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P. H. HUNTER

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BLOW-MOLDED ARTICLE

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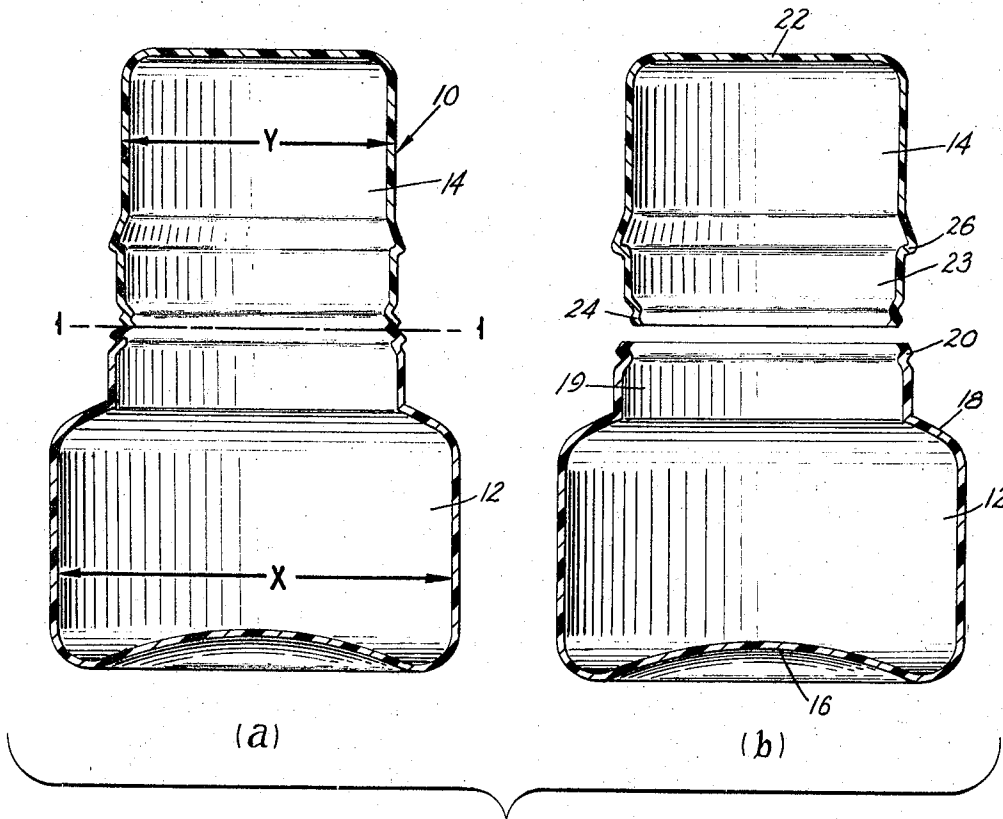
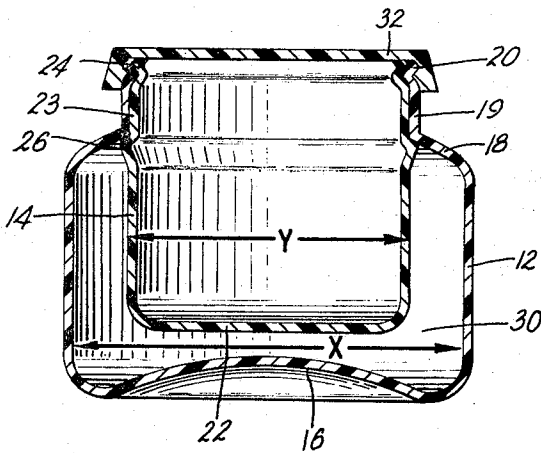


Fig. 1.



INVENTOR
PAUL H. HUNTER
BY *Malter C. Kellum*
ATTORNEY

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BLOW-MOLDED ARTICLE

Paul H. Hunter, New Brunswick, N.J., assignor to Union Carbide Corporation, a corporation of New York
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This invention relates to a blow-molded article and more particularly to a blow-molded double wall container with air space between the walls thereof.

The drug and cosmetics industries require large numbers of containers for packaging their products. For a number of reasons glass is widely used for such containers despite its acknowledged disadvantages such as fragility and weight.

Because many of the products of these industries are sensitive to heat, the mere substitution of unbreakable, lightweight containers, for instance of plastics, has not proved satisfactory. To provide thermal insulation such containers have been made with a double wall for example by placing a cup within a cup leaving an air space between the outer wall of the inner cup and the inner wall of the outer cup. Such constructions have proved to be not only expensive but unexpectedly nonuniform in size and strength when the individual parts are produced by conventional injection molding.

Accordingly, it is an object of this invention to provide a blow-molded hollow body formed in one piece and designed to be separated and re-assembled to form a low cost unbreakable container which provides good thermal insulation to ingredients contained therein.

The present invention provides a blow-molded double wall, plastic container with air space between the walls thereof which comprises an outer container body and an inner container body, each of the container bodies having a closed bottom and a beaded neck portion. The beaded neck portion of the outer body is adapted to receive the beaded neck portion of the inner container body in airtight, leakproof, interlocking frictional assembly therewith. In addition, the outer container body has an inner diameter greater than the outer diameter of the inner container body such that when the neck portions are placed in interlocking frictional assembly, the container bodies form a double wall container with air space between the walls thereof. Also, the beaded neck portion of the outer container body is adapted to receive closure means for the double wall container. Furthermore, the inner container body is formed integral with the outer container body in a blow-molding operation and is adapted to be severed therefrom, inverted and snapped into the beaded neck portion of the outer container body in interlocking frictional assembly therewith.

In another aspect, the beaded neck portion of the inner container body may advantageously be provided with buttress shaped beads constructed and oriented to provide for easy application of the inner container body as closure means for the outer container body while providing substantial resistance to withdrawal of the inner container body from the outer container body.

Advantageously, the beaded neck portion of the outer container body may be outwardly flanged to receive a snap-on cap for the double wall container.

In the drawing:

FIG. 1a is a sectional view of a blow-molded container constituting one embodiment of the invention;

FIG. 1b is a view of the container of FIG. 1a showing the separation of the container along line 1—1 of FIG. 1a into two parts; and

FIG. 2 is a sectional view illustrating the assembled form of the container produced from the parts of FIG. 1b.

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Referring now to the drawing, there is shown in FIG. 1a, a blow-molded generally cylindrical hollow body 10 having portions of different diameters and being closed at both ends. The body 10 is separated along the line 1—1 into two portions adapted to serve as an outer container body 12 and an inner container body 14 (FIG. 1b) when re-assembled to form a container as shown in FIG. 2.

The outer container body 12 has a closed concave bottom 16, an inwardly extending peripheral shoulder 18 and a neck portion 19 extending upwardly from the shoulder 18 and having a peripheral bead 20 at its upper end. The inner container body 14 has a closed bottom 22, a neck portion 23 corresponding in length to the neck portion 19 of the container body 12, and a peripheral bead 24 at its upper end. A peripheral locking bead 26 provided below the neck portion 23 is adapted to engage the inside of the shoulder 18 of the outer container body 12 when the container bodies 12, 14 are assembled (FIG. 2).

As shown in FIG. 2, when the inner container body 14 is placed within the outer container body 12 not only does the peripheral locking bead 26 engage the inside of the shoulder 18 of the outer container body 12 but the beads 20, 24 also interlock, thereby providing substantially permanent, interlocking frictional assembly of the two bodies in the area of their respective neck portions 19, 23. Furthermore, since the outer container body 12 has an inner diameter (x) greater than the outer diameter (y) of the inner container body 14, when the container bodies 12, 14 are assembled, a double wall container having an air space 30 between its walls is provided. As shown a snap-fit cap 32 is provided on the assembled container, but of course a screw-on cap could be used as well, or a conventional stopper placed within the neck of the inner container body 14.

As stated, production of the containers of the invention commences with blow-molding. The blow-molding process is relatively inexpensive because it requires a substantially less expensive mold than the injection molding system. Furthermore, the blow-molding process forms the container in one piece, thereby assuring precision fit of the inner container body within the outer container body. Also, the blow-molding operation can produce containers of various sizes and shapes. However, it is desirable to produce the container of the invention in the range of sizes required for packaging cosmetic creams, ointments, shampoos, and the like. While the blow-molding process is most suitable for forming the depicted cylindrical container, other shapes such as elliptical, triangular, rectangular and a number of other polygonal shapes can be produced. In addition, the walls of the container can be provided with flutes, corrugations or ribs.

Any blow-moldable material may be used for fabrication of containers in accordance with the invention. Typical choices are thermoplastic compositions such as polyethylene copolymers, polypropylene, polystyrene and mixtures thereof, copolymers of ethylene and propylene, mixtures of such polyolefins, and polyvinyl halides. However, the choice of material will be dictated in part by the ingredients intended to be packaged.

The air space between the walls of the outer and inner container bodies, provides excellent thermal insulation to product contained within the inner container body. Also, opaque plastic compositions provide good protection from light. Coatings may be applied to the walls of the container to produce high gloss for decorative effects, barrier properties for oils, perfumes, and the like.

In addition, the double wall container can be used for packaging two-component systems, for instance two powdered materials, where one is used in conjunction

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with the other. Specifically, one compound would be packaged in the outer container body and the other compound would be packaged in the inner container body.

While the aforementioned double wall container is especially suitable for cosmetic creams, ointments, shampoos, and perfumes, other materials may be packaged therein including powders, chemicals, adhesives, and the like.

What is claimed is:

1. A blow-molded hollow body which comprises:
 - (a) integral portions of different diameters;
 - (b) said body being closed at both ends and adapted to be separated into two portions;
 - (c) said portions adapted to serve as an outer container body and an inner container body; each of said container bodies having a beaded neck portion;
 - (d) said beaded neck portion of said outer container body being adapted to receive said beaded neck portion of said inner container body in air-tight, leak-proof, interlocking frictional assembly therewith;
 - (e) said outer container body having an inner diameter greater than the outer diameter of said inner container body such that when said neck portions are placed in interlocking frictional assembly, said container bodies form a double wall container with air space between the walls thereof, and
 - (f) said beaded neck portion of said outer container body being adapted to receive closure means for said double wall container.
2. The blow-molded hollow body of claim 1 wherein said beaded neck portion of said inner container body is provided with buttress shaped beads constructed and oriented to provide for easy application of said inner container body as closure means for said outer container body while providing substantial resistance to withdrawal of said inner container body from said outer container body.
3. The blow-molded hollow body of claim 1 wherein said beaded neck portion of said outer container body is outwardly flanged to receive a snap-on cap for said double wall container.
4. A blow-molded hollow body which comprises:
 - (a) integral portions of different diameters;
 - (b) said body being closed at both ends and adapted to be separated into two portions;
 - (c) said portions adapted to serve as an outer container body and an inner container body;
 - (d) said outer container body having an inwardly extending peripheral shoulder and a neck portion extending upwardly from said shoulder and having a peripheral bead at its upper end;
 - (e) said inner container body having a neck portion corresponding in length to said neck portion of said outer container body, a peripheral bead at its upper end, and a peripheral locking bead provided below said neck portion adapted to engage the inside of the shoulder of said outer container body when said container bodies are assembled;
 - (f) the beaded neck portion of said outer container body being adapted to receive the beaded neck portion of said inner container body in air-tight, leak-proof, interlocking frictional assembly therewith;
 - (g) said outer container body having an inner diam-

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eter greater than the outer diameter of said inner container body such that when said neck portions are placed in interlocking frictional assembly, said container bodies form a double wall container body with air space between the walls thereof, and

(h) said beaded neck portion of said outer container body being adapted to receive closure means for said double wall container.

5. The plastic container of claim 4 wherein the beaded neck portion of said inner container body is provided with buttress shaped beads constructed and oriented to provide for easy application of said inner container body as closure means for said outer container body while providing substantial resistance to withdrawal of said inner container body from said outer container body.

6. A blow-molded hollow body which comprises:

- (a) integral portions of different diameters;
- (b) said body being closed at both ends and adapted to be separated into two portions;
- (c) said portions adapted to serve as an outer container body and an inner container body;
- (d) said outer container body having an inwardly extending peripheral shoulder and a neck portion extending upwardly from said shoulder and having a peripheral bead at its upper end;
- (e) an inner container body having a neck portion corresponding in length to said neck portion of said outer container body, a peripheral bead at its upper end, and a peripheral locking bead provided below said neck portion adapted to engage the inside of the shoulder of said outer container body when said container bodies are assembled;
- (f) the beaded neck portion of said outer container body being adapted to receive the beaded neck portion of said inner container body in air-tight, leak-proof, interlocking frictional assembly therewith;
- (g) said outer container body having an inner diameter greater than the outer diameter of said inner container body such that when said neck portions are placed in interlocking frictional assembly, said container bodies form a double wall container body with air space between the walls, thereof, and
- (h) beaded closure means for said double wall container adapted to be placed in interlocking frictional assembly with the beaded neck portion of said outer container body.

7. The blow-molded hollow body of claim 6 wherein said beaded closure means is a snap-on cap.

8. The blow-molded hollow body of claim 6 wherein said beaded closure means is a screw-on cap.

9. The blow-molded hollow body of claim 6 wherein said beaded closure means for said container is adapted to be placed in interlocking frictional assembly with the beaded neck portion of said inner container body.

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FRANKLIN T. GARRETT, *Primary Examiner.*