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(54) **Cap element for a beverage can**

(57) The invention relates to a cap element (2) adapted for being fixed to a container (1), which container comprises an upper surface (11) that is bounded by an edge (14). The cap element comprises a one-piece, substantially rigid main cap (20) that defines an interior space (21) and at least one opening (22) defined by a circumferential edge (23) adapted to engage over the edge of the container so as to enclose at least part of the container, and sealing means (40) in the interior space near the opening, within the circumferential edge of the main cap, which sealing means are adapted to engage against the upper surface of the container. At least one resilient fixing element (24) is provided in the interior space near the opening, within the circumferential edge of the main cap, which resilient element is adapted to engage against or around the container edge.

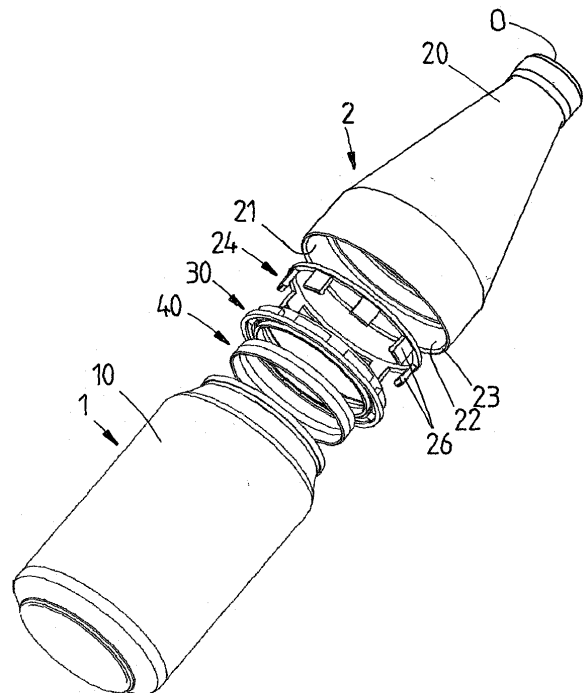


Fig. 2A

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Description

[0001] The invention relates to a cap element adapted for being fixed to a container, in particular a beverage can, which container comprises an upper surface that is bounded by an edge.

[0002] US 6,155,452 discloses an arrangement for re-sealing a carbonated beverage container, comprising a main cap for engagement over the beverage container top. The main cap comprises engagement portions that engage the major part of the edge of the upper surface of the beverage can. The main cap furthermore comprises a number of bridge portions provided to realise a flexible main cap that enables manipulation of the engagement parts for the purpose of fixing the main cap to the beverage container and detaching it therefrom.

[0003] The prior art cap element is complex as regards the manner in which the cap element engages the beverage can, and consequently it is expensive.

[0004] It is an object of the invention to provide a simple cap element.

[0005] To this end, a cap element is provided comprising:

- a one-piece, substantially rigid main cap that defines an interior space and at least one opening defined by a circumferential edge adapted to engage over the edge of the container so as to enclose at least part of the container;
- sealing means in the interior space near the opening, within the circumferential edge of the main cap, which sealing means are adapted to engage against the upper surface of the container;
- at least one resilient fixing element in the interior space near the opening, within the circumferential edge of the main cap, which resilient element is adapted to engage over or around the container edge.

[0006] Since the main cap does not perform a function of its own in the engagement of the container by the cap element, no special measures such as the forming of bridge portions and notches on/in the main cap are required, which significantly simplifies the design of the cap element. The engaging function of the cap element is provided by a resilient element that is arranged in the main cap, e.g. in the form of a ring of an elastic material adapted to engage around the container edge, or a number of resilient fixing tabs that engage the container edge at corresponding locations. Moreover, when the fixing element is implemented in the interior of the main cap, the assembly of container and cap element can be made to look as substantially one unit. This is advantageous from an aesthetic viewpoint and may furthermore prevent the fixing element and thus the cap element from being pulled loose, etc.

[0007] Further advantageous embodiments are defined in the dependent claims and will be discussed in

more detail in the description of the figures below.

[0008] In the figures:

Fig. 1 shows a container fitted with a cap element according to one embodiment of the invention;

Figs. 2A-2C show the assembly of Fig. 1 in perspective view and in side elevation;

Figs. 3A and 3B show details of the cap element according to a preferred embodiment of the invention, and

Figs. 4A-4C show a container fitted with a cap element according to a second embodiment of the invention.

[0009] Fig. 1 shows a container 1, e.g. a can of beer or a soft drink, to which a cap element 2 is fixed. The bottom side of the cap element 2 encloses the upper part of the container 1, so that the whole of container 1 and cap element 2 has the appearance of a bottle.

[0010] Figs. 2A-2C are more detailed views of an assembly of container 1 and cap element 2.

[0011] The container 1 comprises a side wall 10 which slightly tapers off towards the upper surface 11. The upper surface 11 comprises a removable element 12, which, once removed, provides access to the contents of the container 1. The upper surface 11 comprises a groove 13 and is bounded by an edge 14.

[0012] The cap element 2 comprises a rigid main cap 20 that defines an interior space 21 and at least one opening 22 defined by a circumferential edge 23 adapted to engage over the edge 14 of the container 1 so as to enclose at least part of the container 1, as shown in Fig. 1. A further opening O may be provided, via which the contents of the container 1 can be consumed, for example, once the removable element 12 has been removed.

[0013] In one embodiment of the invention, said further opening cannot be closed. This embodiment is in particular advantageous if the container contains a carbonated beverage, such as beer, or another component that builds up gas pressure. Once the element 12 has been removed and the cap element 2 is fully sealed, there is a risk that the gas pressure that has built up will force the cap element 2 off the container 1. In special circumstances this may lead to dangerous situations and/or loss of the contents of the container 1.

[0014] The main cap 20 is preferably made of acrylonitrile butadiene styrene (ABS) or an equivalent material. The material must be sufficiently rigid and must not exhibit any appreciable interaction with the contents of the container 1, e.g. beer. The wall thickness of the main cap varies from about 1.5 mm near the opening 22 to about 4-6 mm at the upper side, near the further opening O, of the cap element 2.

[0015] A resilient fixing element 24 arranged in the interior space 21 of the cap element 2 near the opening 22 comprises a first ring-shaped element 25, from which various resilient and substantially uniformly spaced fixing tabs 26 extend. This enables an easy snap fit of the cap

element on the container 2. In the present example, eight fixing tabs 26 are used, but it is also possible to use four, six or ten fixing tabs 26. The resilient nature of the fixing tabs 26 is provided by the structure of the fixing element 24, in which notches are formed in the ring-shaped element between the tabs 26. Resilience can also be obtained by suitably selecting the material for the element 24 and/or the tabs 26, or by using a suitable combination of said structure and said material. The resilient fixing element is e.g. made of polypropylene (PP).

[0016] As is clearly shown in Fig. 3B, the ends of the fixing tabs 26 comprise hooks 27. The contact portions 28 of the hook elements 27 are so configured that the cap element 2 can be fixed to the container 1 by snapping the fixing tabs round the container edge 14. The contact portions 29 of the hook elements 27 are bevelled so as to make it possible to remove the cap element 2 from the container 1.

[0017] A second ring-shaped element 30, e.g. made of ABS, comprises openings 31 for locking the first ring-shaped element 24 in position. The second ring-shaped element 30 is fitted in the interior space of the main cap 20. The fixing tabs 26 of the first ring-shaped element 24 extend through the openings 31 of the second ring-shaped element 30 in the direction of the opening 22 of the main cap 20. Upright parts 32 bound the openings 31. The openings 31 provide the fixing tabs 26 with sufficient play when the resilience of the fixing tabs 26 is needed, i.e. upon fixing the cap element 2 to the container 1 or removing it therefrom.

[0018] A third ring-shaped element 40, likewise fitted in the interior space 21 of the main cap 20, provides a leak-proof seal. Preferably, the third ring-shaped element is so positioned that the ring-shaped element fits into the groove 13 of the upper surface 11 of the container 1. The third ring-shaped element is preferably capable of at least slight deformation, so that a leak-proof seal is obtained without extreme requirements being made as regards the tolerances. The third ring-shaped element is e.g. made of a rubber. The leak-proof seal makes it possible to transfer the contents of the container 1 from the container 1 through the opening 22 of the cap element 2 to the further opening O via the interior space 21 without any appreciable loss taking place.

[0019] The fitting of the ring-shaped elements 24, 30, 40 can take place in various ways. The sealing element 40 may be fixed to the locking washer 30, e.g. by ultrasonic welding. The ring 24 with the fixing tabs 26 can subsequently be fitted to the assembly of the ring-shaped elements 30, 40 by inserting the fixing tabs 26 into the openings 31 and snapping them in position. Depending on the construction, either the ring-shaped element 24 or the ring-shaped element 30, or both, is (are) fixed to the main cap 20, e.g. by ultrasonic welding. In this way a one-piece cap element 2 that is easy to manufacture is obtained.

[0020] Figs. 4A-4C show a second embodiment of the invention, in which the cap element 2 has a different out-

ward appearance. The snap connection between the cap element 2 and the container 1 is effected in the same manner as discussed for the container that is shown in Figs. 1-3B.

[0021] The cap element 2 comprises a top 50. The cap element 2 is furthermore provided with a logo and/or text 51. The construction of the cap element makes it possible to gear the cap element 2 to the container 1, so that a uniform image of the assembly is obtained.

[0022] The cap element 2 also comprises means 52, e.g. a slot, to which carrying means (not shown), such as a cord, can be attached. Since the assembly of container 1 and cap element 2 is carried by the cap element 2, the snap connection as effected by the fixing tabs 26 must be sufficiently strong near the edge for carrying a full container 1.

[0023] Upon use of the cap element 2, an opening is first formed in the upper surface 11 of the container by removing the element 12. Then the cap element 2 is moved substantially straight toward the container 1 so as to have the circumferential edge 23 enclose the upper part of the container 1. When the contact portions of the fixing tabs 26 make contact with the edge 14 of the container 1, the fixing tabs 26 bend slightly outwards until the edge 14 is fully enclosed. The situation as shown in Fig. 1 is now reached. The cap element 2 can function as a pouring element, e.g. for drinking or pouring from the container 1.

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Claims

1. A cap element adapted for being fixed to a container, which container comprises an upper surface that is bounded by an edge, said cap element comprising:

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- a one-piece, substantially rigid main cap that defines an interior space and at least one opening defined by a circumferential edge adapted to engage over the edge of the container so as to enclose at least part of the container;
- sealing means in the interior space near the opening, within the circumferential edge of the main cap, which sealing means are adapted to engage against the upper surface of the container;
- at least one resilient fixing element in the interior space near the opening, within the circumferential edge of the main cap, which resilient element is adapted to engage over or around the container edge.

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2. The cap element according to claim 1, wherein the cap element is of circular section at least near the opening, and wherein the resilient element comprises a first ring-shaped element provided with resilient fixing tabs, which first ring-shaped element is arranged in the interior space of the main cap, near

the opening.

3. The cap element according to claim 1, wherein the cap element is of circular section at least near the opening, and wherein the resilient element comprises a first ring-shaped element provided with at least three substantially uniformly spaced resilient fixing tabs, which first ring-shaped element is arranged in the interior space of the main cap, near the opening. 5
4. The cap element according to claim 1, wherein the cap element is of circular section at least near the opening, and wherein the resilient element comprises a first ring-shaped element provided with resilient fixing tabs and wherein the cap element further comprises a second ring-shaped element provided with openings, which second ring-shaped element is fitted in the interior space of the main cap, and wherein the fixing tabs extend through the openings of the second ring-shaped element in the direction of the opening of the main cap. 10 20
5. The cap element according claim 1, wherein the cap element is of circular section at least near the opening and wherein the sealing means comprise a third ring-shaped, deformable element. 25
6. The cap element according to claim 1, wherein the main cap, the sealing means and the resilient element are in one piece. 30
7. The cap element according to claim 1, wherein the main cap comprises a further opening that is in communication with said opening via the interior space. 35
8. The cap element according to claim 1, wherein the cap element is arranged in such a manner that said further opening cannot be closed.
9. The cap element according to claim 1, wherein the cap element comprises means for attaching carrying means thereto. 40
10. The cap element according to claim 1, wherein the cap element can be fixed to a soft drink container. 45
11. The cap element according to claim 1, wherein the resilient element is adapted for detachably fixing the cap element to the container. 50
12. A cap element adapted for being fixed to a beverage container, which container comprises a surface provided with a removable element for opening the container and a groove bounded by an edge, said cap element comprising: 55
 - a main cap provided with an opening;
 - a first ring-shaped element provided with three

or more resilient fixing tabs, which is arranged in the main cap to engage over or around the container edge;

- a second ring-shaped element fitted in the main cap, which is provided with openings through which the fixing tabs extend in the direction of the opening of the main cap; and

- a third ring-shaped element fitted to the second ring-shaped element, which is adapted to be positioned in said groove in a substantially leak-proof manner.

13. A cap element adapted for being fixed to a beverage container, which container comprises a surface provided with a removable element for opening the container, said cap element comprising:

- a rigid main cap provided with an opening;
- a ring-shaped element in the main cap, which is provided with at least three resilient fixing tabs that are adapted to effect a snap connection with the container edge without deformation of the main cap being required.

Amended claims in accordance with Rule 86(2) EPC.

1. A cap element (2) adapted for being fixed to a container (1), which container (1) comprises an upper surface (11) that is bounded by an edge (14), said cap element comprising a one-piece, substantially rigid main cap (20) that defines an interior space (21) and at least one opening (22) defined by a circumferential edge (23)

characterised in that

the circumferential edge (23) is adapted to engage over the edge (14) of the container (1) so as to enclose at least part of the container and the main cap (20) comprises at least one resilient fixing element (24) in the interior space (21) near the opening (22), within the circumferential edge (23) of the main cap (20), which resilient fixing element (24) is adapted to engage over or around the edge (14) of the container (1).

2. The cap element (2) according to claim 1, further comprising sealing means (40) in the interior space (21) near the opening (22), within the circumferential edge (23) of the main cap (20), which sealing means (40) are adapted to engage against the upper surface (11) of the container (1).

3. The cap element (2) according to claim 1 or 2, wherein the cap element (2) has a circular section at least near the opening (22), and wherein the resilient element (24) comprises a first ring-shaped element (25) provided with resilient fixing tabs (26), which first ring-shaped element (25) is arranged in

the interior space (21) of the main cap (20) near the opening (22).

4. The cap element (2) according to claim 1 or 2, wherein the cap element (2) has a circular section at least near the opening (22), and wherein the resilient element (24) comprises a first ring-shaped element (25) provided with at least three substantially uniformly spaced resilient fixing tabs (26) which first ring-shaped element (25) is arranged in the interior space (21) of the main cap (20) near the opening (22). 5 10

5. The cap element (2) according to claim 1 or 2, wherein the cap element (2) has a circular section at least near the opening (22), and wherein the resilient element (24) comprises a first ring-shaped element (25) provided with resilient fixing tabs (26) and wherein the cap element (2) further comprises a second ring-shaped element (30) provided with openings (31), which second ring-shaped element (30) is fitted in the interior space (21) of the main cap (20), and wherein the fixing tabs (26) extend through the openings (31) of the second ring-shaped element (30) in the direction of the opening (22) of the main cap (20). 15 20 25

6. The cap element (2) according to claim 2, wherein the sealing means (40) comprise a third ring-shaped, deformable element. 30

7. The cap element (2) according to claim 2, wherein the main cap (20), the sealing means (40) and the resilient element (24) are in one piece. 35

8. The cap element (2) according to claim 1 or 2, wherein the main cap (20) comprises a further opening (O) that is in communication with said opening (22) via the interior space (21). 40

9. The cap element (2) according to claim 8, wherein the cap element (2) is arranged in such a manner that said further opening (O) cannot be closed.

10. The cap element (2) according to claim 1 or 2, wherein the cap element (2) comprises means (52) for attaching carrying means thereto. 45

11. The cap element (2) according to claim 1 or 2, wherein the cap element (2) can be fixed to a soft drink container (1). 50

12. The cap element (2) according to claim 1 or 2, wherein the resilient element (24) is adapted for detachably fixing the cap element (2) to the container (1). 55

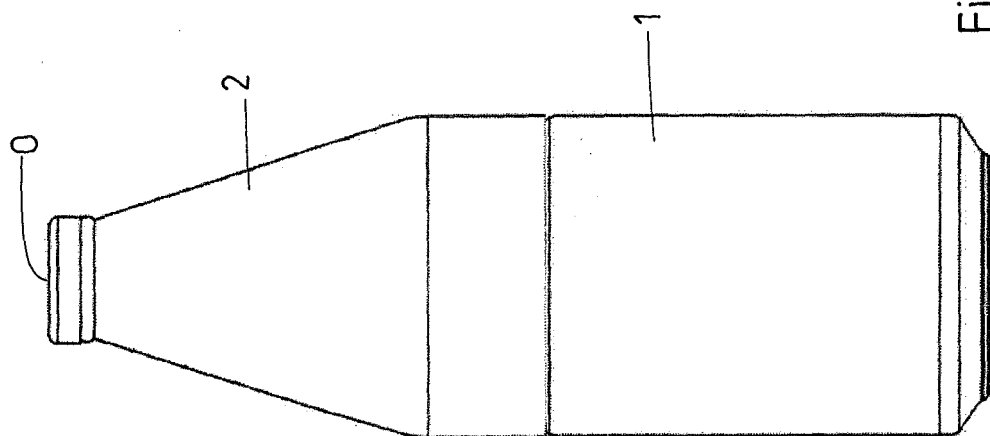


Fig.1

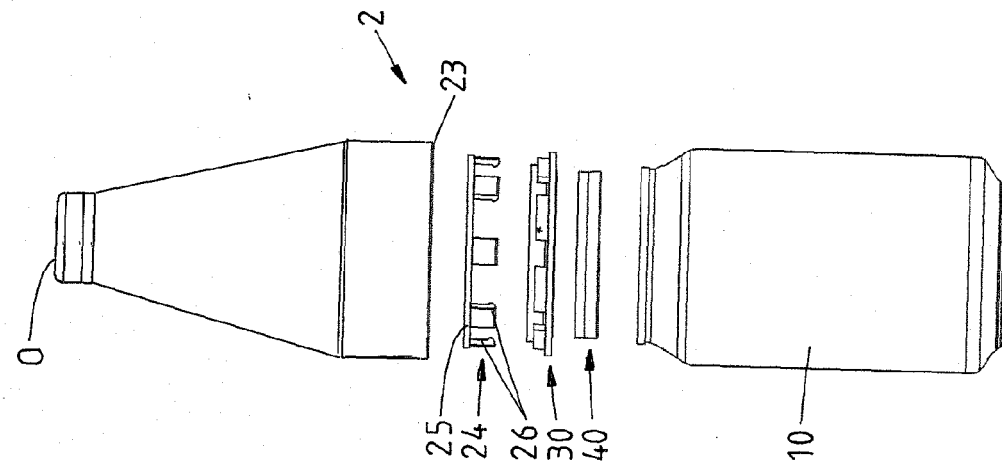


Fig. 2C

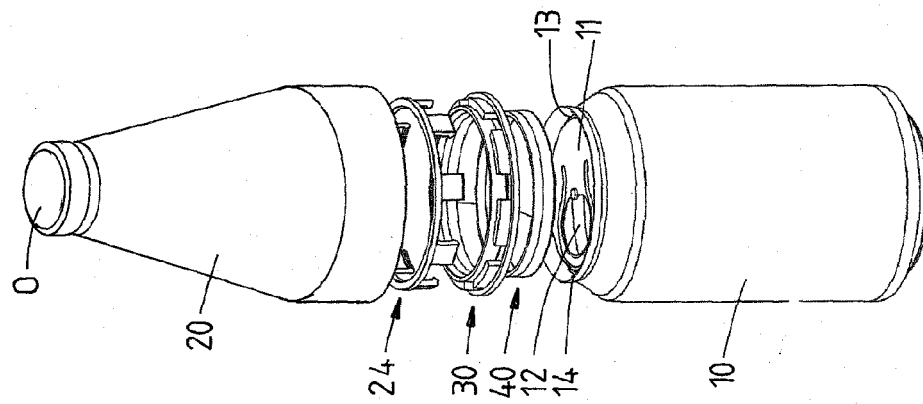


Fig. 2B

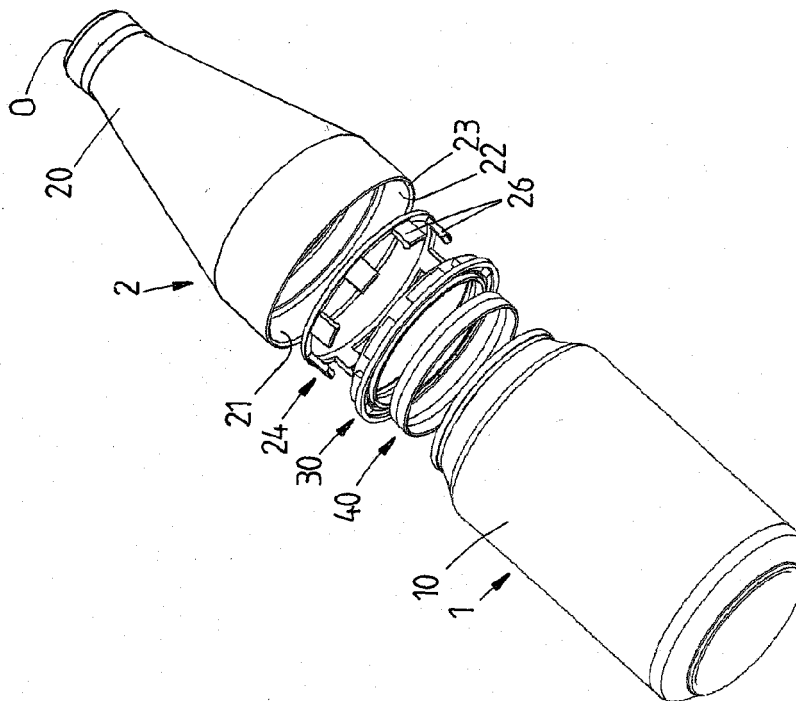


Fig. 2A

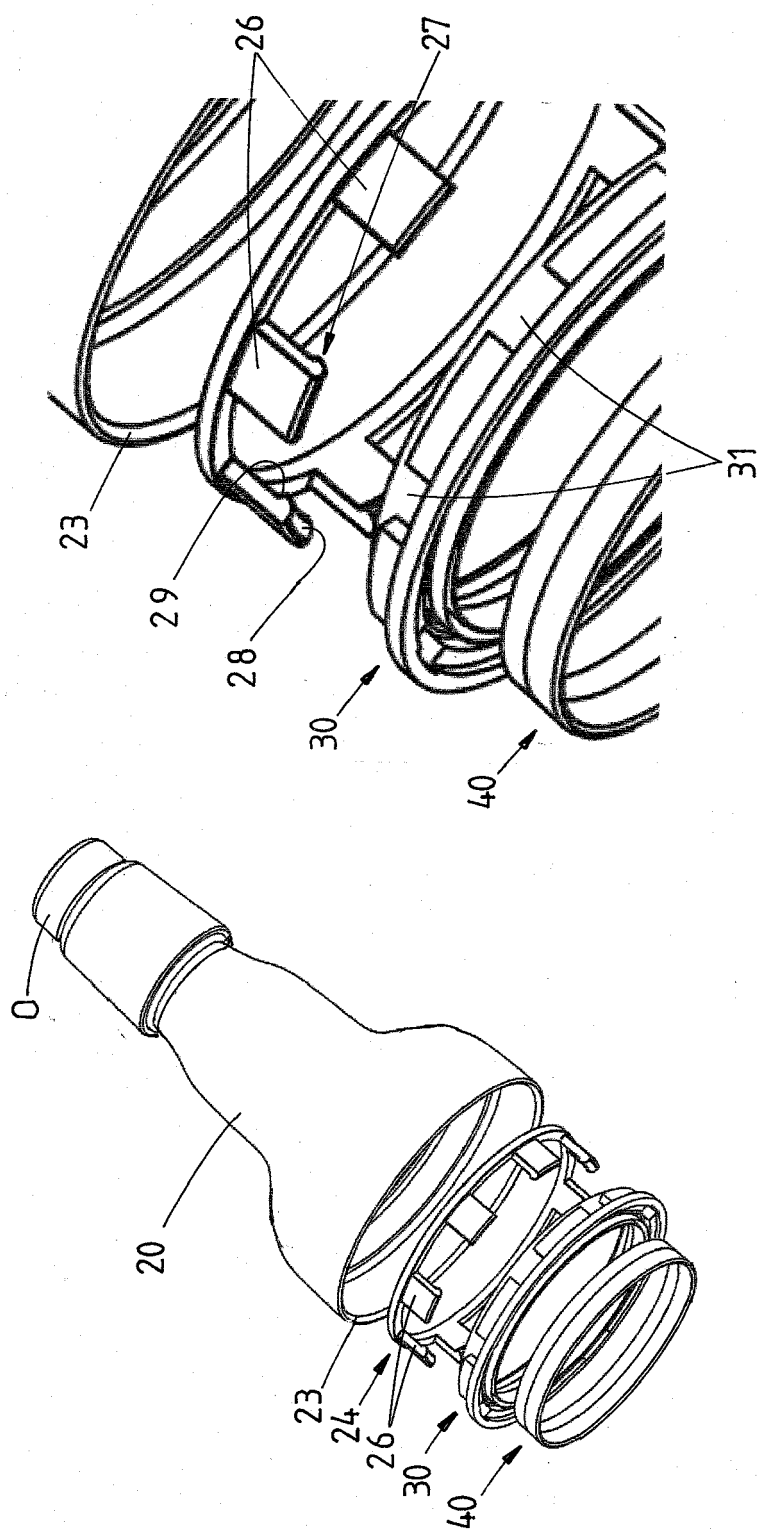


Fig.3B

Fig.3A

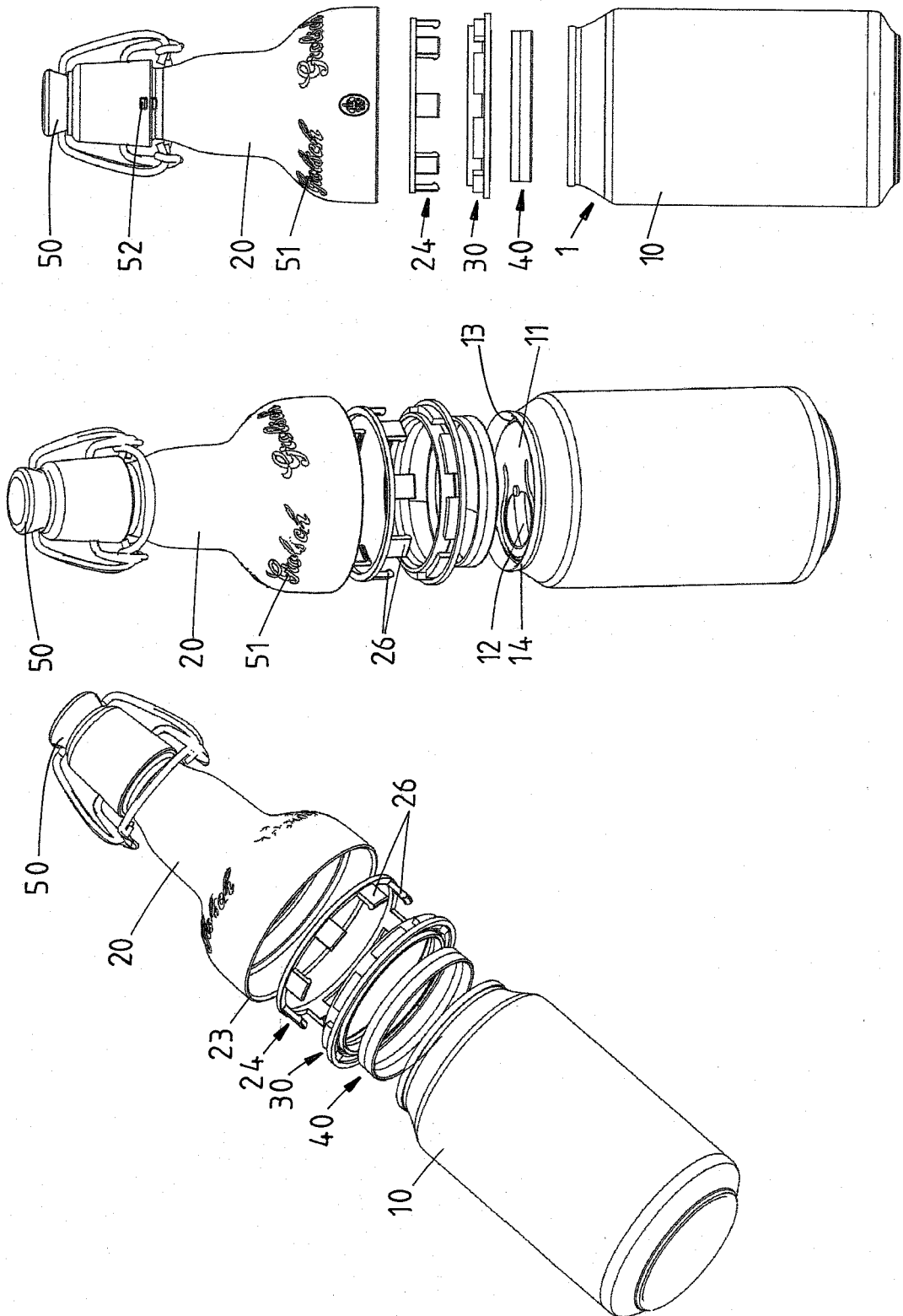


Fig. 4C

Fig. 4B

Fig. 4A



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EUROPEAN SEARCH REPORT

Application Number
EP 05 11 0209

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	FR 2 750 111 A (KAROL GENESI) 26 December 1997 (1997-12-26) * page 2, line 19 - page 3, line 7; figure 1 * * page 3, line 26 - page 4, line 3; figure 11 * -----	1,2,6,7, 10-13	B65D25/48
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D A47G
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		29 March 2006	Bridault, A
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 05 11 0209

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29-03-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2750111	A	26-12-1997	NONE

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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