneously sealing the lower end of the holding part, the edge hole 132 and the bottom plate 130.

As shown in FIGS. 12 to 14, the bottom plate 130 includes a downward movement stopper 133 which protrudes perpendicular to the bottom plate so as to prevent the pusher 200 from moving downwards when the sealing film 140 is torn and open in a vertical direction.

As shown in FIGS. 3 to 6, a guide groove 230 is provided in the outer surface of the pusher 200 in a vertical direction thereof, and a guide projection 114 protrudes vertically on the inner surface of the

corresponding holding part 110, thus guiding the vertical downward movement of the pusher.

The inclined surface 220 provided on the upper end of the pusher 200 rises repeatedly at a predetermined angular interval, a starting point and an end point of the rising portion meeting at a vertical step 222.

As shown in FIG. 5, the predetermined angular interval is 180 degrees.

A guide inclined surface 234 is provided on the inlet of the lower end of the guide groove 230 to allow the guide projection 114 of FIG. 8 to be easily fitted into the guide groove. Preferably, the inclined surface 220 is constructed so that inclined partition walls 210 and vertical steps 222 are repeatedly provided at the angular interval of 180 degrees, as shown in FIG. 5.

According to the third embodiment, the extension tube 120 of the lower cap 100 of FIG. 8 is coupled to the upper cap 300 of FIG. 7. Next, the pusher 200 is inserted into the holding part 110 of the lower cap 100 in such a way that the guide projection 114 of FIG. 8 is fitted into the guide groove 230 shown in FIGS. 4 to 6. The additive is put into the exposed internal space 212, the coupling bridge 131 is folded such that the bottom plate 130 forms the edge hole 132 as shown in FIG. 9, and the edge hole and the bottom plate are sealed by the sealing film 140 as shown in FIG. 12. In this case, the sealing film 140 may comprise

one of an aluminum film, an easy-peel film, a waterproof vinyl film, and other sealable materials.

According to this embodiment, when the upper cap 300 is rotated from the state of FIG. 12, the inclined pushing surface 310 of the inner flange 300 pushes the inclined surface of the pusher 200, so that the pusher 200 is moved downwards along the guide projection 114. By the downward movement of the pusher 200, the sealing film 140 is pressed. Simultaneously, since the bottom plate 130 is supported by the coupling bridge 131, the bottom plate 130 is opened in a vertical direction, as shown in FIG. 13. At this time, the additive contained in the pusher drops to be added to the contents in the bottle. Further, the lower end of the pusher 200 is stopped by the downward movement stopper 133, so that the pusher does not move downwards any more. Therefore, a user opens the upper cap 300 and drinks the contents mixed with the additive through the discharge hole 214 which is formed in the upper partition wall 210 and shown in FIG. 14.

Of course, since other functions are similar to those of the first and second embodiments, the detailed description will be omitted herein.

[Industrial Applicability]

As described above, the present invention provides a bottle cap, which has a sealing capacity which prevents

moisture from permeating into a holding part for holding an additive therein or a pusher held in the holding part.

The present invention provides a bottle cap, which includes a sounding means to make a sound when the addition
5 of an additive to a holding part has been completed, thus allowing a user to recognize when the addition of the additive is finished, therefore arousing the user's interest.

Further, the present invention provides a bottle cap,
10 in which an inner flange having an inclined pushing surface formed such that its lower end is inclined is provided on an upper cap, and the inclination angle of the inclined pushing surface is larger than that between fastening threads provided on an upper extension tube of a holding
15 part, so that the bottle cap may move downwards a long distance even if the rotating degree of the bottle cap is small, thus making it easy to add the additive to the contents of a bottle, in addition to facilitating the coupling of the bottle cap.

【CLAIMS】**【Claim 1】**

A bottle cap, comprising:

5 a lower cap (100) coupled to an inlet of a bottle (10), and having a holding part (110) which enters the inlet of the bottle, accommodates a pusher (200) containing an additive therein, and includes on a center of a bottom thereof a sharp pushing needle (150), a needle support rib (152) provided around the pushing needle (150), with a jet
10 hole (154) formed in the support rib (152);

the pusher (200) accommodated in the holding part (110) to operate in conjunction with the upper cap (300), and comprising an inclined surface (220) which is provided on an upper end of the pusher and an upper partition wall
15 (210) which is provided under the inclined surface (220) and has a discharge hole (214), an internal space defined by the upper partition wall (210) containing the additive (W) therein, a lower end of the pusher being sealed by a sealing film (240) which is torn when the sealing film
20 comes into contact with the pushing needle (150); and

an upper cap (300) coupled to an extension tube (120) of the holding part (110) of the lower cap, and having an inner flange (320) which has on a lower end thereof an inclined pushing surface (310) which comes into contact
25 with and pushes downwards the inclined surface (220) of the pusher (200) when the upper cap (300) is rotated.

【Claim 2】

A bottle cap, comprising:

5 a lower cap (100) coupled to an inlet of a bottle (10), and having a holding part (110) which enters the inlet of the bottle (10), accommodates a pusher (200) containing an additive therein, and includes a sharp pushing needle (150) on a center of a bottom thereof, and a needle support rib (152) and a jet hole (154) around the pushing needle (150);

10 the pusher (200) accommodated in the holding part (110) to operate in conjunction with the upper cap (300), and comprising an inclined surface (220) which is provided on an upper end of the pusher and an upper partition wall (210) which is provided under the inclined surface (220) and has a discharge hole (214), an internal space defined by the upper partition wall (210) containing the additive therein, a lower end of the pusher being sealed by a sealing film (240) which is torn when the sealing film comes into contact with the pushing needle (150); and

20 an upper cap (300) coupled to an extension tube (120) of the holding part (110) of the lower cap, and rotatably having an inner flange (320) which has on a lower end thereof an inclined pushing surface (310) which comes into contact with and pushes downwards the inclined surface (220) of the pusher (200) when the upper cap (300) is

25

rotated; and

a sealing plate (330) extending integrally from an upper edge of the inner flange (320) in a doughnut shape and seated on an inner wall of an upper end of the upper cap (300) to seal an upper end of the extension tube (120).

【Claim 3】

The bottle cap according to claim 2, wherein a one-way gear (326) is provided on an upper end of the inner flange (320), and a corresponding gear (302) rotatable in one direction is provided on a lower surface of the upper cap (300) such that the gear is subjected to a rotating force in only one direction when the upper cap is loosened.

【Claim 4】

A bottle cap, comprising:

a lower cap (100) coupled to an inlet of a bottle (10), and having a holding part (110) which contains an additive therein and enters the inlet of the bottle (10);

a pusher (200) accommodated in the holding part (110) to operate in conjunction with the upper cap (300), and moved downwards by a pushing operation of an inclined surface (220) provided on an upper end of the pusher, thus pushing a bottom plate (130) of the holding part; and

an upper cap (300) coupled to an extension tube of the holding part (110) of the lower cap (100), and

including an inner flange (320) which has on a lower end thereof an inclined pushing surface (220) which comes into contact with and pushes downwards the inclined surface (220) of the pusher (200) when the upper cap rotates on the
5 lower cap (100).

【Claim 5】

The bottle cap according to any one of claims 1, 2 and 4, wherein an inclination angle ($\theta 1$) of each of the inclined pushing surface (310) and the inclined surface
10 (220) is larger than an inclination angle ($\theta 2$) between fastening threads (121) of the extension tube (120).

【Claim 6】

The bottle cap according to claim 1 or 2, wherein a sealing film edge fitting groove (156) is formed in an
15 inner wall of a lower end of the holding part (110) so that the torn sealing film (240) is fitted into the sealing film edge fitting groove.

【Claim 7】

The bottle cap according to claim 6, wherein the
20 sealing film edge fitting groove is open in an inner circumference or lower end thereof at predetermined intervals, thus forming openings (158) which allow the additive to be easily discharged downwards.

【Claim 8】

The bottle cap according to any one of claims 1, 2 and 4, wherein a friction protrusion (123) is provided on an inner surface of the upper end of the extension tube (120), and a sounding protrusion (322) is provided on a lower end of the inner flange (320) to correspond to the friction protrusion (123) and is in friction contact with the friction protrusion (123) to inform a user when a bottom of the holding part is opened.

10 【Claim 9】

The bottle cap according to any one of claims 1, 2 and 4, wherein a lower end of a bottle coupling edge of the lower cap (100) comprises a locking hook (105), and a locking projection (14) is provided at a predetermined position on the bottle (10) to which the locking hook (105) is locked, and a lower end of the locking projection (14) comprises an uneven part, thus preventing the lower cap from rotating.

【Claim 10】

20 The bottle cap according to claim 4, wherein the bottom of the holding part (110) comprises:

a bottom plate (130) having a diameter smaller than that of the holding part and forming an edge hole (132)

between the bottom plate and an inner circumference of the holding part;

a coupling bridge (131) for coupling the bottom plate (130) with a lower end of the holding part; and

5 a sealing film (140) for simultaneously sealing the lower end of the holding part, the edge hole (132) and the bottom plate (130).

【Claim 11】

The bottle cap according to claim 10, wherein the
10 bottom plate (130) comprises a downward movement stopper (133) which protrudes perpendicular to the bottom plate so as to prevent the pusher (200) from moving downwards when the sealing film (140) is torn and open in a vertical direction.

15 **【Claim 12】**

The bottle cap according to claim 4, wherein a guide groove (230) is provided in an outer surface of the pusher (200) in a vertical direction thereof, and a guide projection (114) protrudes vertically on an inner surface
20 of the corresponding holding part (110), thus guiding vertical downward movement of the pusher.

【Claim 13】

The bottle cap according to any one of claims 1, 2

and 4, wherein the inclined surface (220) provided on the upper end of the pusher (200) rises repeatedly at a predetermined angular interval, a starting point and an end point of a rising portion meeting at a vertical step (222).

5 **【Claim 14】**

The bottle cap according to claim 13, wherein the predetermined angular interval is 180 degrees.

【Claim 15】

10 The bottle cap according to claim 2, wherein an outer diameter of the sealing plate (330) is larger than an inner diameter of the upper cap (300), and a sealing plate holding groove (305) is formed in a corresponding portion of an inner circumference of the upper cap (300) to hold part of the sealing plate (330), therefore preventing a
15 removal of the sealing plate.

【DRAWINGS】

FIG.1

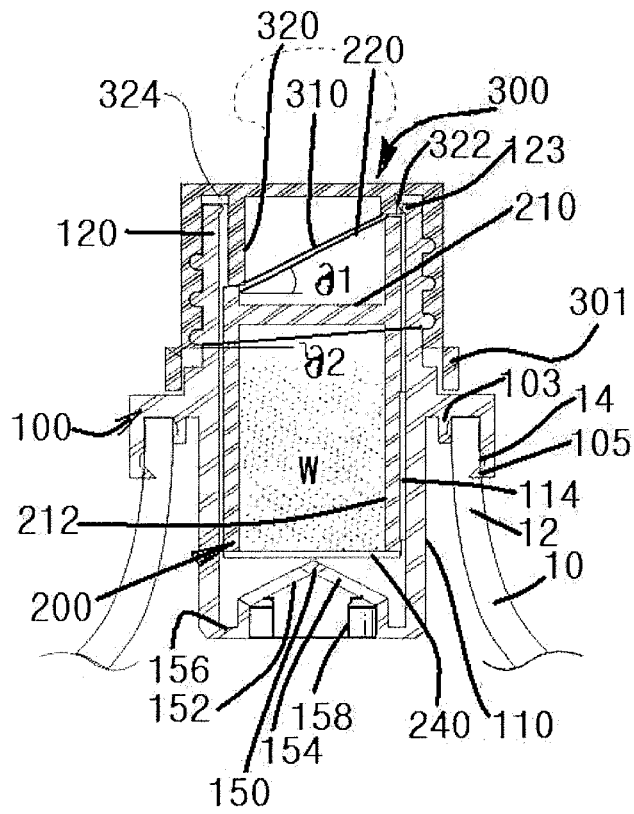


FIG.2

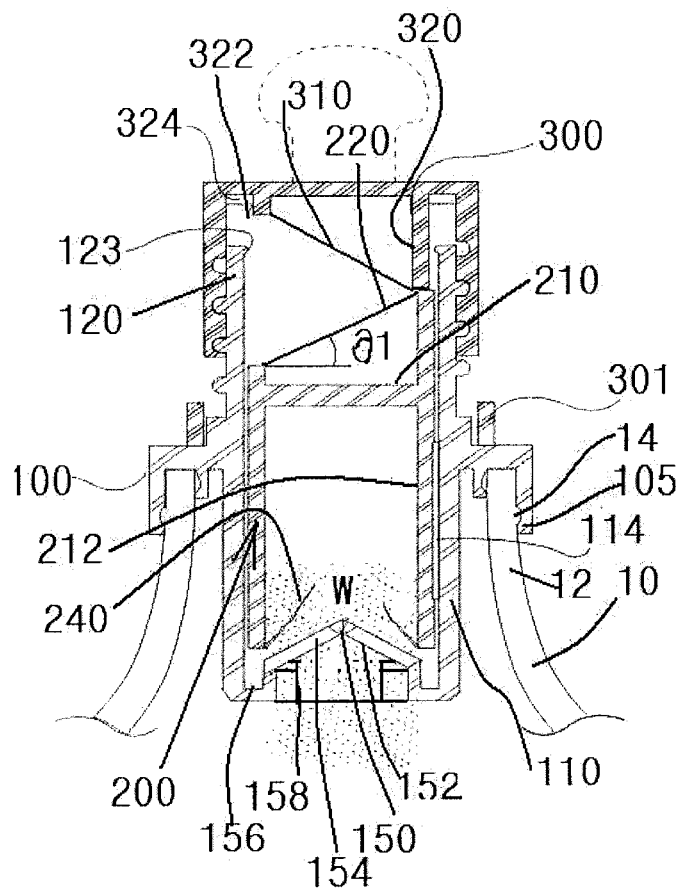


FIG.3

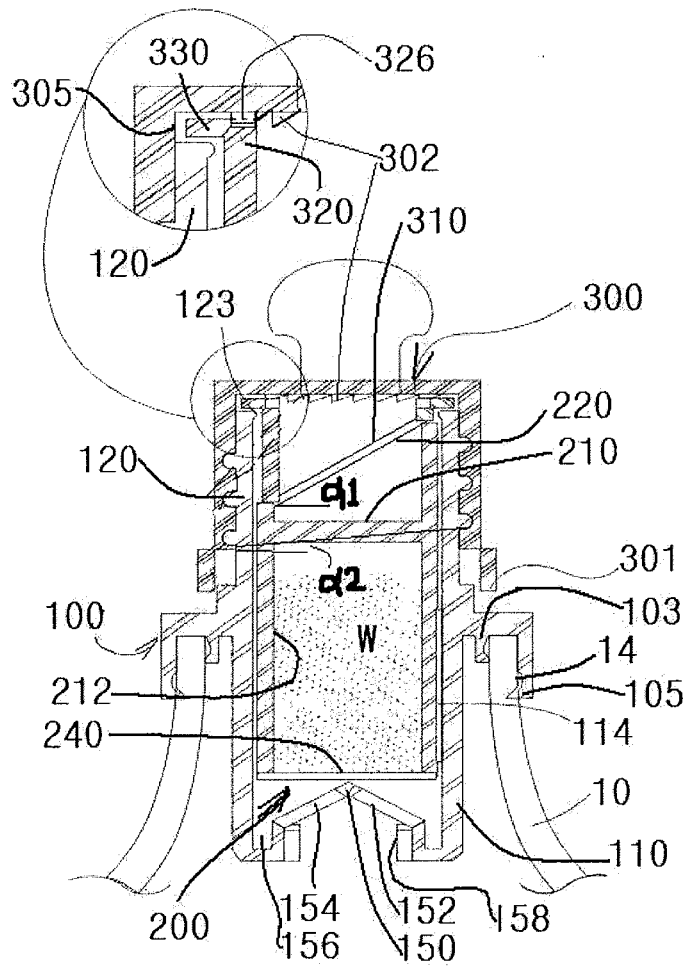


FIG.4

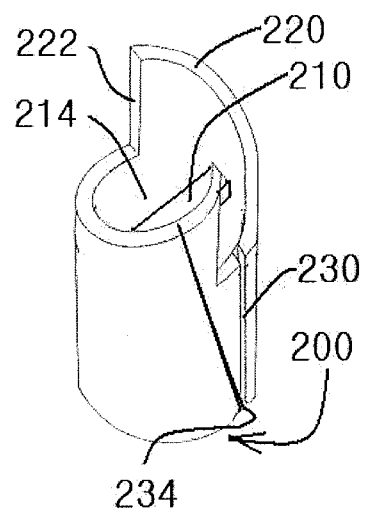


FIG.5

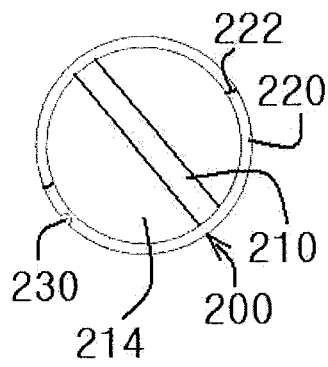


FIG.6

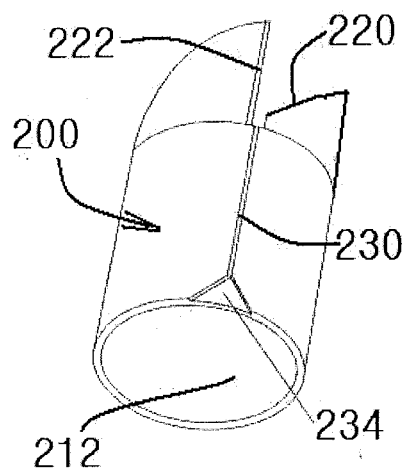


FIG.7

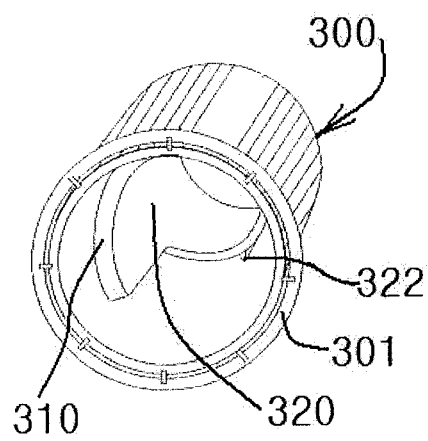


FIG.8

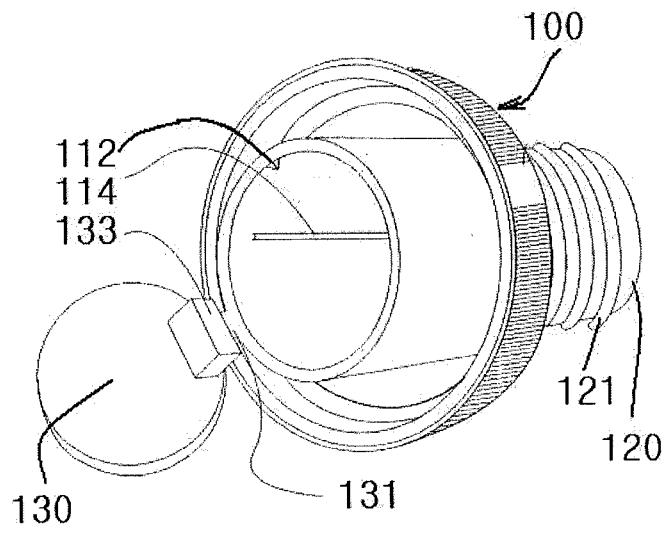


FIG.9

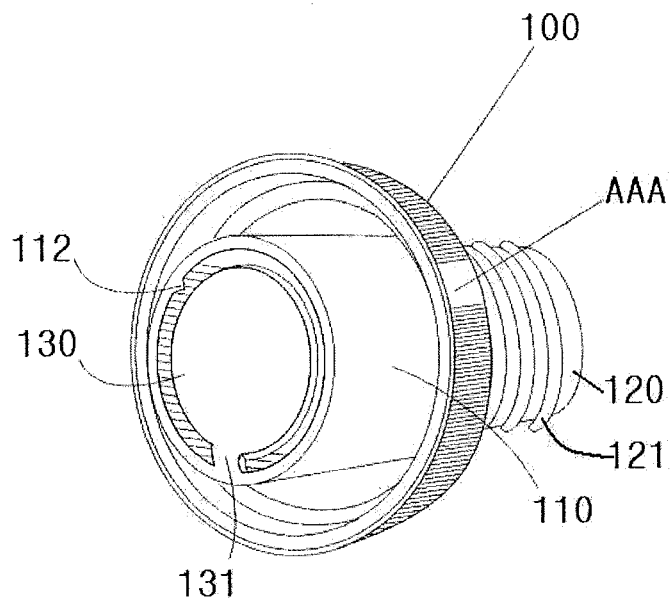


FIG.10

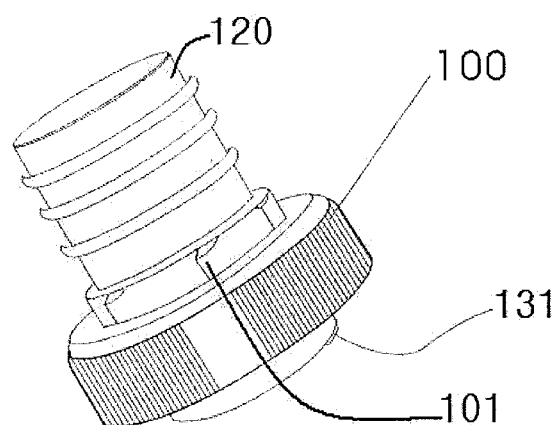


FIG.11

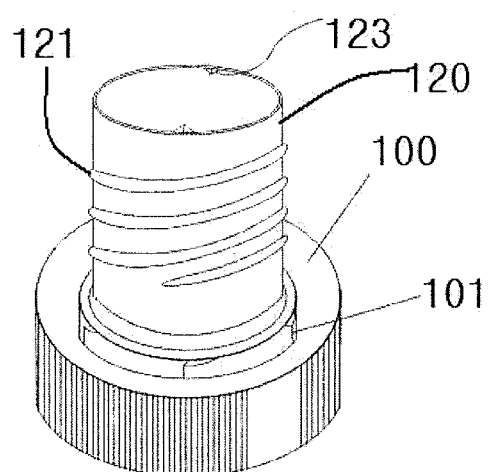


FIG.12

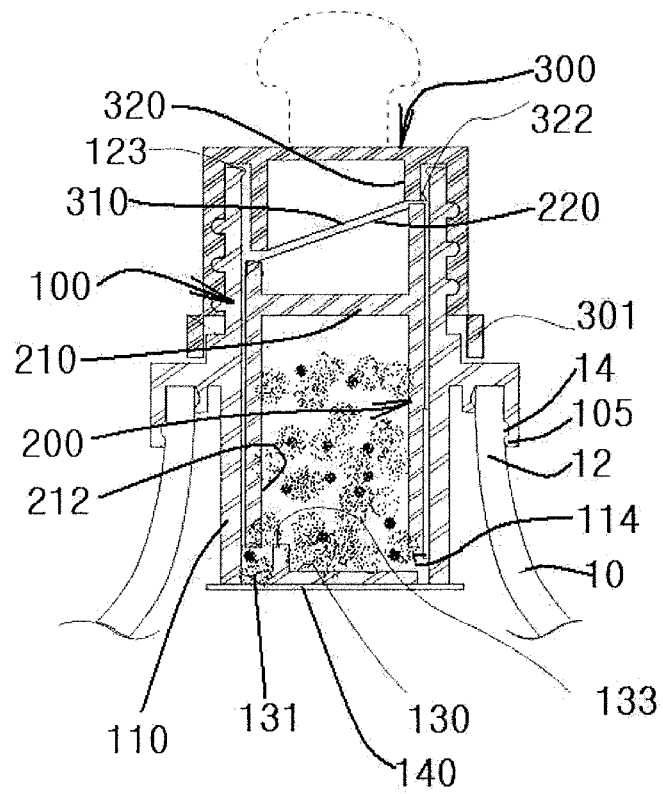


FIG.13

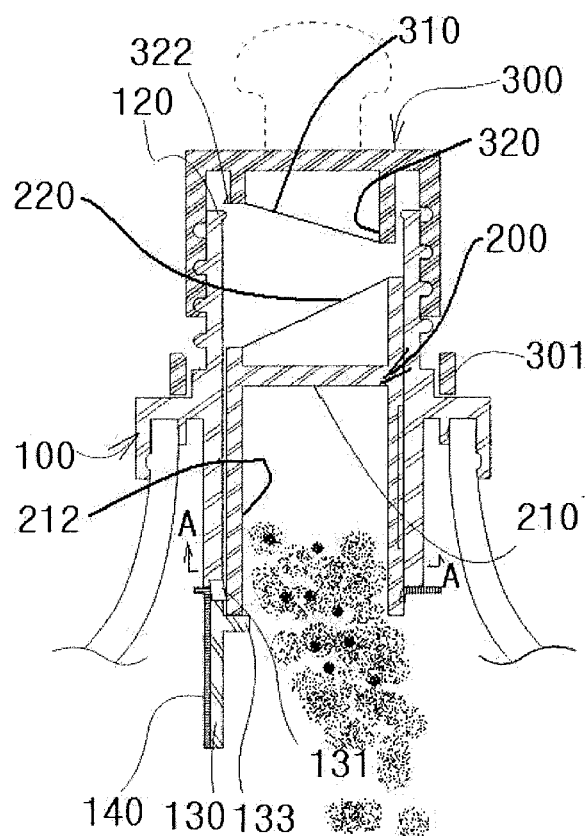


FIG.14

