

**TITLE: BASE CONFIGURATION FOR BIAXIAL STRETCHED BLOW
MOLDED PET CONTAINERS**

BACKGROUND OF THE INVENTION

There are a variety of base configurations for
5 biaxially stretched blow molded PET containers on the
market. These include configurations, for example,
described in U.S. Patent No. 4,785,949 and U.K. Patent
Application No. 2067160. The former (see FIGS. 5 and 6)
comprises a central convex portion and five radiating
10 legs, and is characterized in that the legs and feet are
generally of the same outline as the ribs and legs of a
base configuration having six legs and feet, thereby
rendering the ribs between the feet greater rich. The
latter (see FIGS. 7 and 8) disclose a base configuration
15 with a concave central portion formed therein, the
periphery of the concave central portion intersecting a
lower end of an inclined rim. However, stress cracks or
even rupture is initiated in such base configuration when
the applied pressure exceeds a certain critical level.
20 Therefore, it is an object of the present invention
to provide a base configuration for biaxial stretched blow
molded PET containers which may obviate and mitigate the
above-mentioned drawbacks.

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SUMMARY OF THE INVENTION

This invention relates to an improved base configuration for biaxially stretched blow molded PET containers.

5 It is the primary object of the present invention to provide a base configuration for biaxially stretched blow molded PET containers which has a high internal pressure resistance

 It is another object of the present invention to
10 provide a base configuration for biaxially stretched blow molded PET containers which possesses a high drop impact resistance.

 It is still another object of the present invention to provide a base configuration for biaxially stretched
15 blow molded PET containers which has good standing stability.

 It is still another object of the present invention to provide a base configuration for biaxially stretched blow molded PET containers which is of high blow
20 moldability and strength to resist cracking.

It is a further object of the present invention to provide a base configuration for biaxially stretched blow molded PET containers which has a larger volume than it would otherwise have.

5 The invention accordingly consists of features of constructions and method, combination of elements, arrangement of parts and steps of the method which will be exemplified in the constructions and method hereinafter disclosed, the scope of the application of which will be
10 indicated in the claim following.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of the present invention;

FIG. 2A is a bottom view of the present invention;

FIG. 2B is a sectional view taken along section line

5 2B-2B of FIG. 2A;

FIG. 3 is a sectional view taken along section line

3-3 of FIG. 2A;

FIG. 4 illustrates the structure of the ribs;

FIG. 5 is a front view of a prior art PET container;

10 FIG. 6 is a bottom view of FIG. 5;

FIG. 7 is a front view of another prior art PET
container; and

FIG. 8 is a bottom view of FIG. 7.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

For purpose of promoting an understanding of the principles of the invention, reference will now be made to the embodiment illustrated in the drawings. Specific language will be used to describe same. It will, nevertheless, be understood that no limitation of the scope of the invention is thereby intended, such alternations and further modifications in the illustrated device, and such further applications of the principles of the invention as illustrated herein being contemplated as would normally occur to one skilled in the art to which the invention relates.

With reference to the drawings and in particular to FIG. 1 thereof, the numeral 100 denotes a plastic container which is characterized in the base configuration 200. The container 100 is made of PET (polyethylene telephthalate), such as PET material, which is biaxially stretched blow molded from a preform.

As shown in FIGS. 2A, 2B and 3, the base configuration 200 is provided with a generally spherical

surface, the center of which there is formed a concave spherical portion 1. The concave spherical portion 1 is designed to provide greater strength and improve the thermal stability, so as to prevent the base 200 from stress cracking and increase the flexibility thereof.

The lower edge of the concave spherical portion 1 first extends upwardly and outwardly and then downwardly and outwardly thereby forming a first protruding circular member 11 on the circumferential edge of the concave spherical portion and a closed annular groove 2 around the first protruding circular member 11. Further, the circumferential edge of the annular groove 2 extends upwardly and outwardly to form a second protruding circular member 12. Hence, the base configuration 200 is provided with greater strength and prevented from stress cracking.

Five legs extend radially outwardly from the second protruding circular member 12, each of which comprises an inner side 31, a lower side 32, left and right sides 33, and an outer side 34. The inner side 31 is an inclined

surface extending radially and outwardly with respect to the second protruding circular member 2. The lower side 32 is a horizontal surface of an inclined surface extending radially and inwardly with respect to the second protruding circular member 2. The left and right sides 33 are inclined surfaces. The outer surface 34 is a curved surface extending downwardly from the body of the container 100. The left side and right side 33 of each leg 3, together, subtend an angle A of 72 degrees (shown in FIG. 2A).

Between every two legs 3 there is a curved rib 4 which subtends an angle of 0 degree. As shown in FIGS. 2A and 4, the curved ribs U1, U2, U3, U4 and U5 have an umbrella bone structure thereby further strengthening the structure of the base configuration.

As illustrated in FIGS. 2A, 2B and 4, the base configuration 200 according to the present invention is characterized in the concave spherical portion 1, the first protruding circular member 11, the annular groove 2, the second protruding circular member 12, the ribs having

an umbrella bone structure and each of the ribs subtending an angle of 0 degree and , and the left and right sides of each leg, together (defining the circumferential arc subtended by the outer surface 34) subtending an angle of 5 72 degrees. Hence, the present invention can be clearly distinguished from the prior art shown in FIGS. 5-8. Further, in numerous experiments using biaxially stretched blow molding techniques, the base configuration of the present invention possesses higher strength than those 10 prior art configurations.

The invention is naturally not limited in any sense to the particular features specified in the forgoing or to the details of the particular embodiment which has been chosen in order to illustrate the invention.

15 Consideration can be given to all kinds of variants of the particular embodiment which has been described by way of example and of its constituent elements without thereby departing from the scope of the invention. This invention accordingly includes all the means constituting technical 20 equivalents of the means described as well as their combinations.



I CLAIM:

1. A base configuration for a biaxially stretched
blow molded PET container, comprising:

- 5 a concave spherical portion disposed centrally in
 said base configuration;
- a first protruding circular member disposed on a
 circumferential edge of said concave spherical
 portion;
- 10 an annular groove disposed around said first
 protruding circular member;
- a second protruding circular member disposed
 around said annular groove;
- five legs extending radially outwardly from said
 second protruding circular member, each of said
15 legs including:
 - (a) an outer surface having a substantially
 spherical surface contour and extending a lower
 surface;
 - (b) an inner side surface extending radially
20 outwardly and downwardly from said second



protruding circular member to said lower surface;

5 (c) a pair of inclined left and right sides, each of said sides extending radially from said second protruding annular member to said outer surface and downwardly to said lower surface; and

10 (d) five curved ribs having an umbrella bone structure, each of said five curved ribs being formed between a respective pair of said five legs and extending from said second protruding circular member to said outer surface of each of said respective pair of legs.

2. The base configuration as recited in Claim 1,
15 wherein said lower surface is substantially horizontal.

3. The base configuration as recited in Claim 1, wherein said lower surface is inclined upwardly toward said second protruding circular member.

4. The base configuration as recited in Claim 1,
20 where said outer surface has an angular extent approximating 72 degrees.

5. The base configuration as recited in Claim 1, wherein each of said ribs has an angular extent approximating 0 degree.

THIS SHEET HAS BEEN
REPLACED

ABSTRACT

A base configuration for use with biaxially stretched blow molded PET containers is provided. In particular, the base includes a concave spherical portion disposed at a central position on the base. A first protruding circular member is formed around the circumference of the concave spherical portion. An annular groove is disposed around the first protruding. A second protruding circular member is formed around the circumference of the annular groove. Five legs extend radially outward from the second protruding circular member. The outer surface of each leg subtends an angle of 72 degrees, and a curved rib is formed between every pair of legs, the ribs having an umbrella bone structure and each of the ribs subtending an angle of 0 degree, whereby the base of the container has an increased internal pressure resistance and thus prevents cracking in the base.

FIGURE NO. 2B

This Sheet Has Been Replaced



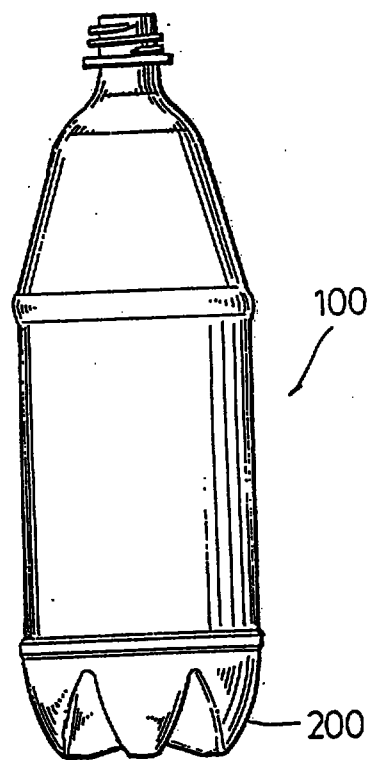
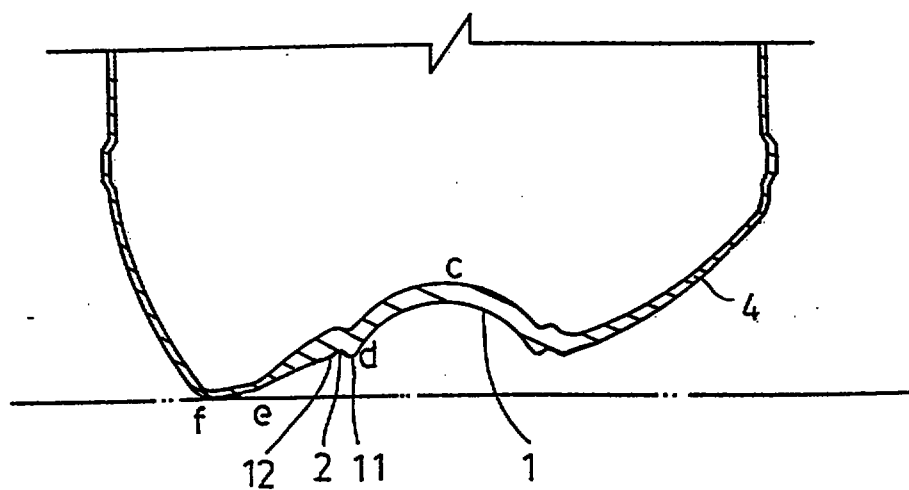


FIG. 1



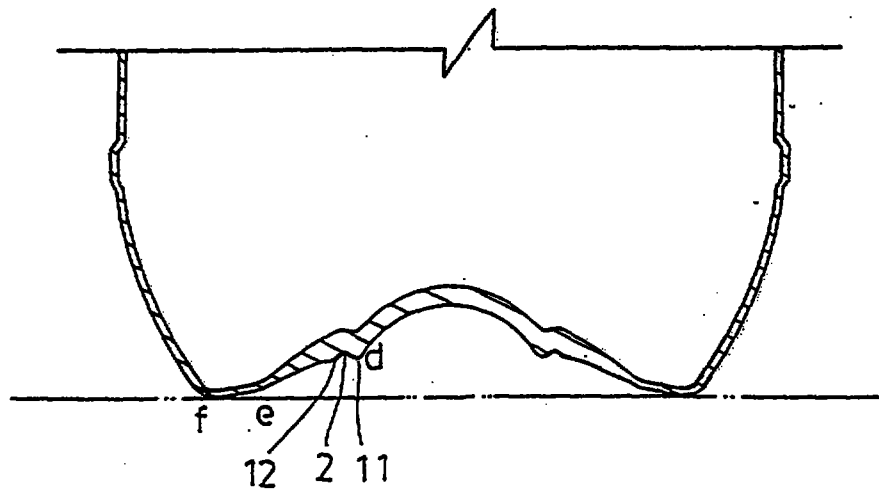


FIG. 3

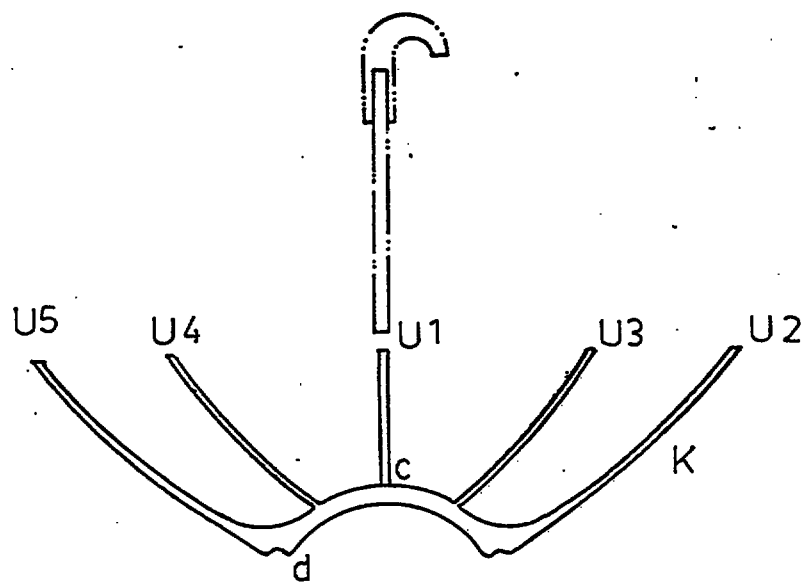


FIG. 4

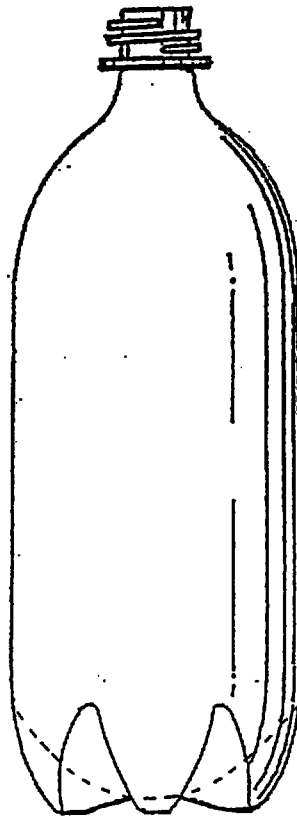


FIG. 5

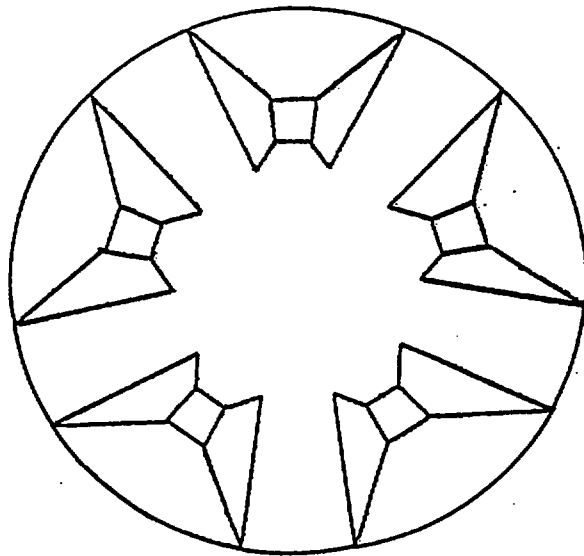


FIG. 6

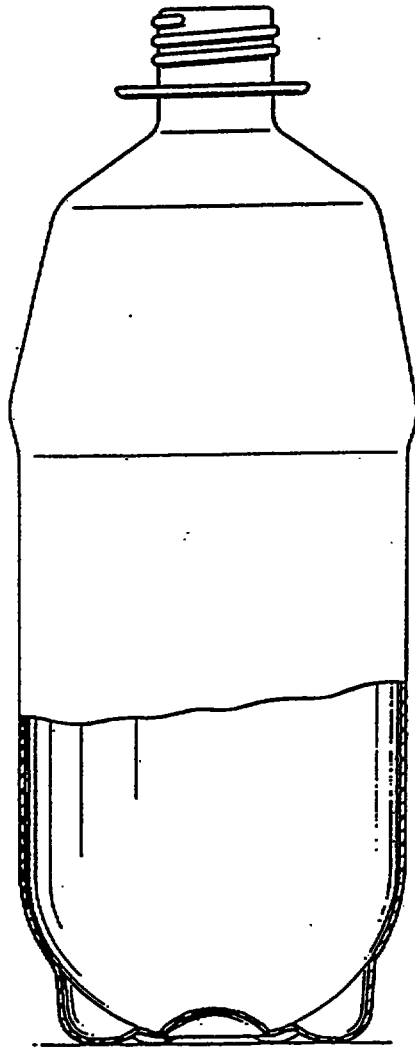


FIG. 7

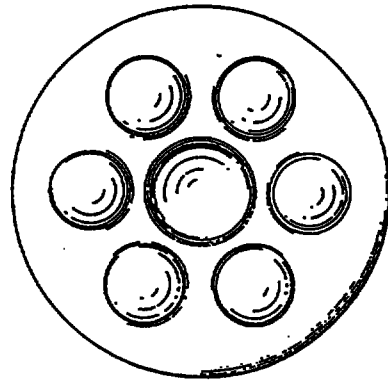


FIG. 8

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ABSTRACT

BASE CONFIGURATION FOR BIAXIAL STRETCHED BLOW MOLDED PET CONTAINERS

A base configuration for use with biaxially stretched blow molded PET containers is provided. In particular, the base includes a concave spherical portion disposed at a central position on the base. A first protruding circular member is formed around the circumference of the concave spherical portion. An annular groove is disposed around the first protruding. A second protruding circular member is formed around the circumference of the annular groove. Five legs extend radially outward from the second protruding circular member. The outer surface of each leg subtends an angle of 72 degrees, and a curved rib is formed between every pair of legs, the ribs having an umbrella bone structure and each of the ribs subtending an angle of 0 degree, whereby the base of the container has an increased internal pressure resistance and thus prevents cracking in the base.

FIGURE NO. 2B

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