



(11) **EP 3 521 194 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
07.08.2019 Bulletin 2019/32

(51) Int Cl.:
B65D 39/00 (2006.01) **B65D 39/16** (2006.01)
B65D 41/02 (2006.01) **B65D 51/00** (2006.01)
B67B 7/40 (2006.01)

(21) Application number: **18000084.6**

(22) Date of filing: **01.02.2018**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
MA MD TN

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(54) **CLOSING DEVICE FOR BEVERAGE CONTAINER**

(57) The closing device for beverage container is a reversible device with a horizontal surface (5). One side of the closing device is a cover (1) which is meant for placement on the opening tab of a can in order to close the opening of the can, and the other side is a cover (3) to be placed on the opening of a bottle for closing it, whereas the cover of bottle opening, is designed to be used as two alternative embodiments: a cover to be slid on the bottle opening and a protruding element inserted into the bottle opening.

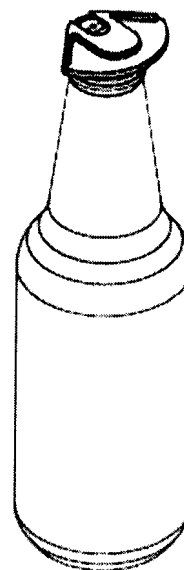


FIG 4

EP 3 521 194 A1

Description

Field of the Invention

[0001] The invention belongs in the area of packaging used for storage of beverages. More specifically, the invention is about a closing device for an open beverage container, e.g. a can with an opening tab and/or a bottle with cap.

Background of the Invention

[0002] The object of the present invention is a device designed for repeated closing and opening of an open beverage container and protection of its contents, preventing the entry of insects, fine particles and other undesirable objects into the beverage container and the beverage contained therein. The closing device for beverage container is a reversible device with a horizontal surface, which can be used both for beverage cans and bottles. The drawback with open beverage containers (e.g. beverage cans and beverage bottles with non-turnable caps) is that those cannot be closed and reopened after the initial opening, i.e. the beverage can or bottle remains open for the whole period of consuming the beverage. Often, not all the beverage is consumed from an open container immediately, and the open container is left waiting for a while. Thus, wasps, bees, ants and other insects can enter the open beverage container (especially if it is a sugar-containing beverage), as well as other undesirable objects (e.g. dust, fine waste, etc.). Bees, wasps, ants and other biting/stinging/poisonous insects pose an especially great risk, as they may sting/bite the person (re)drinking from the beverage container in the mouth or throat, which may cause serious health risks (e.g. allergic reactions) and in the worst case result in the death of the person. Also, the metal opening tab of a beverage can may cause discomfort to a person while consuming the drink from a beverage can (e.g. for children, it touches their nose and the possible sharp edges may injure the user; also, the moustache of a user might be caught in it). Various solutions have been developed in order to solve such problems.

[0003] A protective cover for beverage can is known (US20090032531, Navare et. al., published February 05, 2009), made as a complete rotating piece, which can be placed on an open beverage can for protection and removed. The cover is turned to close and reopen the opening of the beverage can. A drawback of such a solution is that the use of the cover is unpractical, as it can be left behind and it is costly to produce such a cover. Also, the solution is not designed for use on the opening tab of a beverage can. Neither does it solve the inconveniences of consumption related to the opening tab.

[0004] A solution is known (CN105564804, Zhang Shan, published May 11, 2016), including a sealable bottle cover that can be placed on a bottle and removed. There is a sealing block in the middle of the bottle cover

functioning through a pump. A drawback of the solution is the fact that it is not universal, i.e. usable both for a beverage can and a bottle.

[0005] A known solution (WO2011063428, Smooth HIP Ltd, published May 26, 2011) presents a bottle cap having adjacent grasping formations at the perimeter, which makes the cap sit tightly in the bottle neck. A drawback of the solution is the fact that it is not universal, i.e. usable both for a beverage can and a bottle.

[0006] By technical nature, the most similar solution is (US2007051725, Glade Dwight, published March 08, 2007) a cover for an open beverage can containing a top surface, a bottom surface and side walls which form a hollow polygon with a slit at the front. The cover of the beverage container has a turnable opening tab. In order to close an open beverage can, an opening tab is placed in the slit of the cover, and when the cover is turned with the opening tab, the opening of the beverage can closes. The presented cover is reusable. The solution is designed for use only on beverage cans.

Summary of the Invention

[0007] The aim of the invention is to offer a "two-in-one" solution, for easy closing and reopening of beverage containers (cans with opening tabs or rings or bottles with caps (preferably non-turnable caps) during or in the period between the consumption.

[0008] The closing device for beverage container is a reversible (can be used from both sides) device with a horizontal surface, whereas the closing device may be distinguishably marked (e.g. be of one colour as a whole, or the sides of the surface are of different colour, or with different pictures, text, numbers, shapes, etc. elements). The horizontal surface of the closing device is a fan-shaped half-circular component with an curved narrow end and a widening fan-shaped wider end interconnected on sides with straight segments. Both sides of the horizontal surface have vertically protruding additional components attached, which give different functionalities to the different sides of the surface, whereas the additional components can be distinctively marked (e.g. be of different colour, including the parts).

[0009] This way, the object of the invention is a closing device for beverage container, with one side of the horizontal surface being a cover for placement on the opening tab of a can in order to close the opening of the can (including also as an aid for initial opening of the can), and the other side is a cover for placement on the open bottle in order to close the opening.

[0010] The horizontal surface is penetrated by an opening through which it is possible to attach the closing device to e.g. a key ring and thus use it as a separate key chain or keep in a bunch of keys. Also, the opening may be used for attachment of e.g. a string, ribbon, rubber band, etc. by which the closing device is attached to e.g. a beverage container to avoid the loss of the closing device when using the beverage container or unwanted de-

tachment from the beverage container.

[0011] On one side of the horizontal surface of the closing device i.e. the cover of can opening, a component with a specific shape is vertically formed, with a polygon with rounded corners in the centre, reaching from the narrower end of the horizontal surface to the proximity of the wider end. At the narrower end of the horizontal surface of the polygon, a horizontal slit has been made, and a cut out at the wider part of the horizontal surface to form oblong side polygons with rounded ends at the sides of the polygon, which are parallel to the straight side segments of the horizontal surface.

[0012] The other side of the closing device, i.e. the cover of bottle opening, is to be used as two alternative embodiments: a cover to be slid on the bottle opening and a protruding element inserted into the bottle opening, whereas the covers for bottle opening can be used for bottles with different dimensions of opening.

[0013] In one alternative embodiment, a vertical crescent-shaped edge with straight segments at sides is formed on the horizontal surface, from the wider end towards the narrower end, which form a gap getting smoothly narrower towards the crescent, into which the end of a bottle neck without cap can be inserted. The crescent-shaped edge and the straight segments have a flange on the edge vertically distant from the horizontal surface, which is folded inward, and the surface of the horizontal surface has a smoothly elevated (thickened) surface towards the narrower end. The horizontal surface comprises a vertical flange at the outer edge.

[0014] In the next alternative embodiment, the horizontal surface has a cap formed vertically approximately in its centre, with an outer thread and (truncated) cone shape. The horizontal surface is completely surrounded by a vertical outer edge.

Brief Description of the Drawings

[0015]

Fig 1A shows a closing device for beverage container, with one side of the horizontal surface (top side in the drawing) usable as a cover for can opening, to be installed on the opening tab of the can, and the other side as a cover to be slid on the bottle opening;

Fig 1B shows a closing device for beverage container, with one side of the horizontal surface (top side in the drawing) usable as a cover for can opening, to be installed on the opening tab of the can, and the other side as a protruding element to be inserted in the bottle opening;

Fig 2A shows a closing device for beverage container, with one side of the horizontal surface (top side in the drawing) usable as a cover slid on the bottle opening and the other side as a cover of can opening to be installed on the opening tab of the can;

Fig 2B shows a closing device for beverage container, with one side of the horizontal surface (top side in the drawing) usable as a cap inserted in the bottle opening and the other side as a cover of can opening to be installed on the opening tab of the can;

Fig 3A displays the closing device of beverage container shown in fig 1A used on a can, where the top side of the horizontal surface is an alternative embodiment of the cover slid on the bottle opening;

Fig 3B displays the closing device of beverage container shown in fig 1B used on a can, where the top side of the horizontal surface is an alternative embodiment of the protruding element inserted in the bottle opening;

Fig 4 shows the alternative embodiments of either Fig 3A or Fig 3B used on a bottle.

Exemplary Embodiments of the Invention

[0016] The presented solution is designed for resealing and reopening of an open beverage container (a can or a bottle with a cap) and for protecting its contents from insects, fine particles and other undesirable objects while consuming the beverage, whereas it is not the purpose to reseal the open beverage container in airtight manner.

[0017] The object of the invention is a reversible (can be used from both sides) device with a horizontal surface 5, one side of which is cover 1 or 2, which is meant for placement on the opening tab of a can in order to close the opening of the can, and the other side is a cover for closing the opening of a bottle, whereas there are two alternative embodiments for use - cover 3 which is a cover slid on bottle opening, or cover 4, which is a protruding element inserted in bottle opening.

[0018] The horizontal surface 5 of the closing device for beverage container is a fan-shaped half-circular component with an a curved narrow end and a widening fan-shaped wider end interconnected with straight segments. Both sides of the horizontal surface 5 have vertically protruding additional components attached, which give different functionalities to the different sides (1 or 2 and 3 and 4) of surface 5.

[0019] On one side of the horizontal surface 5 of the closing device i.e. surface 1 or 2 of the cover of can opening, a component with a specific shape is vertically formed, with a polygon with rounded corners 6 in the centre, reaching from the narrower end of the horizontal surface 5 to the proximity of the wider end. At the narrower end of the horizontal surface 5 of the polygon 6, a horizontal slit 7 has been made, which extends significantly into the interior of the polygon 6, and at the entry point, a crescent-shaped opening with straight side segments has been made into the polygon. A cut out has been made in the sides at the wider end of the horizontal surface 5 of the polygon 6 to form oblong side polygons with

rounded ends 8 at the sides of the polygon 6, which are parallel to the straight segments of the horizontal surface 5.

[0020] When using cover 1 or 2 of can opening, the opening tab of the beverage can is inserted in slit 7 of the polygon 6. Thus, it is convenient to turn the closing device together with the opening tab to cover the can opening. Thus, the opening tab does not hinder the use of the closing device (e.g. double movements are not necessary). When the closing device and the opening tab are turned to cover the can opening, the side polygons 8 function as an additional side barrier to the can opening, preventing the entry of insects and/or fine particles into the can from between the closing device and the top surface of the can. When the opening tab of the can is inserted into the slit 7 of the closing device, the closing device can also be used as an aid for initial opening of the can.

[0021] The other side of the horizontal surface of the closing device 5, i.e. the surface of the cover for bottle opening, contains two alternative embodiments - cover 3 which is a cover slid on bottle opening, or cover 4, which is a protruding element inserted in bottle opening.

[0022] In one alternative embodiment, a vertical crescent-shaped edge 9 with straight segments 10 at sides is formed on the horizontal surface 5 of the closing device (i.e. cover 3 which is designed for closing the opening of a bottle as a lid), from the wider end towards the narrower end. The crescent-shaped edge 9 and the straight segments 10 have a flange 11 on the edge vertically distant from the horizontal surface, which is folded inward and is useful for more secure sliding of the cover on the bottle opening. The horizontal surface 5 has a vertical flange 13 at the outer edge. To close an open bottle, the cover 3 is slid horizontally from the wider end of the fan-shaped horizontal surface 5 onto the bottle opening. Compared to the wider part of the fan-shaped end, the surface of the horizontal surface 5 has a smoothly elevated (thickened) surface towards the narrower end. Also, the crescent-shaped edge 9 with straight segments 10 at sides forms a gap getting smoothly narrower towards the crescent, into which the end of a bottle neck without cap can be inserted. Thanks to the above characteristics, a wedge effect is applied, which enables more secure sealing of bottle opening. Also, the narrowing gap of the cover makes it possible to use the closing device for sealing bottles with different outer diameter of bottle opening.

[0023] In the next alternative embodiment, the other side of the horizontal surface 5 of the closing device (i.e. cover 4 designed for inserting into bottle opening as a protruding element) has a cap 12 formed vertically approximately in its centre, with an outer thread and (truncated) cone shape, whereas the (truncated) cone has a larger diameter at the end towards the horizontal surface 5. The horizontal surface 5 is surrounded by a vertical outer edge 13. For closing an open bottle, the cap 12 is inserted in the bottle opening. Thanks to the cone-shaped part of cap 12, the solution is suitable for sealing bottles

with different outer diameter of bottle opening. The grooved surface of the protruding part of cap 12 helps the closing device to be better/tighter fixed in the bottle opening.

[0024] The vertical flange 13 is an additional aid for removing the closing device from the beverage container, as it can be conveniently grasped by the user's fingers/fingernails.

[0025] The horizontal surface 5 is penetrated by an opening 14 through which it is possible to attach the closing device to e.g. a key ring and thus use it as a separate key chain or keep in a bunch of keys. Also, the opening 14 may be used for attachment of e.g. a string, ribbon, rubber band, etc. by which the closing device is attached to a beverage container to avoid the loss of the closing device when using the beverage container or unwanted detachment of the closing device from the opening tab of the can or opening of the bottle.

[0026] Preferably, the closing device is made of material with certain flexibility and elasticity. Preferably, the closing device is made of biodegradable material. The closing device may be produced as distinguishable (e.g. be of one colour as a whole, or its sides are of different colour, or the components of different sides are of different colour, or with pictures, text, numbers, shapes, etc. elements used on the closing device). Also, other suitable materials and means may be used to mark the closing device distinguishably. The selection of materials and colours of the closing device or using other distinguishing means do not limit its intended purpose and technical nature.

[0027] The closing device for beverage container prevents the entry of insects, fine particles and/or other undesirable objects into an open beverage container while consuming the beverage. This ensures increased hygiene and safety of the user when the beverage is consumed periodically. When the closing device is used in the open position of beverage container, it also has an additional protection and convenience function. For example, for children, the opening tab of can touches their nose and the possible sharp edges may cause injuries to the user. Also, moustache may get caught in the opening tab. By using the closing device on the opening tab, such injuries and discomfort can be avoided. Also, the closing device can be used for distinguishing one's beverage container from other open beverage containers.

[0028] As the opening tab bends slightly away from the level of the top lid of the beverage can when opened, the closing device installed on it does not significantly touch the lid of the beverage can and the possible liquid on it. Also, the closing device is not significantly exposed to the liquid in the beverage can when it is closed again. That makes the closing device relatively hygienic (e.g. it does not become sticky), which makes it convenient for reuse and e.g. put it in the pocket between uses.

[0029] When using a bottle, the closing device is preferably used on a bottle with non-turnable cap but it is also possible to use it for closing a bottle with threaded

cap (e.g. if the cap is lost). Also, it is possible to use the closing device on bottles with caps inserted in the bottle opening (e.g. wines).

[0030] Cover 3 or 4 of the closing device is universal, which makes it possible to use it for closing bottles with different diameter of opening. Preferably, the dimensions of the vertical component of cover 3 slid on the bottle opening are the following: the width of the open side of the gap is 29 ± 1.5 mm and it narrows towards the curve by about 1 to 2 mm per each 10 mm of the edge length (crescent-shaped edge 9 and straight segment 10), and the total vertical height is 5 ± 2 mm. Thus, the relevant cover 3 is suitable for use on standard beverage bottles with 27 ± 0.5 mm outer diameter of bottle opening. Preferably, the dimensions of the (truncated) cone shaped and threaded cap 12 of cover 4 are as follows: 20 ± 2.5 mm from the end towards the horizontal level 5 and 14.5 ± 2 mm from the opposite end. Thus, the relevant cover is suitable for use on standard beverage bottles with 17 to 23 mm inner diameter of bottle opening.

List of markings

[0031]

1 - closing device with one side of the horizontal surface (top side in Fig 1A) usable as a cover for can opening, to be installed on the opening tab of the can, and the other side as a cover to be slid on the bottle opening;

2 - closing device with one side of the horizontal surface (top side in Fig 1B) usable as a cover for can opening, to be installed on the opening tab of the can, and the other side as a protruding element to be inserted in the bottle opening;

3 - closing device with one side of the horizontal surface (top side in Fig 2A) usable as a cover slid on the bottle opening and the other side as a cover of can opening to be installed on the opening tab of the can;

4 - closing device with one side of the horizontal surface (top side in Fig 2B) usable as a protruding element inserted in the bottle opening and the other side as a cover of can opening to be installed on the opening tab of the can;

5 - horizontal surface of the closing device;

6 - middle part of can opening cover 1 or 2, which is a polygon with rounded corners;

7 - a slit 6 made in the polygon with rounded corners 6 of can opening cover 1 or 2;

8 - oblong side polygon of the polygon with rounded

corners of can opening cover 1 or 2;

9 - crescent-shaped edge of bottle opening cover 3;

10 - side straight element of crescent-shaped edge 9;

11 - flange of crescent-shaped edge 9 and straight elements 10;

12 - cap;

13 - vertical outer edge of the horizontal surface 5 of closing device cover 3 or 4;

14 - opening penetrating horizontal surface 5.

Claims

1. Closing device for beverage container having a cover for closing the opening of a beverage container, which is a hollow polygon with a slit with a top surface, bottom surface and a side wall **characterized in that** the closing device for beverage container is a reversible device with a horizontal surface (5), wherein the horizontal surface is a fan-shaped half-circular component with an a curved narrow end and a widening fan-shaped wider end interconnected on sides with straight segments, and both sides of the surface have vertically protruding additional components attached, and one side of the horizontal surface (5) closing device is a cover, which is meant for placement on the opening tab of a can in order to close the opening of the can, and the other side is a cover to be mounted on the opening of a bottle in order to close it, wherein:

- one side of the horizontal surface (5) of the closing device is a cover (1) which is meant for placement on the opening tab of a can with a surface where specific shape is vertically formed, with a polygon with rounded corners (6) in the centre, reaching from the narrower end of the horizontal surface (5) to the proximity of the wider end, at the narrower end of the horizontal surface (5) of the polygon (6), at the narrow end of the horizontal surface (5) of the polygon (6) a horizontal slit (7) has been made, which extends significantly into the interior of the polygon (6), and at the entry point, a crescent-shaped opening with straight side segments has been made into the polygon (6), and a cut out has been made in the sides at the wider end of the horizontal surface (5) of the polygon (6) to form oblong side polygons with rounded ends (8) at the sides of the polygon (6), which are parallel to the straight segments of the horizontal surface (5);

- the other side of the horizontal surface (5) of the closing device is a cover (3) which is designed as a cover to be slid on the bottle opening where a vertical crescent-shaped (9) edge with straight segments (10) at sides is formed on the horizontal surface, from the wider end towards the narrower end, which form a gap getting smoothly narrower towards the crescent; the crescent-shaped edge (9) and the straight segments (10) have a flange (11) on the edge vertically distant from the horizontal surface (5), and the surface of the horizontal surface has a smoothly elevated surface towards the narrower end compared to the wider fan-shaped end;

and the closing device comprises an opening (14) penetrating the horizontal surface (5); and the closing device and/or the components vertically protruding from its horizontal surface (5) are distinguishably marked.

2. Closing device for beverage container according to claim 1 **characterized in that** the flange (11) is folded inward.

3. Closing device for beverage container according to claims 1 and 2 **characterized in that** the cover (3) of the horizontal surface (5) comprises a vertical flange (13) at the outer edge.

4. Closing device for beverage container having a cover for closing the opening of a beverage container, which is a hollow polygon with a slit with a top surface, bottom surface and a side wall **characterized in that** the closing device for beverage container is a reversible device with a horizontal surface (5), wherein the horizontal surface is a fan-shaped half-circular component with an a curved narrow end and a widening fan-shaped wider end interconnected on sides with straight segments, and both sides of the horizontal surface have vertically protruding additional components attached, and one side of the horizontal surface (5) closing device is a cover, which is meant for placement on the opening tab of a can in order to close the opening of the can, and the other side is a cover to be mounted on the opening of a bottle in order to close it, wherein:

- one side of the horizontal surface (5) of the closing device is a cover (2) which is meant for placement on the opening tab of a can with a surface where specific shape is vertically formed, with a polygon with rounded corners (6) in the centre, reaching from the narrower end of the horizontal surface (5) to the proximity of the wider end, at the narrower end of the horizontal surface (5) of the polygon (6), at the narrow end of the horizontal surface (5) of the polygon (6) a

horizontal slit (7) has been made, which extends significantly into the interior of the polygon (6), and at the entry point, a crescent-shaped opening with straight side segments has been made into the polygon (6), and a cut out has been made in the sides at the wider end of the horizontal surface (5) of the polygon (6) to form oblong side polygons with rounded ends (8) at the sides of the polygon (6), which are parallel to the straight segments of the horizontal surface (5);

- the other side of the horizontal surface (5) is a cover (4) which is designed as a protruding element to be inserted into the opening of a bottle which includes a vertical cap (12) on the horizontal surface (5) approximately at the centre, which is with outer thread and shaped as cone or truncated cone;

and the closing device comprises an opening (14) penetrating the horizontal surface (5); and the closing device and/or the components vertically protruding from its horizontal surface (5) are distinguishably marked.

5. Closing device for beverage container according to claim 4 **characterized in that** the cover (4) of the horizontal surface (5) is surrounded by a vertical outer edge (13).

6. Closing device for beverage container according to claims 4 and 5 **characterized in that** the cap (12) has a larger diameter at the end towards the horizontal surface (5).

7. Closing device for beverage container according to claims 1 to 6 **characterized in that** the closing device is made of elastic material.

8. Closing device for beverage container according to claims 1 to 6 **characterized in that** the closing device is made of rigid material.

9. Closing device for beverage container according to claims 1 to 8 **characterized in that** the closing device is made of biodegradable material.

10. Closing device for beverage container according to claims 1 to 9 **characterized in that** the opening (14) is designed for attaching a separate fitting to the closing device or attachment of the closing device to an external fitting.

11. Closing device for beverage container according to claims 1 to 10 **characterized in that** it is of one colour.

12. Closing device for beverage container according to

claims 1 to 10 **characterized in that** its vertical components are of different colours.

13. Closing device for beverage container according to claims 1 to 10 **characterized in that** pictures and/or text and/or numbers and/or shapes have been applied to the closing device and/or its vertical components. 5
14. Closing device for beverage container according to claims 1 to 13 **characterized in that** the cover (1 or 2) is also designed as an aid for initial opening of the can by the opening tab. 10

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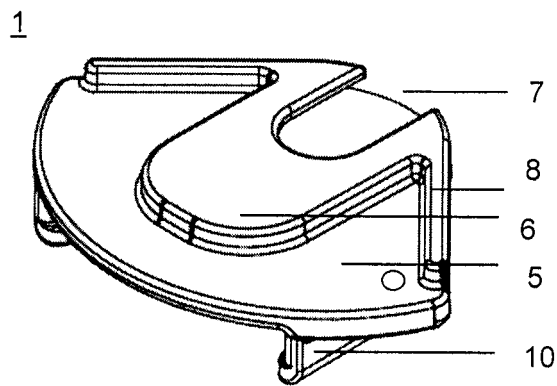


FIG 1A

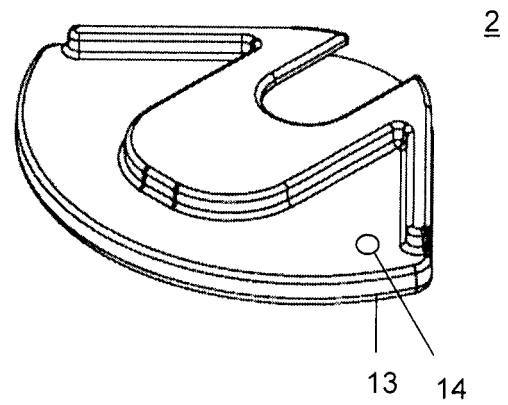


FIG 1B

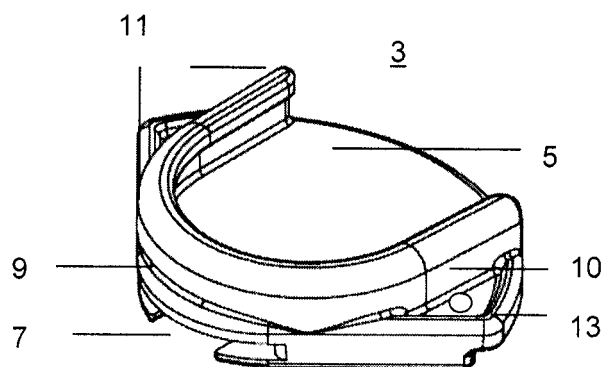


FIG 2A

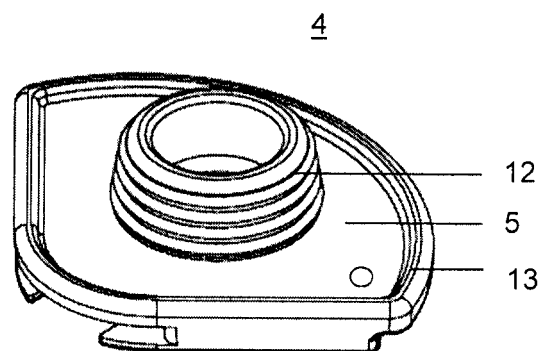


FIG 2B

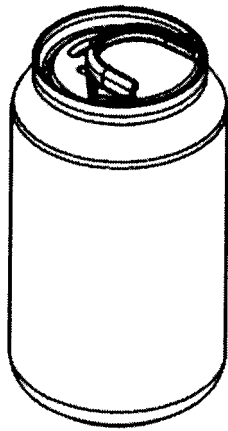


FIG 3A

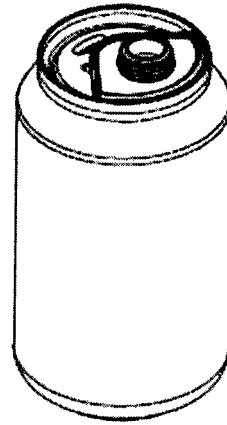


FIG 3B

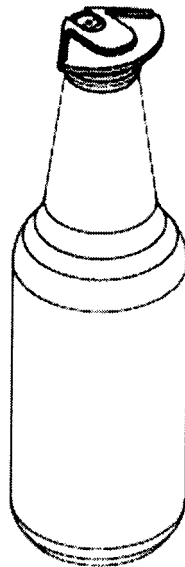


FIG 4



EUROPEAN SEARCH REPORT

Application Number
EP 18 00 0084

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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