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(12) # EUROPEAN PATENT APPLICATION

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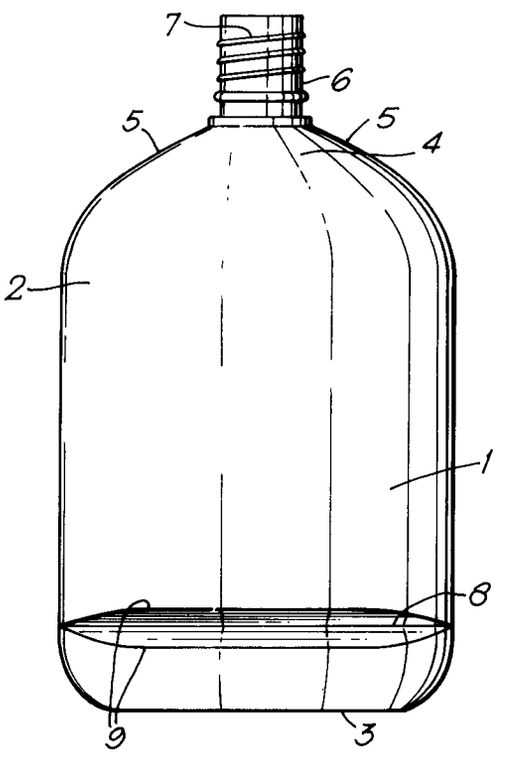
(54) **Collapsible bottle.**

(57) A flexible walled container having a body portion (1) with wall portions (2), a bottom portion (3) which is substantially flat, enabling the container to stand upright, a top portion (4) with a neck to which sealable closure means such as a closure cap may be attached, and a single fold line (8) consisting of an indentation of a surface of a wall portion which transversely crosses the container, enabling the base of the container to be folded upwards and the body portion generally flattened.

Fig.1



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This invention relates to plastic bottles, in particular to a way of making plastic bottles more easily disposable and environmentally-friendly.

It is already known to incorporate into plastics bottles fold lines, to make them more readily collapsible and therefore easier to dispose of. For example, in Canadian patent 2,021,398 (Duering), there are described collapsible bottles which are essentially square or rectangular in cross section, and contain a plurality of fold lines to aid the collapsibility of the bottle.

In addition, there is commercially available from Supermatic Kunststoff AG a collapsible bottle, which again is essentially rectangular in cross section, and has fold lines on it positioned so as to aid its collapsibility, such that it may be collapsed to as little as 8% of its original volume. This is of use both for ease of transportation of the empty bottle prior to filling and use, and also for ease of disposal after use. The fold lines on the Supermatic bottle design which aid collapsibility include two vertical fold lines in the middle of the sides of the bottle, and two sets of fold lines on all sides of the bottle (i.e. on the back, front and sides of the bottle), both at the top and the bottom, to allow the essentially rectangular top and bottom faces of the bottle to collapse on to either the front or the back panels of the bottle.

A problem associated with these known bottle designs is the number of fold lines that are to be found in the bottle design to enable it to adequately collapse. The bottle design of the Duering patent requires that the bottle should have at least two long, vertical fold lines of the sides of the bottle, whilst the Supermatic bottle design has two long vertical fold lines along the sides of the bottle, and two horizontal fold lines which run around the whole of the bottle body. This leads to problems in that the bottle design may be undesirably weakened by the number of fold lines required, and hence requires the bottle to be made of a more rigid plastic than would otherwise be necessary.

We have surprisingly discovered that it is possible to produce a collapsible but sturdy bottle design with only one horizontal fold line on the bottle, and yet provide a bottle with good collapsibility properties and which is convenient to manufacture, and has good performance in use. Because it has only one fold line, the resulting bottle is generally sturdier than prior art bottle designs, and therefore need not be made of more rigid or denser plastic than usual to compensate for structural weaknesses caused by having many fold lines. The bottle design of the invention is particularly applicable to bottles which have an essentially oval cross section.

Thus, according to the invention, there is provided a flexible walled container having a body portion with wall portions, a bottom portion which is substantially flat, enabling the container to stand upright, a top portion with a neck to which sealable closure means such as a closure cap may be attached, and a single fold line consisting of an indentation of a surface of a wall portion which transversely crosses the container, and runs substantially parallel to the bottom portion of the bottle, enabling the base of the container to be folded upwards and the body portion generally flattened.

Preferably, the fold line is only on one wall portion of the container, with that section of the container being wider than, or equal in breadth to any other wall portion of the container.

Preferably, the fold line is located substantially towards the bottom portion of the container on a wall portion, horizontally (with regard to the bottom portion), and at a distance from the bottom of around half the maximum width of the bottom portion. In practice this is often within about 2 centimetres of where the wall portion meets the bottom portion.

The container according to the invention may conveniently be made from plastics materials, for example by blow-moulding techniques.

Preferably, the container has a substantially oval cross section.

The invention will now be described with reference to the accompanying example.

Figure 1 shows a front view of a bottle according to the invention.

Figure 2 shows a bottom view of a bottle according to the invention.

Figure 3 shows a side view of a bottle according to the invention.

Figure 1 shows a bottle having a body portion 1, which is made up of two wall portions, a front wall (not shown) and a back wall 2. The bottle is substantially oval in cross section (as shown by figure 2), and therefore does not have discernable side walls.

Body portion 1 has a bottom portion 3 which is substantially flat, and which allows the bottle to stand upright. Body portion 1 also has a top portion 4 having sloping shoulders 5, and a conventional neck 6 to which a closure cap (not shown) may be attached, for example by means of a screw thread 7. Neck 6 also has an orifice (not shown) through which fluid contained in the bottle may be dosed and dispensed.

Located towards the bottom portion 3 of the bottle is a single fold line 8. The bottle has only one fold line, located in this embodiment on the back wall of the bottle, although it could equally well be located on the front wall. Conveniently the single fold line 8 is located between recess fold lines 9, which are moulded into the bottle. Recess fold lines 9 facilitate the folding flat of the bottom

portion 3 of the bottle, such that bottom portion 3 may be substantially parallel to back wall 2 after folding.

Figure 3 shows a side view of the bottle, in particular the relation of recess folds 9 and fold line 8.

Claims

1. A flexible container having:
a body portion with wall portions;
a bottom portion which is substantially flat, enabling the container to stand upright;
a top portion with a neck to which sealable closure means may be attached;
a single fold line consisting of an indentation of a surface of a wall portion which transversely crosses the container, enabling the base of the container to be folded upwards and the body portion flattened.

2. A container according to claim 1, wherein the fold line is only on one wall portion of the container, that wall portion being wider than, or equal in breadth to, any other wall portion of the container.

3. A container according to any of the preceding claims, wherein the single fold line runs substantially parallel to the bottom portion of the bottle.

4. A container according to any of the preceding claims, wherein the single fold lines is located between recess fold lines.

5. A container according to any of the preceding claims, wherein the container has a substantially oval cross section.

6. A container according to any of the preceding claims, wherein the fold line is positioned on the bottle at a distance from the bottom portion of half of the maximum width of the bottom portion.

7. A container according to any of the preceding claims, wherein the single fold line is located within 2cm of the bottom portion.

8. A container according to any of the preceding claims, manufactured from blow-moulded plastics materials.

Fig.1

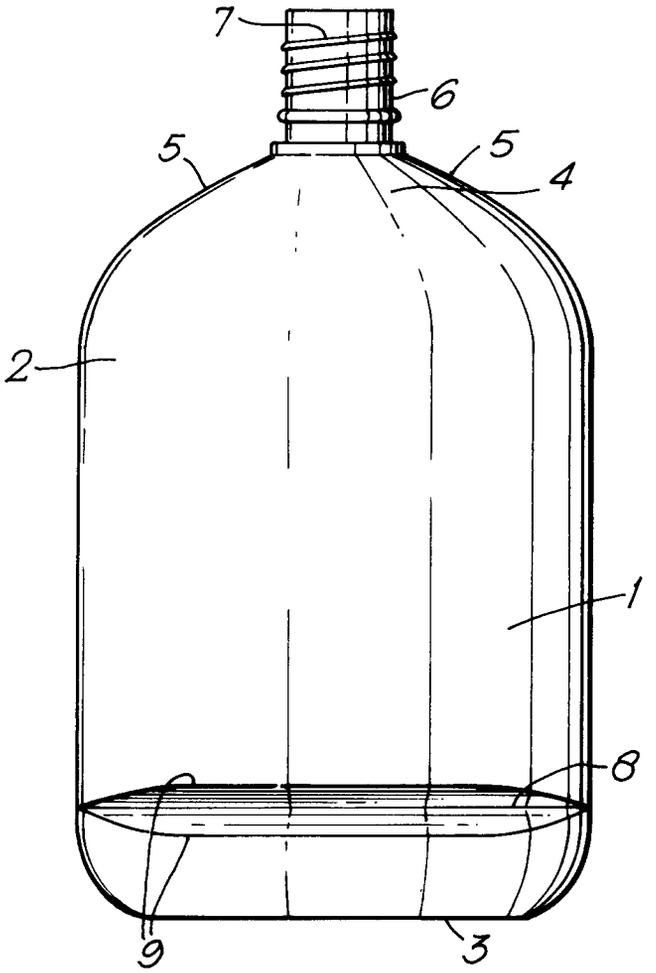


Fig.3.

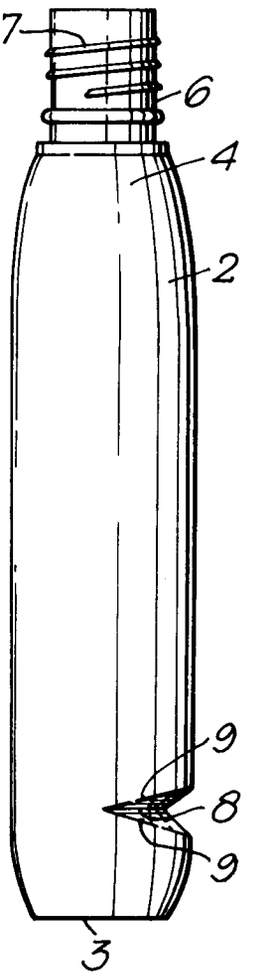
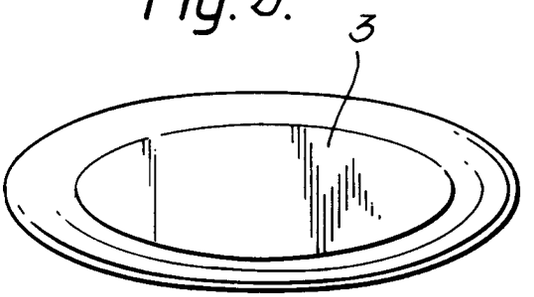


Fig.2.



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EUROPEAN SEARCH REPORT

Application Number

EP 93 30 2108

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 521 417 (BENCKISER) * column 1, line 51 - line 54 * * column 3, line 27 - column 4, line 37 * * figures 1-3 *	1-8	B65D1/02
A	FR-A-2 607 109 (CASTANET) * page 2, line 17 - page 3, line 6; figure 1 *	4	
A	EP-A-0 511 596 (SUPERMATIC)		
D,A	CA-A-2 021 398 (DUERING)		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	30 AUGUST 1993	MARTENS L.G.R.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
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T : theory or principle underlying the invention
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