(19) Europäisches Patentamt
European Patent Office
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(11) **EP 4 292 947 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
20.12.2023 Bulletin 2023/51

(21) Application number: **23177917.4**

(22) Date of filing: **07.06.2023**

(51) International Patent Classification (IPC):
B65D 1/02 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65D 1/0292; B65D 1/0284

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: **13.06.2022 IT 202200012470**

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(54) A BOTTLE

(57) A bottle (1) comprising a tubular body (2), endowed with a first free end (A) from which a neck (3) extends integrally therewith and which delimits a mouth (4) of the bottle (1), the neck (3) featuring connection means (5) for coupling with a cap for sealing the bottle, a second free end (B) of the tubular body (2) determining a support surface (6) of the bottle (1), configured so that when the bottle is placed on a horizontal surface by means of the said support surface, the said bottle assumes an essentially vertical position; the second free end (B) has an axial channel (7) which divides the support surface (6) into two semi-supporting surfaces (6A, 6B) which are essentially symmetrical with respect to the said axial channel (7), the said axial channel (7) determining a preferential bend line configured for flattening the second free end (B) and to facilitate the rolling up of the bottle, starting from the said free end (B) in order to completely squeeze out a fluid substance housed in the bottle.
Class: A45D

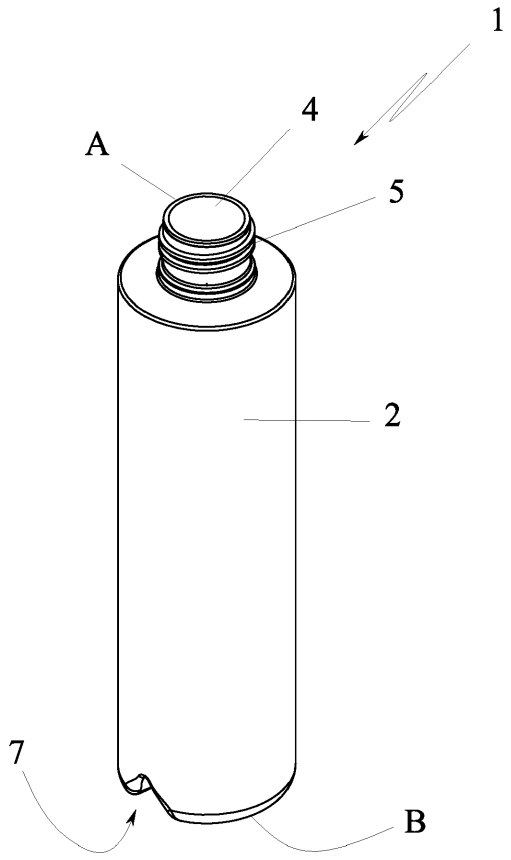

FIG.2

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a bottle.

[0002] In particular, the invention refers to a bottle designed to contain and transport a relatively dense fluid substance, such as a cream, gel, soap or shampoo, for example in the cosmetic or medical field, etc.

BACKGROUND ART

[0003] The most common and most marketed bottles are made of relatively rigid plastic.

[0004] It is often difficult to completely dispense the contents of these bottle because part of the substance housed therein, especially if dense, remains stuck to the walls.

[0005] This generates a great waste of the product contained in the bottle which, at least indirectly, damages the environment.

[0006] Furthermore, with bottles according to prior art, it is necessary to perform careful cleaning thereof before proceeding with an efficient recycling of the constituent plastic material.

[0007] US 8,783,487 B2, JP 2001 039424 A and JP H10 245036 A describe known bottles.

SUMMARY OF THE INVENTION

[0008] The object of the present invention is to provide a bottle which is improved with respect to the prior art.

[0009] A further object of the invention is to provide a bottle which can be emptied more easily than those according to prior art.

[0010] A still further object of the present invention is to provide a bottle that is more ecological than those according to prior art.

[0011] This and other objects are achieved by a bottle manufactured in accordance with the technical teachings of the appended claims.

BRIEF DESCRIPTION OF THE FIGURES

[0012] Further features and advantages of the innovation will become clearer in the description of a preferred but not exclusive embodiment of the bottle, illustrated - by way of a non-limiting example - in the drawings annexed hereto, in which:

Figure 1 is a lateral view of the bottle according to the present invention;

Figure 2 is a perspective view of the bottle in Figure 1;

Figure 3 is a bottom-up view of the bottle in Figure 1;

Figure 4 is a section view taken along line IV-IV in Figure 3; and

Figure 5 is a perspective view of the bottle in Figure 1, after the said bottle has been used, in a flattened and rolled up configuration.

DETAILED DESCRIPTION OF THE INVENTION

[0013] With reference to the figures stated, reference number 1 is used to denote, as a whole, a bottle.

[0014] The bottle 1 can be used to contain a preferably dense fluid substance, such as a cream, shampoo, soap, or any other substance, for example in the cosmetic or medical field.

[0015] For transportation of the said substance, the bottle can be closed with a conventional top or cap, such as for example a screw top, a flip top, etc.

[0016] With reference to Figure 2, it should be noted that the bottle 1 comprises a tubular body 2, endowed with a first free end A from which a neck 3 extends integrally therewith and which delimits a mouth 4 of the bottle 1.

[0017] The neck 3 has connection means 5 for connection to the said cap for sealing the bottle.

[0018] In the example, the connection means comprise a thread, for coupling with a screw cap.

[0019] Obviously, the said connection means can be suitable for coupling with the means present on the cap or fastening and, by way of example, they can comprise a rib for snap coupling with the cap, or other systems according to prior art.

[0020] A second free end B of the tubular body 2 delimits a support surface 6 of the bottle 1, configured so that when the bottle is resting on a horizontal surface by means of the said support surface, the bottle assumes an essentially vertical position.

[0021] The second free end B has an axial channel 7 which divides this support surface 6 into two semi-supporting surfaces 6A, 6B. The two semi-surfaces are essentially symmetrical with respect to the said axial channel 7.

[0022] For example, the said surfaces assume an arched conformation, similar to that of a round bracket.

[0023] In the example shown, the tubular body has a circular section, and, in this case, the axial channel 7 extends along a diameter of the said circular section.

[0024] Advantageously, the channel 7 is single, in the sense that the support surface 6 has one sole axial channel 7, which runs through the bottle, from side to side.

[0025] Obviously, the tubular body can also have a section with a different conformation, such as an ellipse, a square, a triangle, etc.

[0026] If the section has an elliptical conformation, the axial channel 7 preferably extends along a major axis of the ellipse.

[0027] If the section has a square or rectangular conformation, the axial channel 7 can extend along a diagonal thereof or perpendicularly to one side of the square,

dividing the said square in two.

[0028] It should be noted that the axial channel 7 (indented or recessed with respect to the support surface 6) determines a preferential bend line configured for flattening the second free end B and facilitating the rolling up (as shown in Figure 5) of the bottle 1, starting from the said free end B. This is intended to allow a fluid substance housed in the bottle 1 to be squeezed out completely.

[0029] Preferably, the axial channel 7 has a depth P of between 5 and 15% of the total bottle height, preferably 7%.

[0030] This facilitates the flattening of the bottle through exertion of force in an essentially perpendicular direction with respect to the axis C of the axial channel or groove 7, on the side wall of the bottle in the vicinity of the semi-surfaces 6A, 6B.

[0031] Advantageously, when seen perpendicularly to the axis C (as in Figure 1), the walls which delimit the channel 7 are inclined by an angle $\alpha 1$ of between 50° and 100°, preferably approximately 75°.

[0032] Therefore, the axial channel 7 is indented or recessed with respect to the support surface 6 of the bottle.

[0033] Advantageously, when seen in a plan view as in Figure 3, the axial channel 7 is formed of a first portion 7A converging towards a centre D of the support surface 6 and open at a perimeter wall of the bottle 1, followed by a second portion 7B diverging from the centre D towards the said perimeter wall.

[0034] This facilitates the aforesaid operations to completely squeeze the substance contained inside the bottle out through the mouth 4.

[0035] In Figure 4, it can be seen that, according to the invention, in a section view taken along the said axial channel 7, a bottom wall 11 of the container have a conformation which is concave towards the inside of the bottle, determined by the two essentially straight segments E, F, which meet, respectively angled, at the centre D.

[0036] The angle α between the two segments E, F is between 170° and 160°, preferably 164°.

[0037] In the view in Figure 4, a further rather large angle $\alpha 2$ can also be seen, which determines, in particular, the area of the support surfaces 6A and 6B.

[0038] The said angle $\alpha 2$, which is visible in a section view taken along axis C of the channel and determined by the walls W and Y (which may also be curved), can be between 80° and 150°, preferably 115°.

[0039] Furthermore, to render the form of the axial channel 7 more harmonious, the walls which determine the said channel can have fillets with radii of between 2 and 6 mm.

[0040] The bottle 1 is preferably made by blow-moulding a single piece of plastic material. The blowing is performed starting from a parison (rod/tube) in order to determine with precision, the part that cooperates with the cap, i.e. the mouth 4, the neck 3, and the connection means 5.

[0041] The plastic material can be LDPE additivated with HDPE, and the percentage of HDPE is advantageously between 6 and 15% with respect to the weight of the LDPE, preferably 10%.

[0042] The said mixture makes it very easy to flatten the bottle, which is very soft.

[0043] Furthermore, the weight of the bottle made of this material is much lower than that of conventional bottles. By way of example, a normal 200 ml bottle made of HDPE has a weight of 21 grams, as against the 11 grams of the bottle (with the same capacity) according to the present invention. The savings are evident and considerable, amounting to approximately 50%.

[0044] The invention described here combines the convenience and practicality of a tube-shaped flattenable container (such as, for example, a toothpaste container), which is easily collapsible, with the aesthetics of a conventional cylindrical container, i.e. with the cap facing upwards.

[0045] Except for the area in proximity to the support surface 6, the said container is identical to a conventional - for example a cylindrical - bottle.

[0046] Cylindrical containers are also the best sellers on the market, in absolute terms, because they are easier to decorate. The invention maintains this characteristic while furthermore adding the advantages of a tube container.

[0047] Furthermore, a bottle according to the invention can be displayed (for example, on a shelf) standing bottom-down, with the cap or top upwards, just like a normal bottle, unlike a tube, which must be displayed with the cap downwards (if a standing position is desired).

[0048] Various embodiments of the innovation have been disclosed herein, but further embodiments may also be conceived using the same innovative concept.

Claims

1. Bottle (1) comprising a tubular body (2), equipped with a first free end (A) from which, formed in one piece, a neck (3) extends, the neck (3) defining a mouth (4) of the bottle (1), the neck (3) having connection means (5) with a hermetic closure of the bottle, a second free end (B) of the tubular body (2) defining a support surface (6) of the bottle (1), configured so that when the bottle is placed on a horizontal plane through said support surface, the bottle assumes a substantially vertical position, **characterized by** the fact that the second free end (B) has an axial channel (7) which divides the support surface (6) into two semi-supporting surfaces (6A, 6B) substantially symmetrical with respect to said axial channel (7), the axial channel (7) defining a preferential folding line configured to flatten the second free end (B) and favor a winding of the bottle on itself, starting from said end free (B), in order to completely squeeze a fluid substance that can be housed in the

bottle, **characterized in that**, in a section taken along said axial channel (7), a bottom wall (11) of the container has a concave conformation towards the inside of the bottle, defined by two segments (E, F) substantially rectilinear that join, respectively angled, at the center (D), the segments (E, F) forming an angle (α) comprised between 170 and 160°, preferably of 164°.

2. Bottle according to the preceding claim, wherein the tubular body has a circular section, and said axial channel (7) extends along a diameter of said circular section.

3. Bottle according to claim 1, wherein said axial channel has a depth (P) comprised between 5 and 15%, preferably 7% of the total height of the bottle.

4. Bottle according to claim 1, **characterized in that** it is made by blowing a plastic material, in a single piece.

5. Bottle according to the preceding claim, wherein the plastic material is LDPE added with HDPE.

6. Bottle according to the previous claim, in which the percentage of HDPE is between 6 and 15%, preferably 10% with respect to the weight of the LDPE.

7. Bottle according to claim 1, in which the axial channel (7), seen in plan view, is formed by a first portion (7A) converging towards a center (D) of the supporting surface (6) and open on a wall perimeter of the bottle (1), followed by a second section (7B) diverging from the center (D) towards said perimeter wall.

8. Bottle according to claim 1, wherein the walls defining said axial channel (7) are joined with chamfers of a radius between 2 and 6 mm.

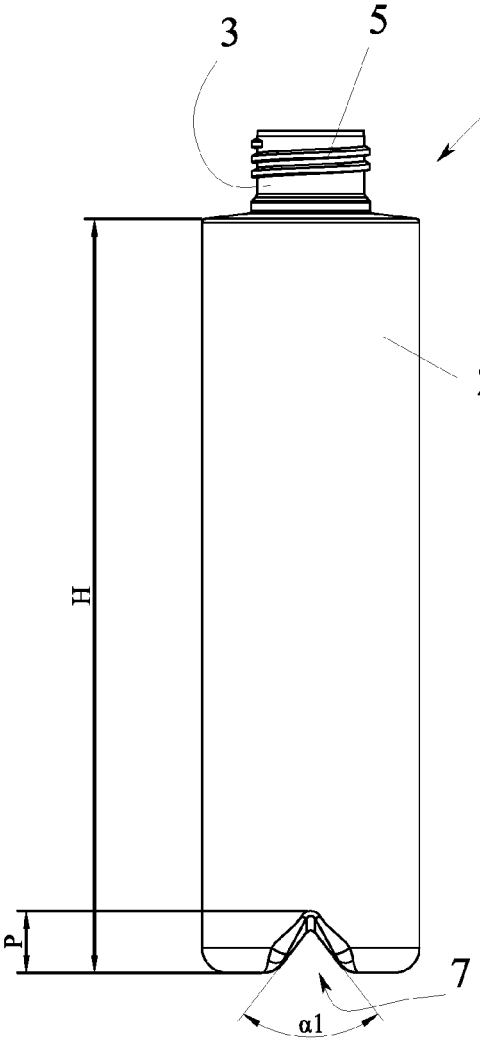

FIG.1

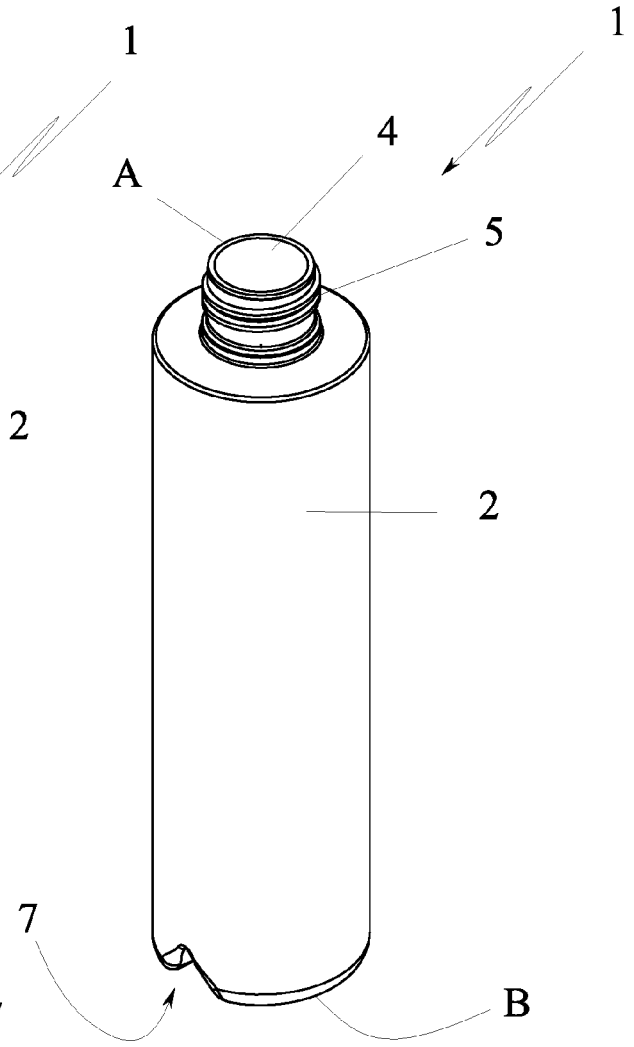

FIG.2

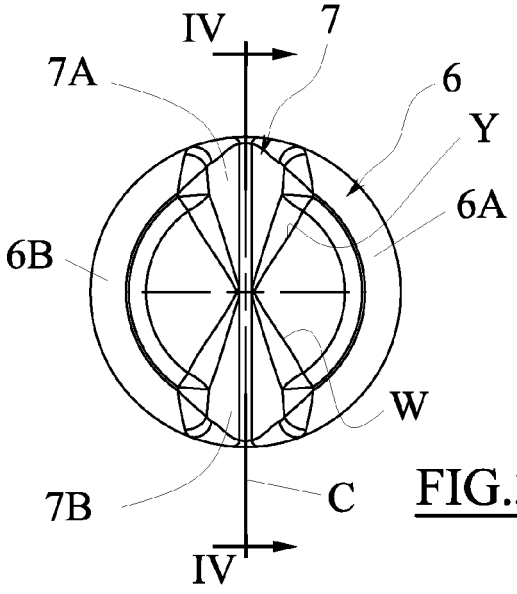

FIG.3

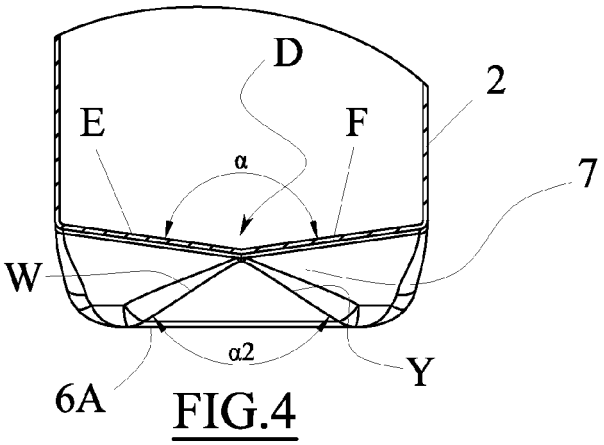

FIG.4

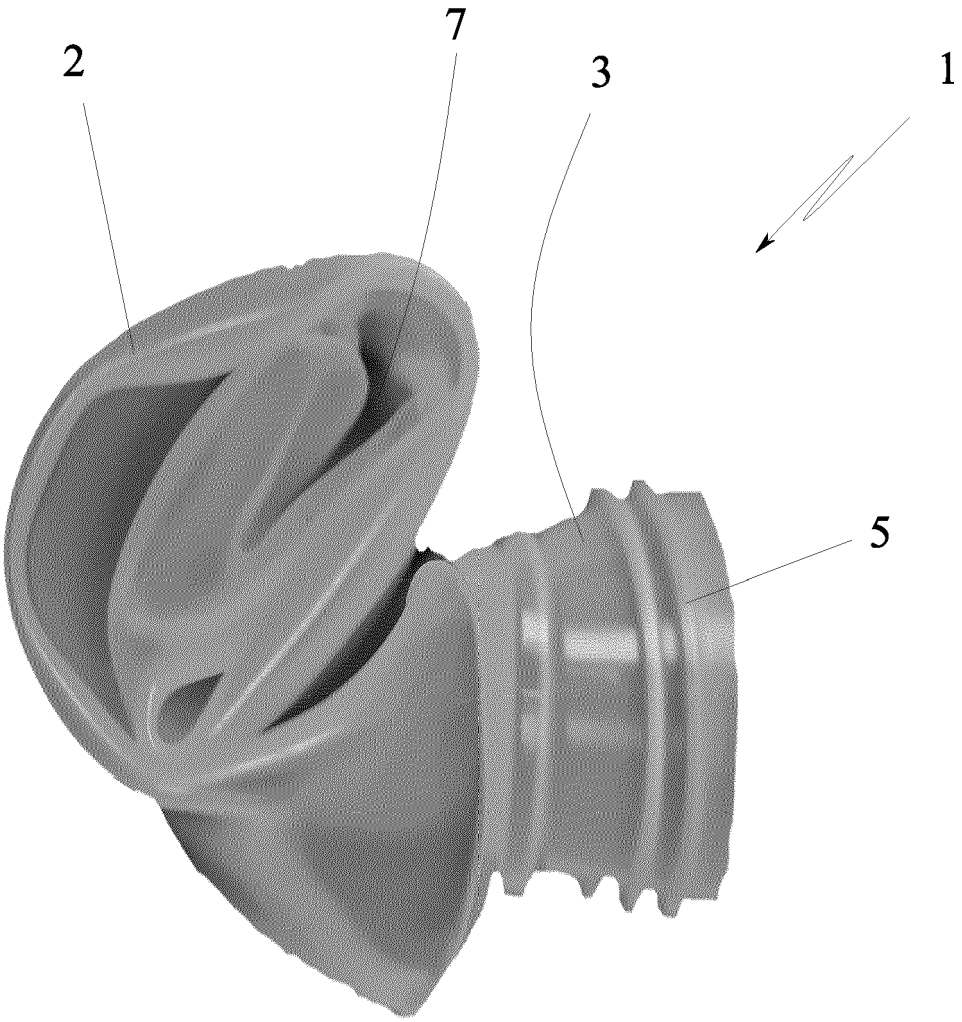

FIG.5

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EUROPEAN SEARCH REPORT

Application Number
EP 23 17 7917

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	US 8 783 487 B2 (HOJO MASARU [JP]) 22 July 2014 (2014-07-22) * column 4, line 7 - column 8, line 25; figures *	1-8	INV. B65D1/02
A	JP 2001 039424 A (RUNA KASEI KK) 13 February 2001 (2001-02-13) * paragraphs [0002] - [0017] *	1-8	
A	JP H10 245036 A (YAMAMURA GLASS CO LTD) 14 September 1998 (1998-09-14) * paragraphs [0001] - [0018]; figures *	1-8	

TECHNICAL FIELDS SEARCHED (IPC)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	4 October 2023	Fournier, Jacques

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 23 17 7917

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04-10-2023

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

REFERENCES CITED IN THE DESCRIPTION

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- JP 2001039424 A **[0007]**
- JP H10245036 A **[0007]**