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(54) **SAFE INNER PLUG FOR BUBBLE  
BLOWING FLUID BOTTLE TO PREVENT  
SEEPAGE OF FLUID**

(52) **U.S. Cl. .... 446/15**

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(57) **ABSTRACT**

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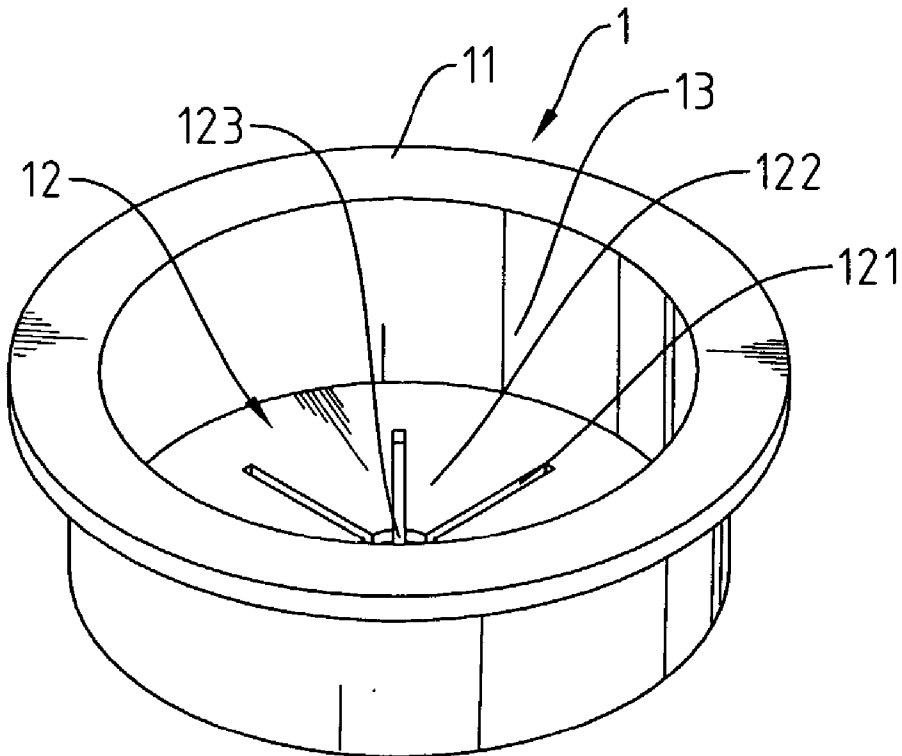
A safe inner plug for preventing seepage of bubble blowing fluid from a fluid bottle consists of a circular wall, brace ring, base plate and concave void, wherein the circular wall is entirely embedded in the bottle mouth, and the brace ring is retained on the bottle mouth. The base plate encircles the circular wall to form a central void. There are at least two radial cuts on the base plate to constitute scrapers allowing the fluid stick to pass the cuts. The void on the base plate can keep seeped fluid in the void and return it to the fluid bottle. When the fluid stick is pulled out, most of the fluid is scraped off, so there leaves no excessive fluid on the stick. Even when the bottle is shaken, the base plate always keeps the fluid from directly touching the twist cap, so fluid seepage will never occur.

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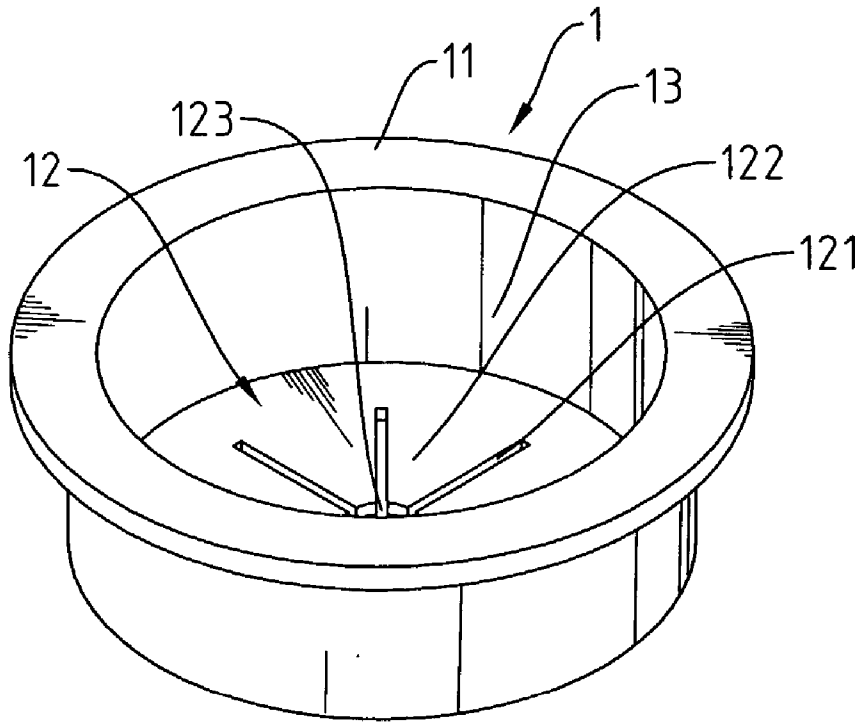


Fig. 1

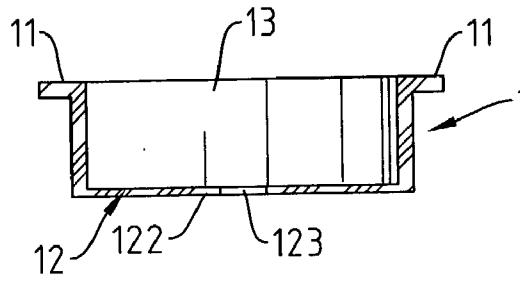


Fig. 2

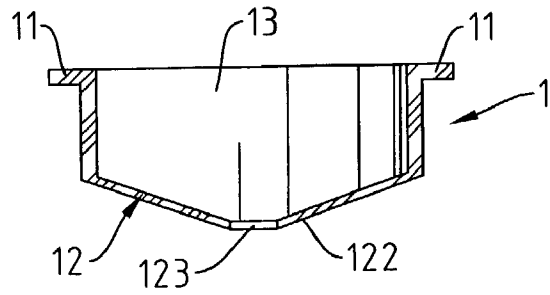


Fig. 3

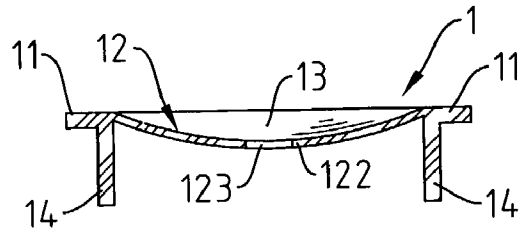


Fig. 4

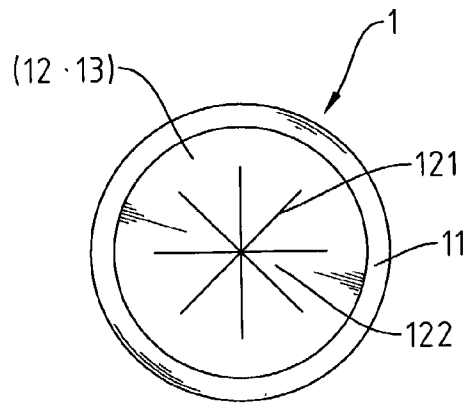


Fig. 5

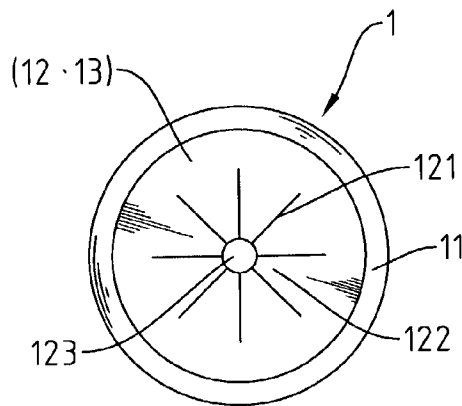


Fig. 6

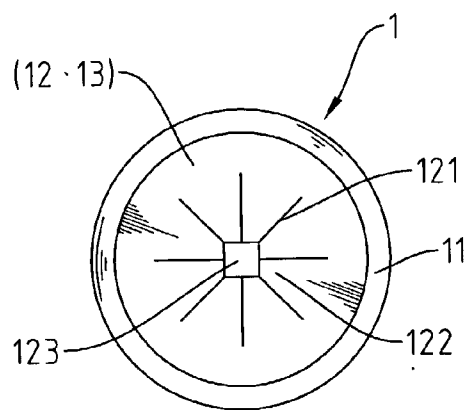


Fig. 7

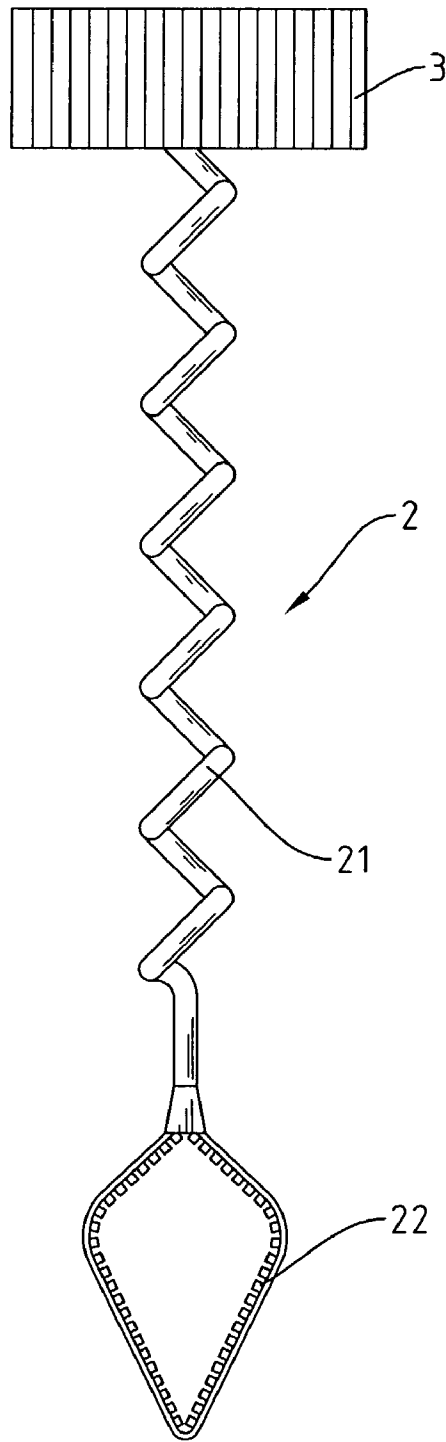


Fig. 8

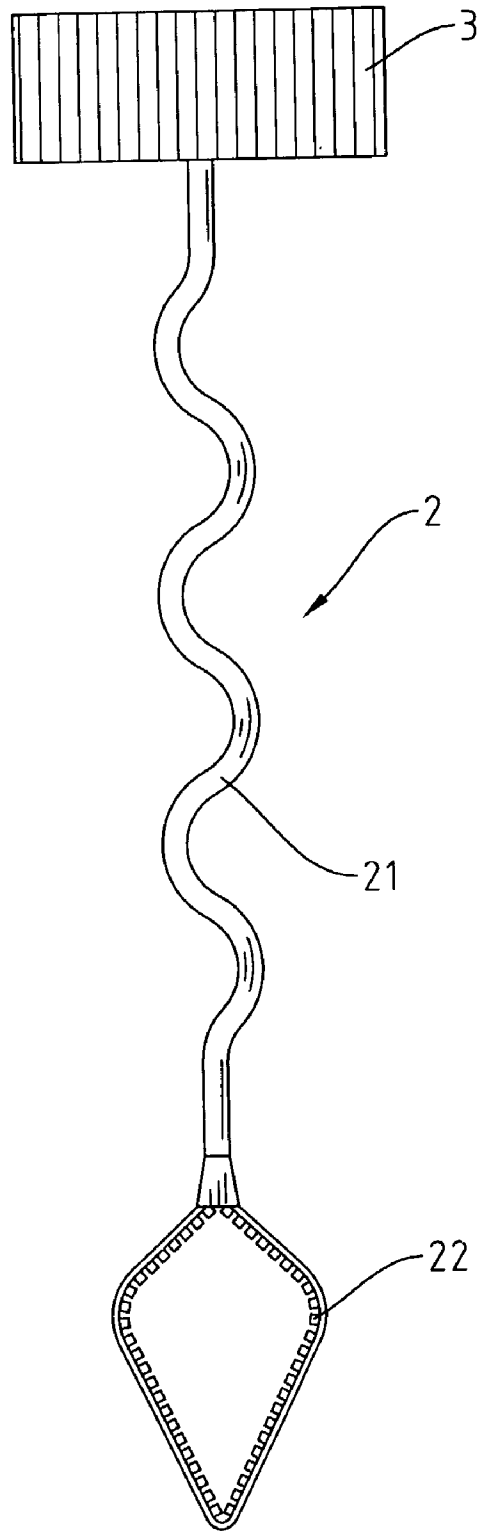


Fig. 9

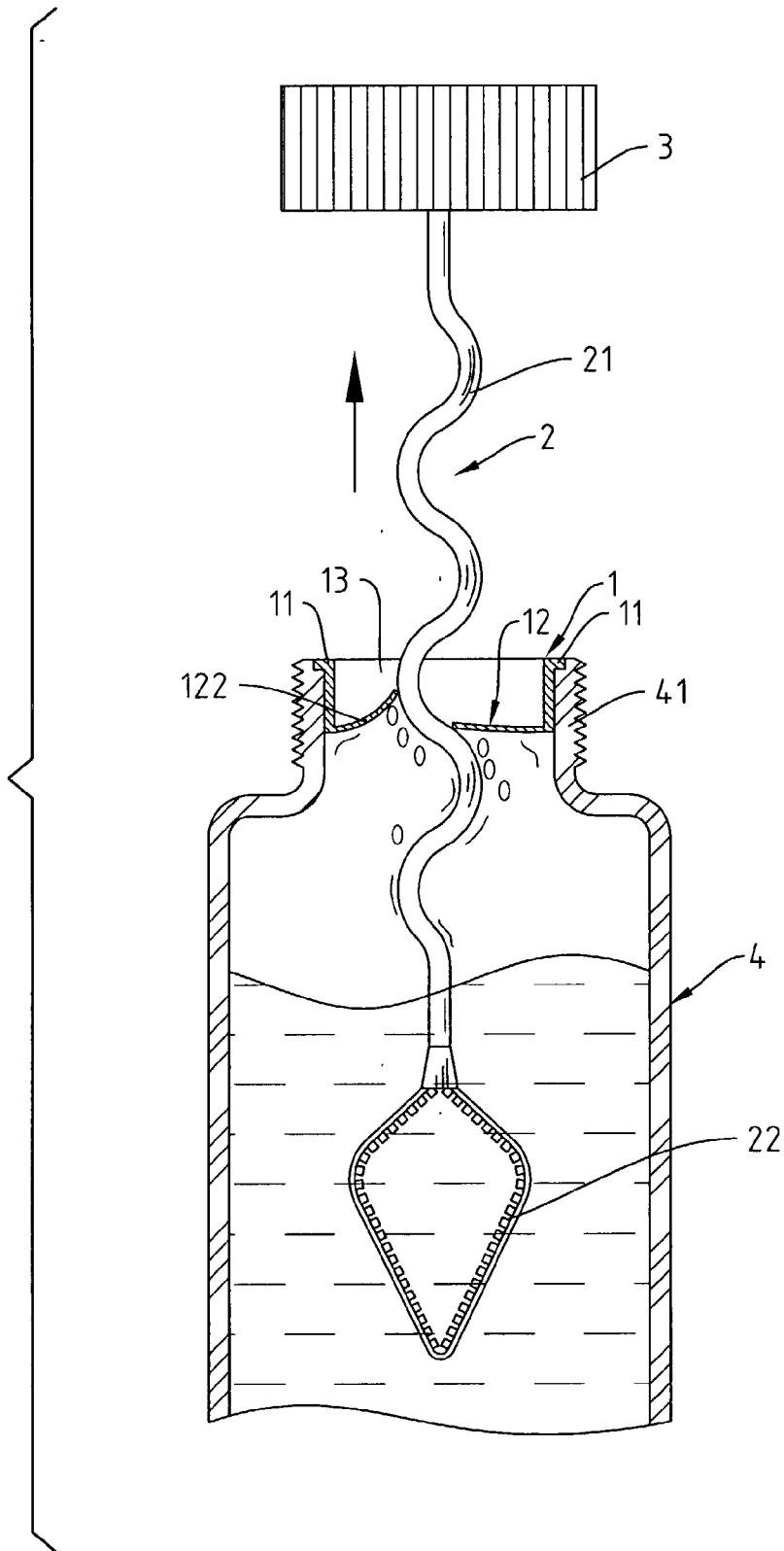


Fig. 10

## SAFE INNER PLUG FOR BUBBLE BLOWING FLUID BOTTLE TO PREVENT SEEPAGE OF FLUID

### FIELD OF THE INVENTION

[0001] This invention relates to a safe inner plug for bubble blowing fluid bottle designed to prevent the bubble fluid from seeping off, in particular when the bent fluid stick is pulled out of the fluid bottle, there is always excessive bubble fluid on the fluid stick, and the plug will scrape the bubble fluid off the fluid stick, so no bubble fluid is wasted.

### BACKGROUND OF THE INVENTION

[0002] There are many bubble blowing toys available on the market for sale and the manufacturers are taking an aggressive effort in developing a variety of novel and fancy bubble blowing toys in an attempt to induce the strong purchase desire from the consumers. However, in most cases, the bubble blowing toy provides a fluid stick which is always directly fastened to the twist cap, permitting the bubble fluid directly contact the cap. When the cap is opened, only a part of the excessive bubble fluid attached the fluid stick can be removed by sweeping the fluid stick on the bottle mouth, and most is dripped and wasted.

[0003] Due to such seepage and dripping of bubble fluid, the inventor has spent years in designing a stop at the bottle mouth to prevent the seepage of bubble fluid which possesses the industrial practicable value at the same time.

### SUMMARY OF THE INVENTION

[0004] The primary object of the invention is provide a base plate which is cut into a plurality of slots to work as the scrapers which enable to remove the excessive bubble fluid attached to the fluid stick to avoid the incautious dripping or the waste of bubble fluid.

[0005] Another object of the invention is to provide a concave void which is employed in one way to keep the bubble fluid away from the bottle mouth and in other to collect and return the excessive bubble fluid to the bottle.

[0006] Another object of the invention is to provide a downward extended base plate on the safe inner plug. When the bottle is shaken or toppled down, the bubble fluid is allowed to flow and contact the base plate, but never reaches the twist cap so as to prevent seepage of bubble fluid coming out of the bottle mouth.

[0007] Another object of the invention is to provide a fluid stick which is in a bent or curved form. When pulling off, it goes through the scraper to make some fantastic music.

[0008] The invention is explained in great details with an aid of the preferred embodiment as illustrated in the drawings attached.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 shows a stereo outlook of the safe inner plug of this invention.

[0010] FIG. 2 shows a cross section of the safe inner plug of the invention (1).

[0011] FIG. 3 shows a cross section of the safe inner plug of the invention (2).

[0012] FIG. 4 shows a cross section of the safe inner plug of the invention (3).

[0013] FIG. 5 shows a top view of a modified radial cut on the safe inner plug of the invention (1).

[0014] FIG. 6 shows a top view of a modified radial cut on the safe inner plug of the invention (2).

[0015] FIG. 7 shows a top view of a modified radial cut on the safe inner plug of the invention (3).

[0016] FIG. 8 shows an embodiment of a fluid stick of the invention (1).

[0017] FIG. 9 shows an embodiment of a fluid stick of the invention (2).

[0018] FIG. 10 shows when a fluid stick is pulled out of the bottle, excessive fluid is entirely scraped from the stick.

### DETAILED DESCRIPTION OF THE INVENTION

[0019] As shown in FIGS. 1 and 10, the safe inner plug 1 is inserted in the bottle mouth 41 of the fluid bottle 4 and closely seals the bottle mouth 41. The safe inner plug 1 constitutes a brace ring 11, a base plate 12 and a concave void 13, wherein the base plate 12 and the concave void 13 are installed in the inner side of the brace ring 11. The base plate 12 has at least two radial cuts 121 to form a plurality of scrapers 122 which are a critical device to stop seepage of the bubble fluid from the fluid bottle 4. Since the bubble fluid is kept off the cap 3, the bubble fluid will never contaminate the bottle mouth 41 and the cap 3, so the bottle mouth 41 and the cap always remain in neat condition.

[0020] As shown in FIGS. 2 through 4, the safe inner plug 1 has a base plate 12 and a concave void 13 which is disposed on the top of the base plate 12. The scraped bubble fluid will stay in the concave void 13 temporarily and returns to the fluid bottle 4 finally. The base plate 12 has several modifications as described below.

[0021] As shown in FIG. 2, the base plate 12 of the safe inner plug 1 is an inward extension from the bottom of the circular wall 14 and is disposed lower than the brace ring 11, and a concave void 13 is formed between said base plate and the inner side of said circular wall 14. As shown in FIG. 3, the base plate 12 of the safe inner plug 1 extends inward from the joint of the brace ring 11 and the circular wall 14 and inclines downward in an angle to the center to form a tapered concave void 13 which leads the excessive bubble fluid into the fluid bottle 4. As shown in FIG. 4, the base plate 12 is in a curved form, so is the concave void 13. The concave void 13 of the safe inner plug 1 is used to collect and to store temporarily the excessive bubble fluid removed from the fluid stick in one end and keeps the bubble fluid from directly contacting the cap 3 in another end. This is a unique way to stop seepage of bubble fluid.

[0022] As shown in FIGS. 5 through 7, the radial cuts 121 of the base plate 12 of the safe inner plug 1 are in radial arrangement so as to convert the base plate 12 into a plurality of scrapers 122. The fluid stick 2 penetrates into the fluid bottle 4 through the scrapers 122 as illustrated in FIG. 10. The opening 123 in the center of the scrapers 122 of the base plate 12 can be made in a round or square pattern to suit the shape of the shank 21 of the fluid stick 2.



[0023] As shown in **FIGS. 8 and 9**, the top shank **21** end of the fluid stick **2** is linked to the cap **3** and the lower shank **21** end with the bubble forming ring **22**. The shank **21** can be in a pattern of screw, wave, or straight rod. When the fluid stick **2** is pulled through the scrapers **122**, the friction produces a fantastic music to give more fun for it. When the fluid stick **2** is pulled out, the excessive bubble fluid attached to the shank **21** will be entirely shaved off by the scrapers **122** of the base plate **12** of the safe inner plug **1**, keeping the fluid stick **2** clean and neat.

[0024] As shown in **FIG. 10**, when the fluid stick **2** is pulled upward, the bent shank **21** of the fluid stick **2** will push the scrapers **122** of the base plate **12** upward, there the excessive fluid attached to the shank **21** is shaved off to prevent any dripping of bubble fluid on the ground.

**1.** A safe inner plug for a bubble blowing fluid bottle to prevent seepage of fluid mounted in a bottle mouth of a fluid bottle, comprising:

- a circular wall, in a reverse pattern of said bottle mouth of said fluid bottle and embedded in said bottle mouth;
- a brace ring, an upward extension of a circular wall, retained on said bottle mouth of said fluid bottle to hold said safe inner plug disposed in said bottle mouth;
- a base plate, peripherally connected with said circular wall bottom with center of said base plate lower than said circular wall, said base plate being cut with at least two radial slots to form a plurality of scrapers allow-

ing a fluid stick to pass through and preventing seepage of fluid within said fluid bottle;

a concave void formed above said base plate designed to store excessive fluid and return said fluid to said fluid bottle;

while said fluid stick being pulled upward, said excessive fluid on a shank being shaved off by said scraper of said base plate to maintain said fluid stick clean and neat.

**2.** The safe inner plug for a bubble blowing fluid bottle to prevent seepage of fluid of claim 1, wherein there is an opening along the scrapers in a center of said base plate.

**3.** The safe inner plug for a bubble blowing fluid bottle to prevent seepage of fluid of claim 1, wherein said base plate of said safe inner plug extends inward from a joint of said brace ring and said circular wall and inclines downward in an angle to a center to form a tapered concave void leading said excessive bubble fluid into said fluid bottle.

**4.** The safe inner plug for a bubble blowing fluid bottle to prevent seepage of fluid of claim 1, wherein said base plate of said safe inner plug is an inward extension from bottom of said circular wall, and a concave void is formed between said base plate and inner side of said circular wall.

**5.** The safe inner plug for a bubble blowing fluid bottle to prevent seepage of fluid of claim 1, wherein said base plate of said safe inner plug extends inward from bottom of said circular wall at an angle to form a tapered concave void leading excessive bubble fluid into said fluid bottle.

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