

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

Publication number:

0 441 966 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45)

Date of publication of patent specification: **30.11.94**

(51)

Int. Cl.⁵: **B65D 23/00**

(21)

Application number: **90910184.2**

(22)

Date of filing: **06.07.90**

(86)

International application number:
PCT/JP90/00867

(87)

International publication number:
WO 91/00832 (24.01.91 91/03)

(54)

BOTTLE MADE OF SYNTHETIC RESIN.

(30)

Priority: **07.07.89 JP 80237/89 U**

(43)

Date of publication of application:
21.08.91 Bulletin 91/34

(45)

Publication of the grant of the patent:
30.11.94 Bulletin 94/48

(84)

Designated Contracting States:
AT BE CH DE ES FR GB IT LI NL

(56)

References cited:
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Description

The present invention relates to a relatively large synthetic resin bottle-shaped container.

Biaxially oriented blow-moulded bottle-shaped containers made of acrylonitrile resin or polyethylene terephthalate resin are popularly used because of their mechanical strength, transparency and other excellent properties.

Such biaxially oriented blow-moulded bottle-shaped containers are generally divided into two groups:

- (1) those having a semispherically bulged bottom for an enhanced internal pressure resistance and provided with a base cup that serves as a stand; and
- (2) those having a bottom with an internally depressed central area that serves as a stand for self-standing without a base cup.

A bottle-shaped body having a self-standing capability is advantageous over a bottle-shaped body provided with a base cup in terms of ease of cleaning, sterilization, moulding and assembling as well as of overall appearance.

However, a self-standing bottle-shaped body has only a small bottom area that supports the bottle-shaped body relative to the cross sectional area of a body portion and therefore is less stable when it stands by itself.

More specifically, when a circular peripheral portion of the bottom that serves as a stand for the bottle-shaped body is formed by depressing the central area of the bottom by blow-moulding, the circular peripheral portion of the bottom is inevitably located nearer to the centre of the bottom than the outer circumference of the body portion. This fact results in the reduced bottom area that supports the bottle-shaped body in an upright condition.

Moreover, when a high internal pressure is applied to such a self-standing bottle-shaped body, the bottom portion forming a stand is subjected to a relatively large expansion, which in turn adversely affects the self-standing capability of the bottle-shaped body to a significant extent. Such an expansion can result in a deformation.

On the other hand, in a bottle-shaped body provided with a base cup to keep it upright, the height of the base cup is required to be relatively large in order to accommodate the outwardly projecting semispherical bottom portion of the bottle-shaped body so that the overall appearance of the bottle-shaped container will be aesthetically poor, because of the disproportionately large base cup. Moreover, the bottom of such a bottle-shaped body is not protected from expansion and deformation when a large internal pressure is applied thereto.

Besides, a biaxially oriented blow-moulded bottle-shaped container made of acrylonitrile resin is insufficiently resistive to shocks applied to the bottom and can produce cracks and fissures on the bottom when it is inadvertently dropped.

US-A-3,927,782 describes a previously proposed base for a round bottomed container. The base comprises a central bottom panel, a connecting ring for coupling the base to the container and an annular support channel joining the bottom panel to the ring. The annular support channel includes parallel channel walls and a groove therebetween. The inner channel wall being smaller in the axial direction than the outer channel wall. This construction has some of the disadvantages described above.

In view of the above described problems, it is therefore the aim of the present invention to provide a bottle-shaped container having a depressed area at the centre of the bottom which is to be provided with a pedestal as self-standing means wherein the bottom has an enhanced and stable self-standing capability and is protected from any expansion and deformation and at the same time is highly resistive to shock.

Accordingly the present invention is directed to a synthetic resin bottle-shaped container comprising; a biaxially-oriented blow-moulded bottle-shaped body having a press-fit recess on a curved outer peripheral surface area of a curved bottom portion; and a pedestal body having a straight and cylindrical upper half portion with an outer diameter substantially equal to that of a body portion of the bottle-shaped body and a pedestal-shaped lower half portion; in which the upper half portion of the pedestal body is so configured as to be closely engaged along its length with the press-fit recess on its curved inner peripheral surface, and the pedestal-shaped lower half portion of the pedestal body is cylindrical and so configured as to accommodate the bottom of the bottle-shaped body so that the lowest end of the lower half portion of the pedestal body is positioned below the lowest end of the bottom portion of the body.

The press-fit recess formed on the curved peripheral surface area of the bottle-shaped body is preferably so formed that the recess is progressively deeper toward the lower end thereof.

The press-fit recess is formed progressively deeper toward the lower end thereof on the curved outer peripheral surface area of the bottom portion, and the matching curved inner surface area which is formed on the inner peripheral surface of the upper half portion of the cylindrical pedestal body is tapered toward the upper end thereof. Therefore, the bottom of the bottle-shaped body is closely engaged with the pedestal body by simply pressing the bottle-shaped body downwards until the

curved outer peripheral surface area of the bottom of the bottle-shaped body is completely in contact with the matching curved inner peripheral surface area of the cylindrical upper half portion of the pedestal body.

When the press-fit recess formed on the curved outer peripheral surface area of the bottle-shaped body is so configured that the recess is progressively deeper toward the lower end thereof and a relatively high projecting portion is provided at the lower end of the press-fit recess, a press-fit rib projecting at the lower end of the curved inner peripheral area of the cylindrical upper half portion of the pedestal body is closely engaged with the high projecting portion to produce a firm and stable engagement between the bottle-shaped body and the pedestal body.

With such an arrangement, since the curved outer peripheral surface of the bottom of the bottle-shaped body is closely engaged with the inner surface of the pedestal body, an enhanced inner pressure is supported by the inner surface of the pedestal body, and the bottom of the bottle-shaped body is protected against any undesirable expansion and deformation due to such an enhanced inner pressure.

Besides, since the lowest end of the lower half portion of the pedestal body is always positioned below the lower end of the bottom of the bottle-shaped body, the lower end surface of the pedestal body provides a firm and stable support for the bottle-shaped body regardless of expansion and deformation of its bottom.

Moreover, since the pedestal body is not integral with the bottle-shaped and the pedestal body serves as a shock absorber that effectively protects the bottom of the bottle-shaped body from cracks and fissures, the bottom of the bottle-shaped body has sufficiently high resistance to any shock even if the bottle-shaped container is made of acrylonitrile resin and it is dropped from a high position.

An example of a container made in accordance with the present invention will be described in greater detail with reference to the accompanying drawings, in which:

Figure 1 is a front view of such a container showing the pedestal body in partial longitudinal cross section; and

Figure 2 is an enlarged longitudinal sectional view showing only the encircled area of Figure 1.

In Figures 1 and 2, a biaxially-oriented blow-moulded bottle-shaped body portion 1 made of synthetic resin. A bottom portion 3 is integrally formed at the lower end of the body portion 2 of the bottle portion 1. The bottom section 3 has a depressed area 6 at the centre thereof and a peripheral projecting area surrounding the de-

pressed area can serve as a stand or support structure in a conventional hollow bottle-shaped body of the self-standing type.

Now referring to Figure 2, a relatively long press-fit recess 4 is formed on the outer peripheral surface area of the curved surface of the bottom portion 3 near the body portion 2. The recess 4 is so configured that its depth is progressively increased as it approaches the lower end thereof. Therefore, a relatively high projecting portion 5 is formed at the lower end of the press-fit recess 4.

On the other hand, a pedestal body 7 for supporting the bottle-shaped body 1 is formed as a whole in the form of a short and straight cylinder. An upper half cylindrical portion 9 of the pedestal body 7 is provided with a curved inner surface area 10 matching the outer peripheral surface area of the press-fit recess 4. Since both the curved surfaces have a same radius of curvature, they are closely engaged with each other in a press-fit manner when assembled. A press-fit rib 11 projects from the lower end of the curved inner surface area 10 of the upper half cylindrical portion 9 of the pedestal body and is closely engaged with the lower edge of the press-fit recess 4 when assembled.

With such an arrangement, since a step is formed at the boundary between the press-fit cylindrical upper half portion 9 and the lower half pedestal portion 8 of the pedestal body 7, the projecting portion 5 does not constitute any obstacle when the bottle-shaped body 1 and the pedestal body 7 are assembled.

The press-fit rib 11 is so sectionally constructed in a sharp top shape that it can be resiliently deformed. The curved inner surface area 10 is so tapered toward the upper end thereof that it provides a guide surface for properly engaging the bottle-shaped body 1 with the pedestal body 7. The press-fit rib 11 can be resiliently deformed and easily pass over the projecting portion 5 for engagement of the bottle-shaped body 1 and the pedestal body 7 when they are assembled together.

Because of the engagement between the rib 11 and the projecting portion 5, the pedestal body 7 is strongly fitted to the bottom portion 3 of the bottle-shaped body 1 once they are assembled.

The pedestal body 7 is made of a synthetic resin material which is highly resistive to shock and therefore can provide satisfactory protection for the bottle-shaped body 1 against external shock even when the bottom portion 3 of the bottle-shaped body 1 is made of acrylonitrile resin.

Because of the construction described above, the present invention provides the following advantages.

Firstly, since the pedestal body is formed in the form of a short and straight cylinder having an outer diameter substantially identical with that of the body portion of the bottle-shaped container, the flat bottom surface of the lower end of the pedestal body provides the stable support for the bottle-shaped body in its upright position.

Secondly, since the overall height of the pedestal body is only slightly greater than that of the bottom portion having a depression at the centre thereof, the pedestal body has a sufficiently reduced height relative to that of the elongated bottle-shaped main body. Consequently, the pedestal body does not provide a poor impression of the container in appearance.

Thirdly, since the pedestal body is tightly press fitted to the outer peripheral area of the bottom portion of the bottle-shaped body, it can effectively prevent any expansion and deformation of the bottom portion occurring due to an enhanced internal pressure. Consequently, the resistance against the inner pressure of the bottle-shaped body having a depressed central area at the bottom portion can be considerably increased.

Additionally, since the bottle-shaped body is closely engaged with the pedestal body by a simple press-fit operation, the two bodies can be assembled without any difficulty. Moreover, since the two bodies are conveniently and mutually guided to a proper position, they can be accurately assembled.

Finally, since the pedestal body is made of a highly shock-absorbing synthetic resin material, it can effectively protect the bottom portion of the bottle-shaped body from external impacts, and prevent the bottle-shaped body from damage when the container is dropped even if the container is made of a material having a relatively poor shock resistance, such as acrylonitrile resin.

Claims

1. A synthetic resin bottle-shaped container comprising;
 - a biaxially-oriented blow-moulded bottle-shaped body (1) having a press-fit recess (4) on a curved outer peripheral surface area of a curved bottom portion (3); and
 - a pedestal body (7) having a straight and cylindrical upper half portion (9) with an outer diameter substantially equal to that of a body portion (2) of the bottle-shaped body (1) and a pedestal-shaped lower half portion (8);
 characterised in that the upper half portion (9) of the pedestal body (7) is so configured as to be closely engaged along its length with the press-fit recess on its curved inner peripheral surface (10), and the

pedestal-shaped lower half portion (8) of the pedestal body (7) is cylindrical and so configured as to accommodate the bottom of the bottle-shaped body (1) so that the lowest end of the lower half portion (8) of the pedestal body (7) is positioned below the lowest end of the bottom portion of the body (1).

2. A synthetic resin bottle-shaped container according to claim 1, characterised in that the press-fit recess (4) formed on the curved outer peripheral surface area of the bottom portion (3) of the bottle-shaped body is so formed that the recess is progressively deeper toward the lower end thereof.

Patentansprüche

1. Flaschenförmiger Behälter aus Kunststoff, der aus folgenden Teilen besteht: einem biaxial orientierten, blasgeformten, flaschenförmigen Körper (1) mit einer eingepreßten Vertiefung (4) in einem gekrümmten, äußeren Umfangsbereich eines gekrümmten Bodenteils (3), und einem Sockel (7), der eine gerade und zylindrische obere Hälfte (9) mit einem Außendurchmesser hat, der im wesentlichen mit dem des Körpers (2) des flaschenförmigen Körpers (1) identisch ist, und mit einer sockelförmigen, unteren Hälfte (8), dadurch gekennzeichnet, daß die obere Hälfte (9) des Sockels (7) so geformt ist, daß sie längs ihrer Länge an ihrer inneren Umfangsfläche (10) mit der eingepreßten Vertiefung im Eingriff ist und daß die sockelförmige untere Hälfte (8) des Sockels (7) zylindrisch und so ausgeführt ist, daß sie den Boden des flaschenförmigen Behälters (1) aufnimmt, so daß das unterste Ende der unteren Hälfte (8) des Sockels (7) unterhalb des untersten Endes des Bodens des Körpers (1) liegt.
2. Flaschenförmiger Behälter aus Kunststoff nach Anspruch 1, dadurch gekennzeichnet, daß die eingepreßte Vertiefung (4), die an der gekrümmten äußeren Umfangsfläche des Bodens (3) des flaschenförmigen Körpers ausgebildet ist, so geformt ist, daß die Vertiefung in Richtung auf ihr unteres Ende zunehmend tiefer wird.

Revendications

1. Récipient en forme de bouteille en résine synthétique comportant :
 - un corps (1) en forme de bouteille moulé par soufflage avec orientation biaxiale présentant un évidement (4) d'ajustement serré sur

une zone de surface périphérique extérieure arrondie d'une partie de fond arrondie (3) ; et

un corps de socle (7) ayant une moitié supérieure cylindrique et droite (9) présentant un diamètre extérieur sensiblement égal à celui d'une partie de corps (2) du corps (1) en forme de bouteille et une moitié inférieure (8) en forme de socle ;

caractérisé en ce que

la moitié supérieure (9) du corps (7) de socle est configurée de façon à être étroitement engagée, sur sa longueur, avec l'évidement d'ajustement serré sur sa surface périphérique intérieure arrondie (10), et la moitié inférieure (8) en forme de socle du corps de socle (7) est cylindrique et est configurée de façon à loger le fond du corps (1) en forme de bouteille afin que l'extrémité la plus basse de la moitié inférieure (8) du corps de socle (7) soit positionnée au-dessous de l'extrémité la plus basse de la partie de fond du corps (1).

2. Récipient en forme de bouteille en résine synthétique selon la revendication 1, caractérisé en ce que l'évidement (4) d'ajustement serré formé sur la zone de surface périphérique extérieure arrondie de la partie de fond (3) du corps en forme de bouteille est formé de manière que l'évidement soit progressivement plus profond vers son extrémité inférieure.

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FIG. 1

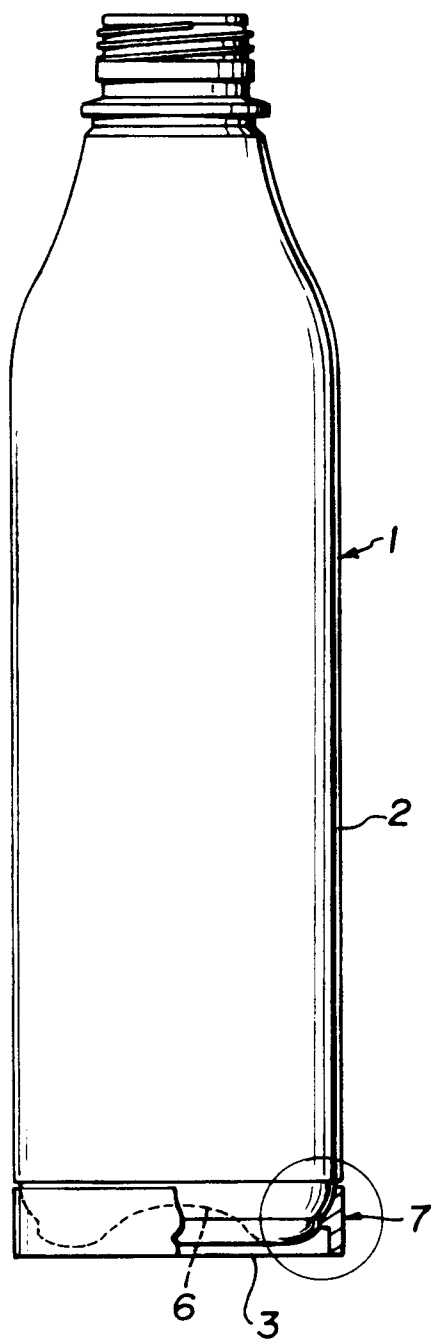


FIG. 2

