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(54) Bottle, protective element and cap

(57) The invention provides a bottle (2) and bottle cap (5) having a containing body of the bottle that has a containing space (21) and a bottle opening (22) where the containing space (21) is capable of providing a liquid to be filled into the containing body of the bottle through the bottle opening. The bottle and bottle cap include a first connecting portion (3), at least an assembling-and-disassembling body (4), and a bottle-cap body (5). The first connecting portion is positioned at the bottle opening while the assembling-and-disassembling body has a second connecting portion (41) at the inner-diameter's circumference thereof and a first assembling portion (42) at the outer-diameter's circumference thereof. The bottle-cap body having a second assembling portion (51) is capable of engaging with the first assembling portion to make the bottle-cap body position on the assembling-and-disassembling body.

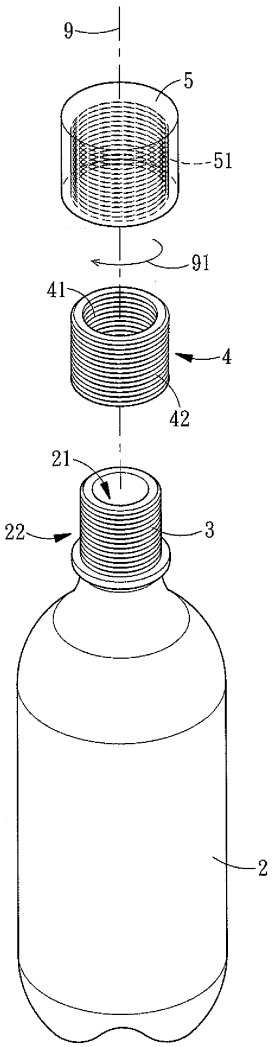

Fig.2A

EP 2 133 280 A1

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The invention relates to a structure of environment protection bottle, and more particularly, to a structure of environment protection bottle that is capable of being repeatedly used.

2. Description of the Invention

[0002] Science and technology change with each passing day ever since the industrial revolution. But, the contamination that destroys the environment occurs accordingly. Just how to cherish and protect our environment has always been an essential issue of all the countries at this stage since we have only one earth.

[0003] FIG. 1A is a schematic and exploded view of a PET bottle commonly used on the market of the prior art; and FIG. 1B is a schematic and assembling view of a PET bottle commonly used on the market of the prior art. As shown in FIG. 1A and FIG. 1B, the PET bottle (1) commonly used on the market includes a bottle body (11) and a bottle cap (12). The bottle body (11) has a containing space (13) and a bottle opening (14). One can fill the beverage into the containing space (13) through the bottle opening (12) and then seal the containing space (13) by the bottle cap (12) to prevent the beverage from flowing out of the bottle body (11).

[0004] When it comes to drinking the beverage, one can simply open the bottle cap (12) to separate it from the bottle opening (14) to drink by the use of a straw (not shown in the Figure) or have one's mouth contact the bottle opening (14) directly to drink. After the PET bottle is recycled, the bottle body (11) is cleaned and sterilized, and a new bottle cap (12) is replaced. In general, the next consumer after buying the beverage contained in the recycled PET bottle (1) is reluctant to have his/her mouth directly contact the bottle opening (14) to drink without knowing that the recycled PET bottle (1) is completely cleaned and sterilized. Therefore, the use of straw is going to increase which will cause a second contamination.

[0005] Therefore, it has been an urgent plan and improvement project for the designers to resolve the above-mentioned problems.

SUMMARY OF THE INVENTION

[0006] In light of the above-mentioned demerits of the invention, the invention provides a structure of environment protection bottle that aims to ameliorate at least some of the demerits of the invention or to provide a useful alternative.

[0007] The objective of the invention is to provide a structure of environment protection bottle that makes use of the fact that the assembling-and-disassembling body is capable of mutually engaging and separating such that the containing body of the bottle can be used repeatedly in order to achieve the efficacy of environment protection.

[0008] In order to achieve the above-mentioned objectives, the invention provides a structure of environment protection bottle having a containing body of the bottle that has a containing space and a bottle opening where the containing space is capable of providing a liquid to be filled into the containing body of the bottle through the bottle opening. The structure of environment protection bottle includes a first connecting portion, at least a assembling-and-disassembling body, and a bottle-cap body. The first connecting portion is positioned at the bottle opening while the assembling-and-disassembling body has a second connecting portion at the inner-diameter's circumference thereof and a first assembling portion at the outer-diameter's circumference thereof. The bottle-cap body having a second assembling portion is capable of engaging with the first assembling portion to make the bottle-cap body position on the assembling-and-disassembling body. By the use of the separation between the first connecting portion and the second connecting portion, one is capable of making the assembling-and-disassembling body separate from the containing body of the bottle and providing another assembling-and-disassembling body to make the first connecting portion engage with the corresponding second connecting portion such that the assembling-and-disassembling body positions on the containing body of the bottle. The assembling-and-disassembling body is capable of being alternately used to achieve the object of being repeatedly used and having the efficacy of environment protection.

[0009] The accomplishment of this and other objectives of the invention will become apparent from the following description and its accompanying drawings of which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

FIG. 1A is a schematic and exploded view of a commonly used PET bottle on the market of the prior art;

FIG. 1B is a schematic and assembling view of a commonly used PET bottle on the market of the prior art;

FIG. 2A is a schematic and exploded view of the structure of the environment protection bottle of the first preferred embodiment of the invention;

FIG. 2B is a schematic and assembling view of the structure of the environment protection bottle of the first preferred embodiment of the invention;

FIG. 2C is a cross-sectional view of the structure of the environment protection bottle of the first preferred embodiment of the invention;

FIG. 3 is a cross-sectional view of the structure of the environment protection bottle of the second preferred embodiment of the invention;

FIG. 4 is a schematic and exploded view of the structure of the environment protection bottle of the third preferred embodiment of the invention;

FIG. 5 is a schematic and exploded view of the structure of the environment protection bottle of the fourth preferred embodiment of the invention;

FIG. 6 is a cross-sectional view of the structure of the environment protection bottle of the fifth preferred embodiment of the invention;

FIG. 7 is a cross-sectional view of the structure of the environment protection bottle of the sixth preferred embodiment of the invention;

FIG. 8 is a cross-sectional view of the structure of the environment protection bottle of the seventh preferred embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] FIG. 2A is a schematic and exploded view of the structure of the environment protection bottle of the first preferred embodiment of the invention; FIG. 2B is a schematic and assembling view of the structure of the environment protection bottle of the first preferred embodiment of the invention; FIG. 2C is a cross-sectional view of the structure of the environment protection bottle of the first preferred embodiment of the invention. As shown in FIG. 2A, FIG. 2B, and FIG. 2C, the containing body of the bottle (2) of the invention has a containing space (21) and a bottle opening (22). The containing space (21) is capable of providing liquid to be filled into the containing body of the bottle (2) (not shown in the Figure) through the bottle opening (22). The structure of environment protection bottle of the invention includes a first connecting portion (3), at least an assembling-and-disassembling body (4), and a bottle-cap body (5) where the first connecting portion (3) is positioned at the bottle opening (22). In a preferred embodiment of the invention, the first connecting portion (3) is a threaded structure. The assembling-and-disassembling body (4) being a hollow tube structure has an inner-diameter's circumference dimension corresponding to the outer-diameter's circumference dimension of the bottle opening (22). What is more, the inner-diameter's circumference of the assembling-and-disassembling body (4) has a second connecting portion (41), and the outer-diameter's circumference thereof has a first assembling portion (42) where both the second connecting portion (41) and the first assembling portion (42) are threaded structures. The thread of the first assembling portion (42) can be either fully spread or partially spread around the circumference of the outer diameter. Certainly, both the first connecting portion (3) and the second connecting portion (41) can be an adhesive making the assembling-and-disassembling body (4) adhere to the bottle opening (22).

[0012] The dimension of the inner-diameter's circumference of the bottle-cap body (5) is corresponding to the dimension of the outer-diameter's circumference of the first assembling portion (42). Moreover, the bottle-cap body (5) has a second assembling portion (51) that is a threaded structure corresponding to the first assembling portion (42) where the thread of the second assembling portion (51) can be either fully spread or partially spread around the circumference of the inner diameter. The second assembling portion (51) can engage with the first assembling portion (42) making the bottle-cap body (5) position on the assembling-and-disassembling body (4). The thread of the first assembling portion is between 0.1~99.9%, the thread of the second assembling portion is between 0.1~99.9%.

[0013] In a preferred embodiment of the invention, after a consumer has the second assembling portion (51) separate

from the first assembling portion (42) making the bottle-cap body (5) separate from the containing body of the bottle (2), he/she is capable of drinking the beverage contained in the bottle by the use of a straw (not shown in the Figure) or drinking directly by contacting the assembling-and-disassembling body (4) with his/her mouth. When it comes to recycling the bottle, the supplyer needs only to turn the assembling-and-disassembling body (4) on the bottle opening (22) with respect to an axis (9) to perform a rotational displacement (91). In this way, one can separate the first connecting portion (3) from the second connecting portion (41) making the assembling-and-disassembling body (4) separate from the containing body of the bottle (2). Afterwards, one can clean the containing body of the bottle (2) and provide another assembling-and-disassembling body (4) to let the first connecting portion (3) align and engage with the second connecting portion (41) making the new assembling-and-disassembling body (4) position on the containing body of the bottle (2). Finally, another bottle-cap body (5) is provided to let the another second assembling portion (51) engage with the first assembling portion (42) and have the another bottle-cap body (5) position on the assembling-and-disassembling body (4).

[0014] To facilitate illustration, same element numerals will be used for the same elements in the following other preferred embodiments while an alphabet is added to the original elements for those elements that are slightly different from the original elements. Shown in FIG. 3 is a cross-sectional view of the structure of the environment protection bottle of the second preferred embodiment of the invention. What is the difference from those of the above-mentioned embodiments is that the dimension of the inner-diameter's circumference of the assembling-and-disassembling body (4a) is corresponding to the dimension of the outer-diameter's circumference of the bottle-cap body (5). Therefore, only an internal threaded structure surround the circumference thereof without an external one for the assembling-and-disassembling body (4a) is needed, while an external threaded structure surround the circumference thereof is necessary for the bottle-cap body (5).

[0015] FIG. 4 is a schematic and exploded view of the structure of the environment protection bottle of the third preferred embodiment of the invention. As shown in FIG. 4, in the third embodiment of the invention, the assembling-and-disassembling body (4b) is a disassembling body (can be either a plastic film or a paper film) that is directly slipped on the bottle opening (22). The assembling-and-disassembling body (4b) , after being used, can be removed from the bottle opening (22) directly.

[0016] FIG. 5 is a schematic and exploded view of the structure of the environment protection bottle of the fourth preferred embodiment of the invention. As shown in FIG. 5, in the fourth preferred embodiment of the invention, the assembling-and-disassembling body (4c) has a second connecting portion (41) at the inner-diameter's circumference of the assembling-and-disassembling body (4c), and an opining (43) on the upper end surface thereof. The bottle-cap body (5c), being connected to the assembling-and-disassembling body (4c), presses against the opening (43) at the first position (50a) and forms an angle with respect to the assembling-and-disassembling body (4c) at the second position (50b).

[0017] FIG. 6 is a cross-sectional view of the structure of the environment protection bottle of the fifth preferred embodiment of the invention. As shown in FIG. 6, in the fifth preferred embodiment of the invention, the first connecting portion (3d) extends appropriately from the adjacent bottle opening (22) and protrudes at the outer edge of the containing body of the bottle (2) to correspond with a channel provided at the inner-diameter's circumference of the assembling-and-disassembling body (4).

[0018] FIG. 7 is a cross-sectional view of the structure of the environment protection bottle of the sixth preferred embodiment of the invention. As shown in FIG. 7, in the sixth preferred embodiment of the invention, the first connecting portion (3e) extends appropriately from the adjacent bottle opening (22) and protrudes at the inner-diameter's circumference of the containing body of the bottle (2) to correspond with a channel provided in the second connecting portion (41e) at the outer-diameter's circumference of the assembling- and-disassembling body (4e).

[0019] FIG. 8 is a cross-sectional view of the structure of the environment protection bottle of the seventh preferred embodiment of the invention. As shown in FIG. 8, in the seventh preferred embodiment of the invention, the first connecting portion (3f) extends appropriately from the adjacent bottle opening (22) and protrudes at the outer-diameter's circumference of the containing body of the bottle (2) to correspond with a channel provided at the inner-diameter's circumference and positioned at the lower end opening of the assembling-and-disassembling body (4f). The assembling-and-disassembling body (4f) has an opening (43f) at the other end thereof. Moreover, the bottle-cap body (5f) is connected to the assembling-and-disassembling body (4f). Furthermore, the bottle-cap body (5f), can either press against the opening (43f) at the first position (50a) or forms an angle with respect to the assembling -and-disassembling body (4f) at the second position (50b).

[0020] It will become apparent to those people skilled in the art that various modifications and variations can be made to the structure of the invention without departing from the scope or spirit of the invention. In view of the foregoing description, it is intended that all the modifications and variation fall within the scope of the following appended claims and their equivalents.

NUMERALS

2	Containing body of the bottle	21	Containing space
22	Bottle opening		
3, 3d, 3e, 3f First connecting portion			
4, 4a, 4b, 4c, 4d, 4e, 4f Assembling-and-disassembling body			
41, 41d, 41e, 41f Second connecting portion			
42	First assembling portion	43, 43f	Opening
5, 5a, 5c, 5f Bottle-cap body		50a First position	
50b Second position		51 Second assembling portion	
9 axis		91 Rotational displacement	

Claims

1. A structure of environment protection bottle, with a containing body of the bottle having a containing space and a bottle opening where the containing space is capable of providing a liquid to be filled into the containing body of the bottle through the bottle opening, comprising:

   a first connecting portion positioned at the bottle opening;
   at least an assembling-and-disassembling body having a second connecting portion at the edge of the inner-diameter's circumference thereof and having a first assembling portion at the edge of outer-diameter's circumference thereof; and
   a bottle-cap body having a second assembling portion that is capable of engaging with the first assembling portion to make the bottle-cap body position on the assembling-and-disassembling body ;

   wherein, by the use of the separation between the first connecting portion and the second connecting portion, one is capable of making the assembling-and-disassembling body separate from the containing body of the bottle and providing another assembling-and -disassembling body to make the first connecting portion engage with the corresponding second connecting portion such that the another assembling-and-disassembling body positions on the containing body of the bottle.

2. The structure of environment protection bottle as claimed in claim 1, wherein the assembling-and-disassembling body is capable of performing a rotational displacement with respect to an axis of the bottle on the bottle opening.

3. The structure of environment protection bottle as claimed in claim 1, wherein the first connecting portion, the second connecting portion, the first assembling portion, and the second assembling portion are threaded structures.

4. The structure of environment protection bottle as claimed in claim 1, wherein the dimension of the inner-diameter's circumference of the assembling-and-disassembling body is corresponding to the dimension of the outer-diameter's circumference of the bottle opening.

5. The structure of environment protection bottle as claimed in claim 1, wherein the dimension of the outer-diameter's circumference of the assembling-and-disassembling body is corresponding to the dimension of the inner-diameter's circumference of the bottle-cap body.

6. The structure of environment protection bottle as claimed in claim 1, wherein the first connecting portion and the second connecting portion are connected by adhesive or frame structures.

7. The structure of environment protection bottle as claimed in claim 1, wherein the assembling-and-disassembling body is a film structure that slips on the bottle opening directly.

8. The film structure as claimed in claim 7, wherein the film are paper, plastic, metal, ceramic or composite materials.

9. The structure of environment protection bottle as claimed in claim 1, wherein the thread of the first assembling portion is between 0.1 ~ 99.9 % on the first assembling portion.

10. The structure of environment protection bottle as claimed in claim 1, wherein the thread of the second assembling portion is between 0.1 ~ 99.9 % on the second assembling portion.

11. A structure of environment protection bottle, with a containing body of the bottle having a containing space and a bottle opening where the containing space is capable of providing a liquid to be filled into the containing body of the bottle through the bottle opening and a first connecting portion is provided at the bottle opening, comprising:

an assembling-and-disassembling body having a second connecting portion at one end and having an opening at the other end; and
a bottle-cap body, being engaged with the assembling-and -disassembling body, pressing against the opening at the first position and forming an angle with respect to the assembling-and-disassembling body at the second position;

wherein, by the use of the separation between the first connecting portion and the second connecting portion, one is capable of making the assembling-and-disassembling body separate from the containing body of the bottle and providing another assembling-and-disassembling body to make the first connecting portion engage with the corresponding second connecting portion such that the another assembling-and-disassembling body positions on the containing body of the bottle.

12. A structure of environment protection bottle, with a containing body of the bottle having a containing space and a bottle opening where the containing space is capable of providing a liquid to be filled into the containing body of the bottle through the bottle opening, comprising:

At least a first connecting portion positioned at the bottle opening in appropriate disposition;
at least an assembling-and-disassembling body having at least a second connecting portion and a first assembling portion at both ends thereof, and each of the second connecting portion is corresponding to the first connecting portion; and
a bottle-cap body having a second assembling portion that is capable of connecting to the first assembling portion to make the bottle-cap body position on the assembling-and-disassembling body ;

wherein, by the use of the separation between the first connecting portion and the second connecting portion, one is capable of making the assembling-and-disassembling body separate from the containing body of the bottle and providing another assembling-and-disassembling body to make the first connecting portion engage with the corresponding second connecting portion such that the assembling-and-disassembling body positions on the containing body of the bottle.

13. The structure of environment protection bottle as claimed in claim 12, wherein the first connecting portion positions at the outer-diameter's circumference of the containing body of the bottle.

14. The structure of environment protection bottle as claimed in claim 12, wherein the second connecting portion positions at the inner-diameter's circumference of the assembling-and-disassembling body

15. A structure of environment protection bottle, with a containing body of the bottle having a containing space and a bottle opening where the containing space is capable of providing a liquid to be filled into the containing body of the bottle through the bottle opening, comprising:

At least a first connecting portion positioned at the bottle opening in appropriate disposition;
at least an assembling-and-disassembling body having at least a second connecting portion and an first opening at both ends thereof, and each of the second connecting portion is one-to-one corresponding to the first connecting portion; and
a bottle-cap body connecting to assembling-and-disassembling body, the bottle-cap body can either press against the opening at the first position or forms an angle with respect to the assembling -and-disassembling body at the second position.

wherein, by the use of the separation between the first connecting portion and the second connecting portion, one

is capable of making the assembling-and-disassembling body separate from the containing body of the bottle and providing another assembling-and-disassembling body to make the first connecting portion engage with the corresponding second connecting portion such that the assembling-and-disassembling body positions on the containing body of the bottle.

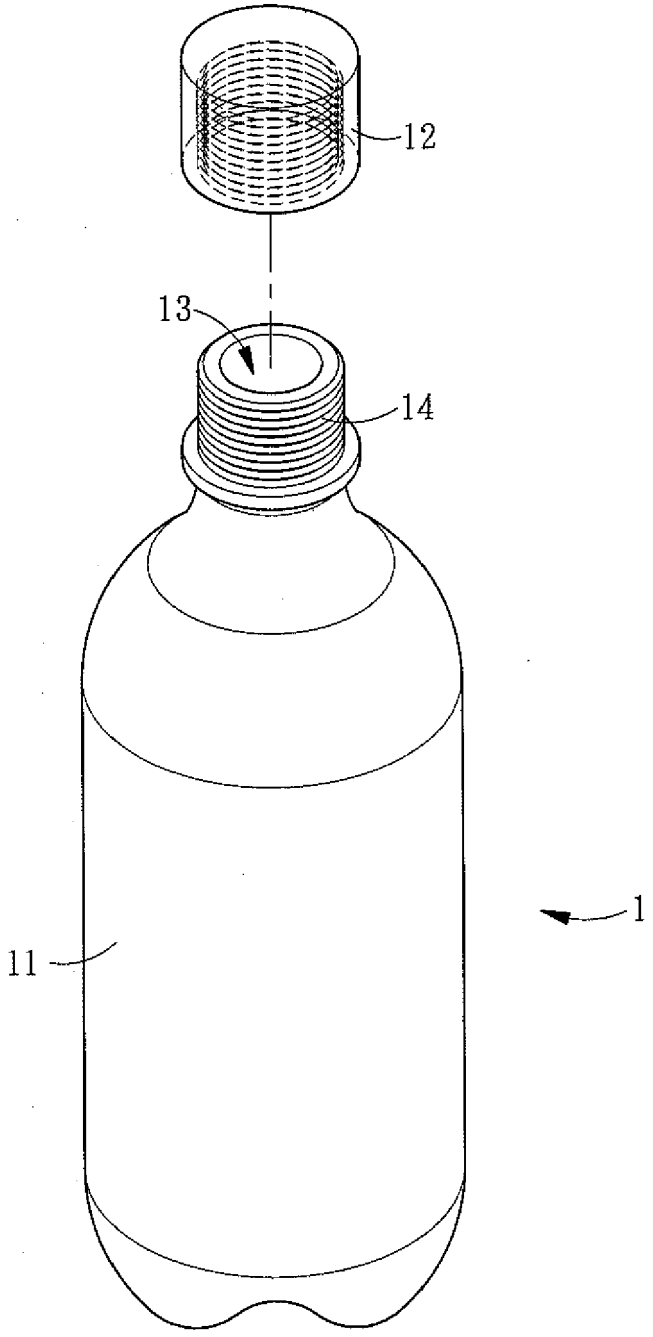

Fig.1A
(Prior Art)

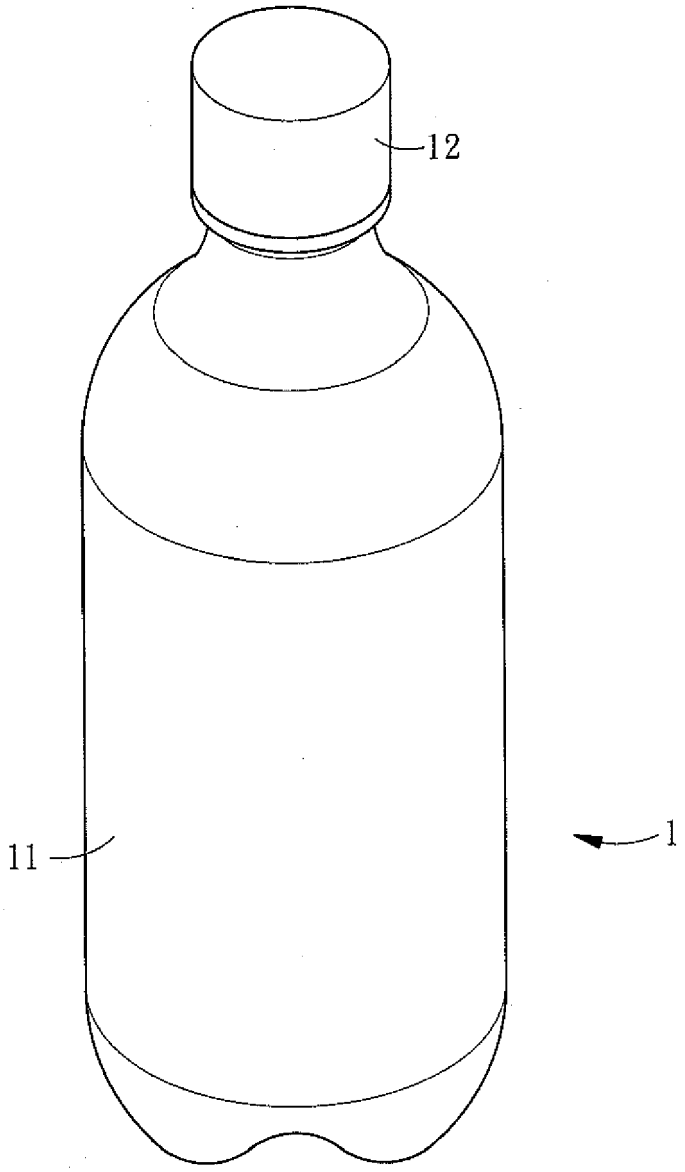

Fig.1B
(Prior Art)

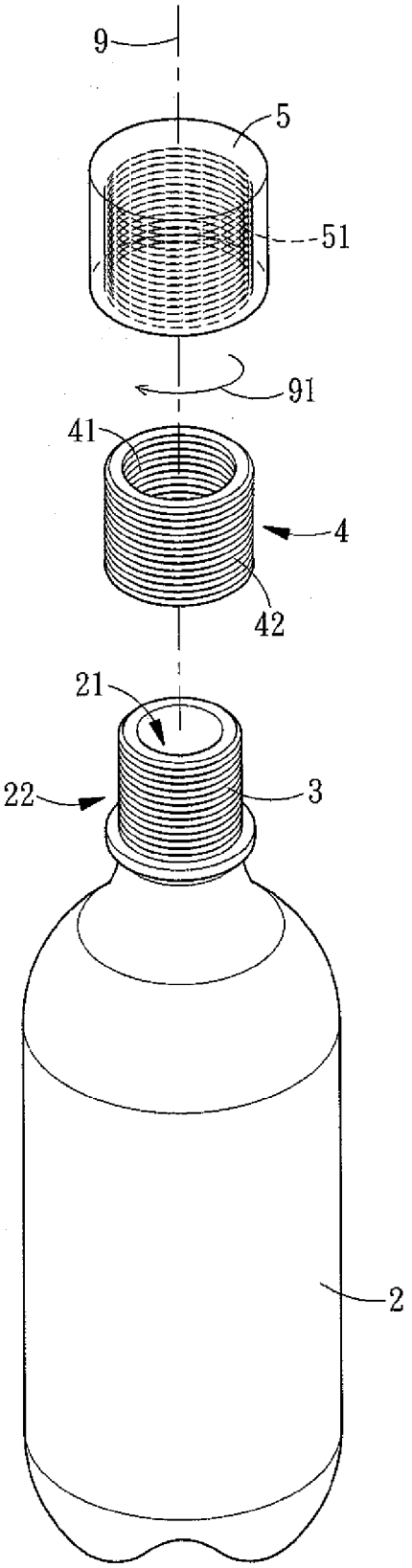

Fig.2A

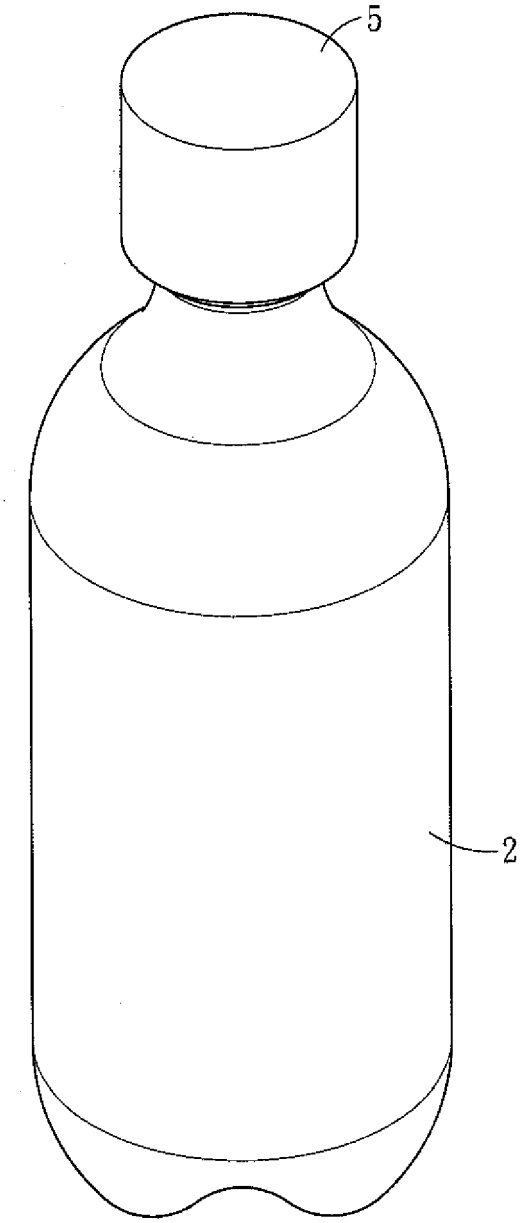

Fig. 2B

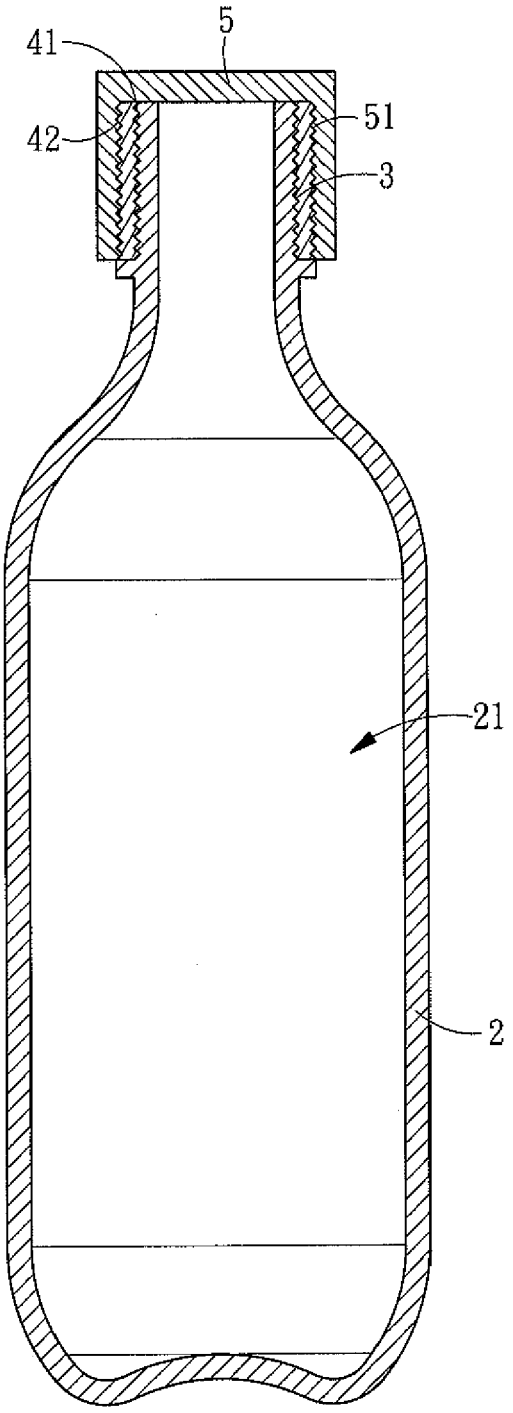

Fig.2C

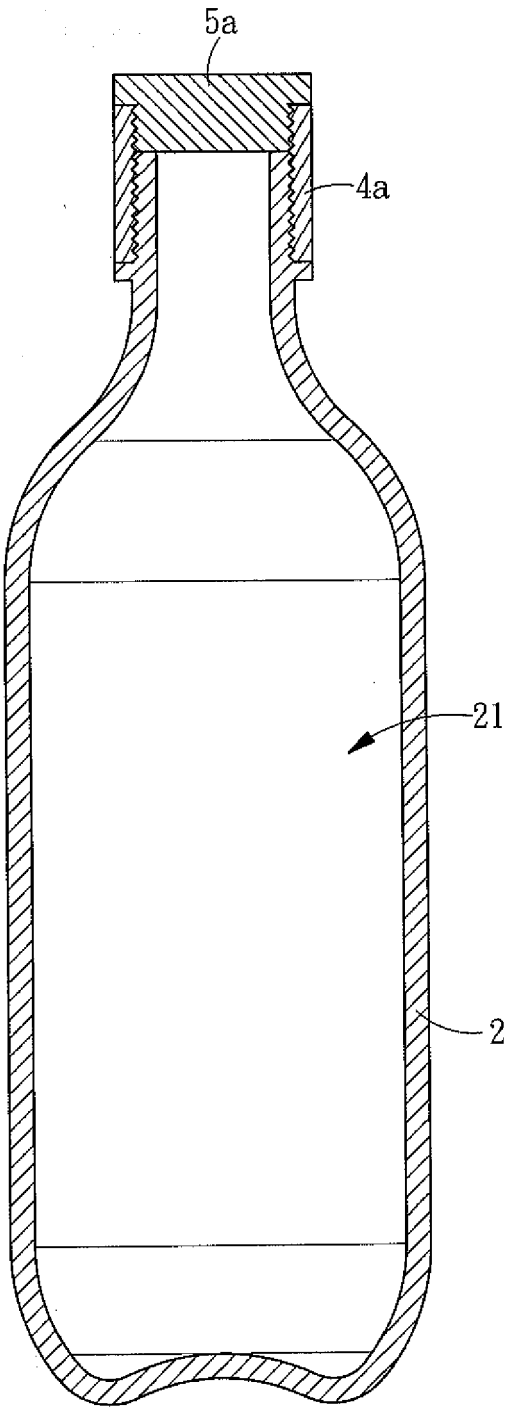

Fig.3

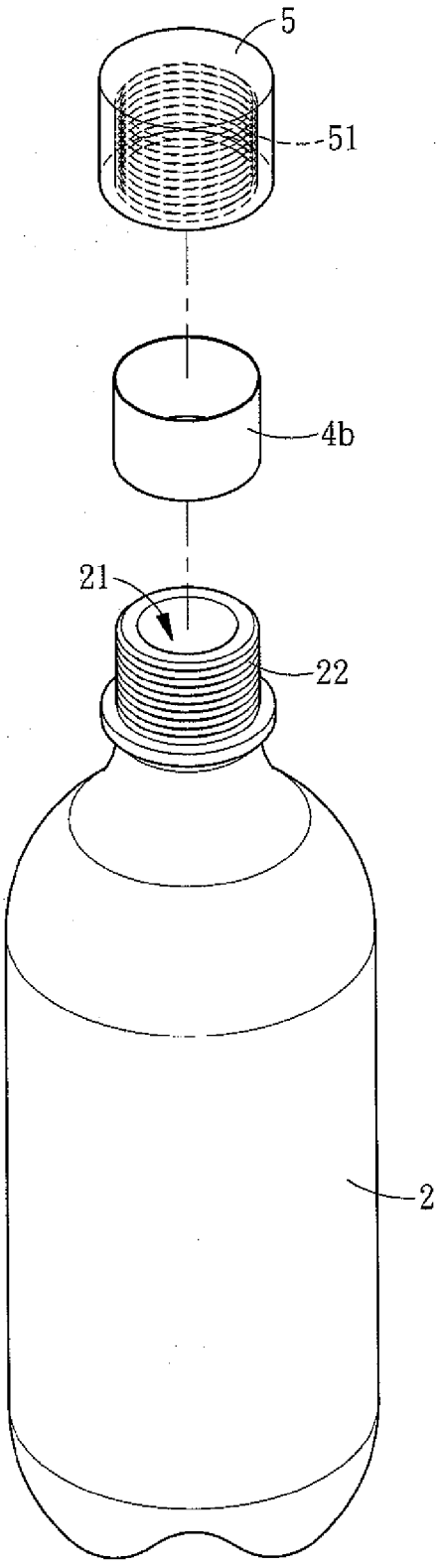

Fig.4

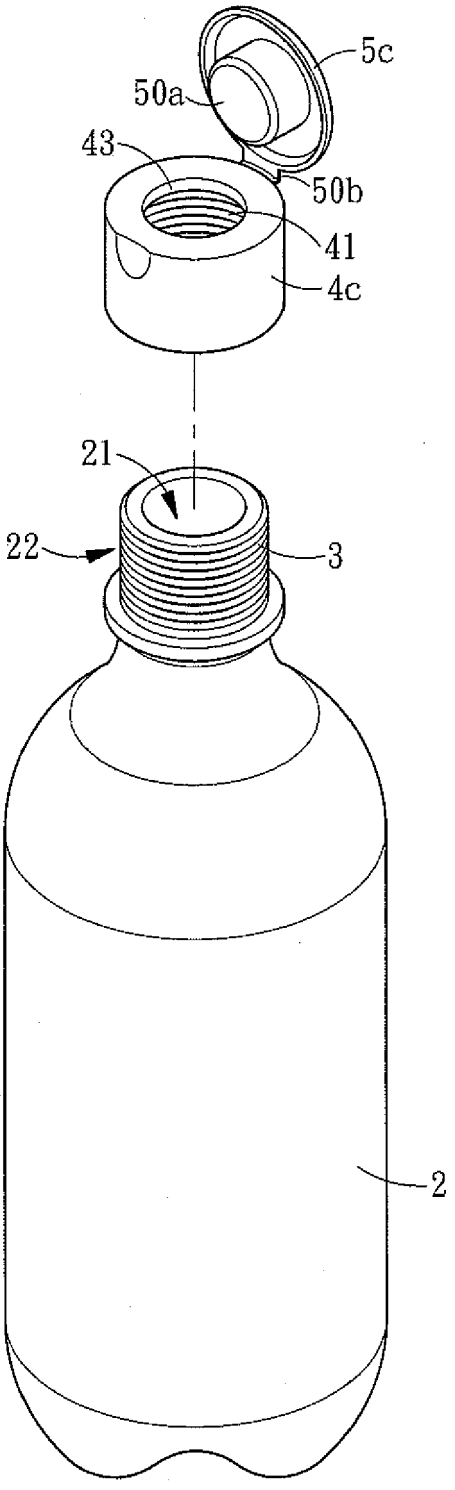

Fig.5

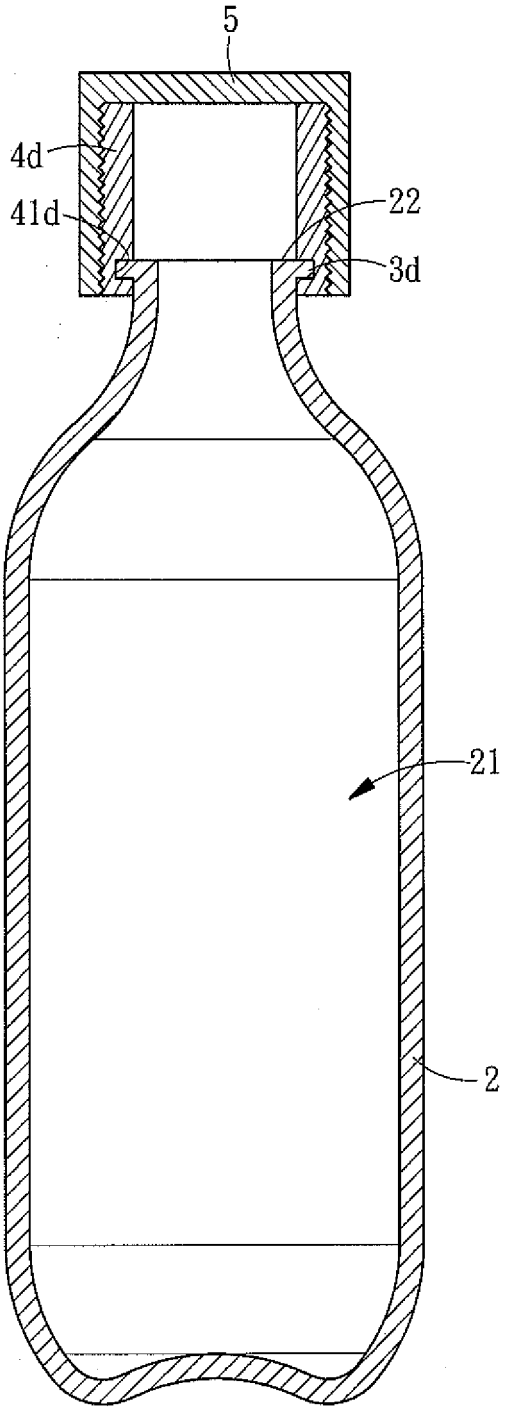

Fig.6

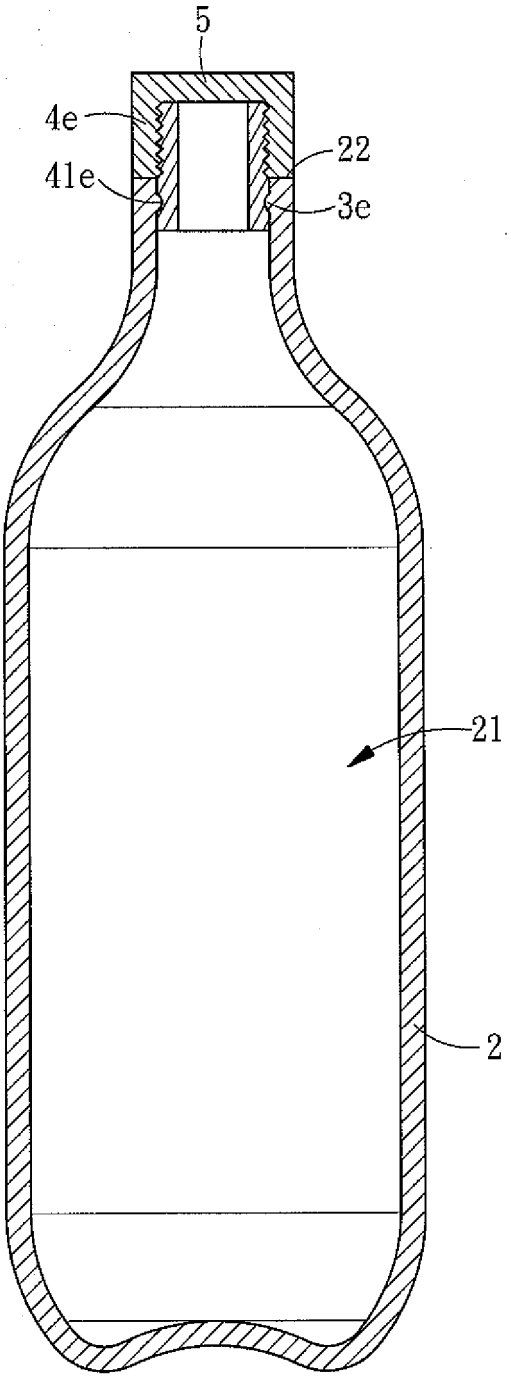

Fig.7

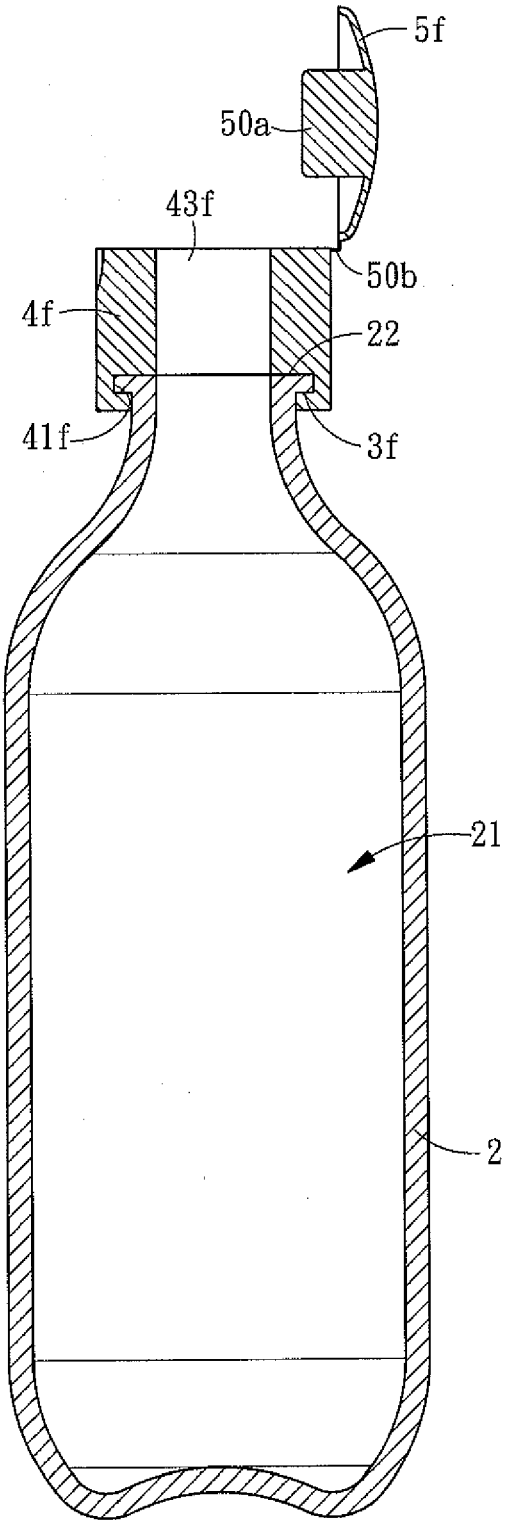

Fig.8

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 08 15 8019

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	20 August 2008	Leijten, René

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
P : intermediate document

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 15 8019

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82