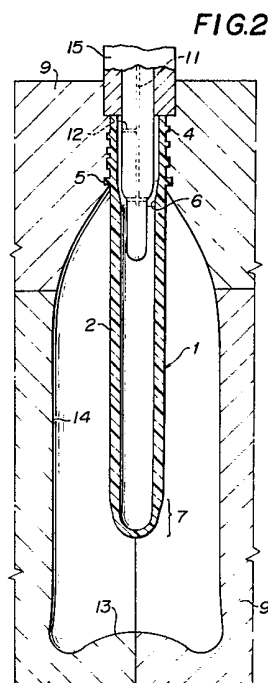


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(54) **Tubular parison for molding bottle-shaped container of synthetic resin**

(57) A tubular parison 1 for molding a bottle-shaped container of biaxially oriented sythetic resin is formed so that the shoulder and bottom forming portions 6, 7 respectively are 80% or less than 80% of the thickness of the body 2 thereof. The parison 1 is stretched by urging a push rod containing blowing passages 11, 12 therein (Figure 3) and then blown into engagement with the mould 9.



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This diagram illustrates a medical device, possibly a catheter or probe, in a cross-sectional view. The device is shown inserted into a body cavity, with the surrounding tissue represented by a hatched pattern. The device components are labeled with numbers: 15 is the handle at the top; 3 is a connector or joint; 6 is a component near the top of the shaft; 10 is the central shaft; 11 and 12 are internal components or channels; 2 is the outer sheath; 14 is a balloon or flexible section; 7 is the distal tip; and 13 is a side opening or port. The device is surrounded by a hatched area labeled 9, which represents the body wall or tissue. The diagram shows the device in a retracted position, with the balloon (14) partially inflated.

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FIG. 2

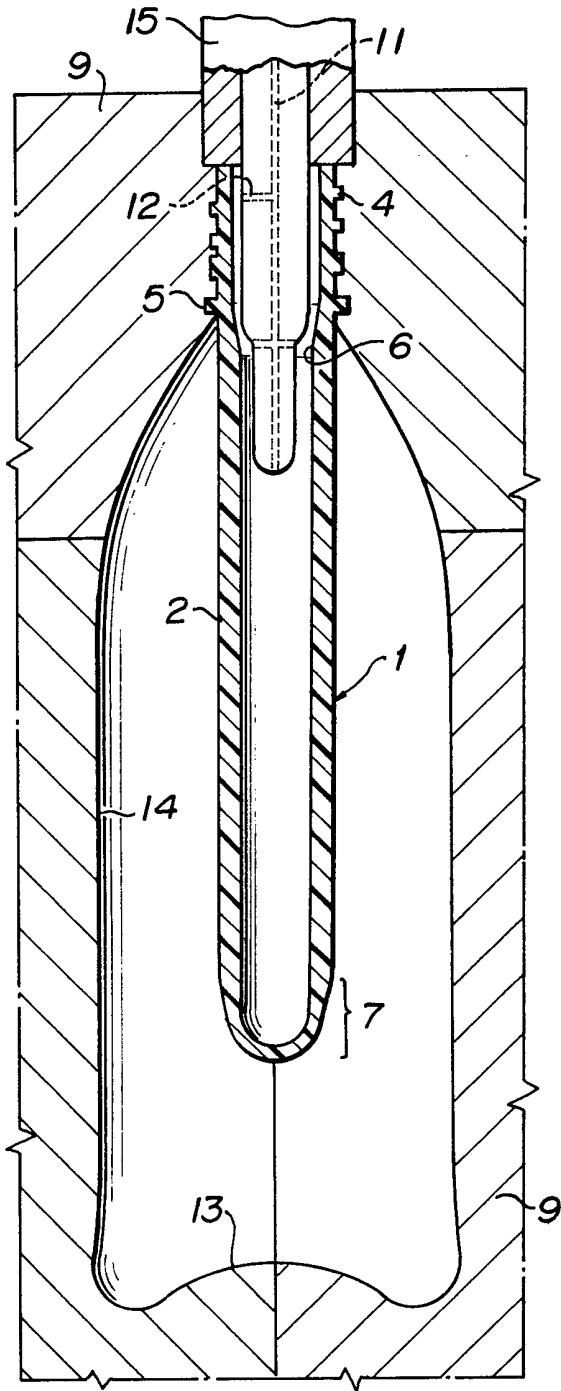
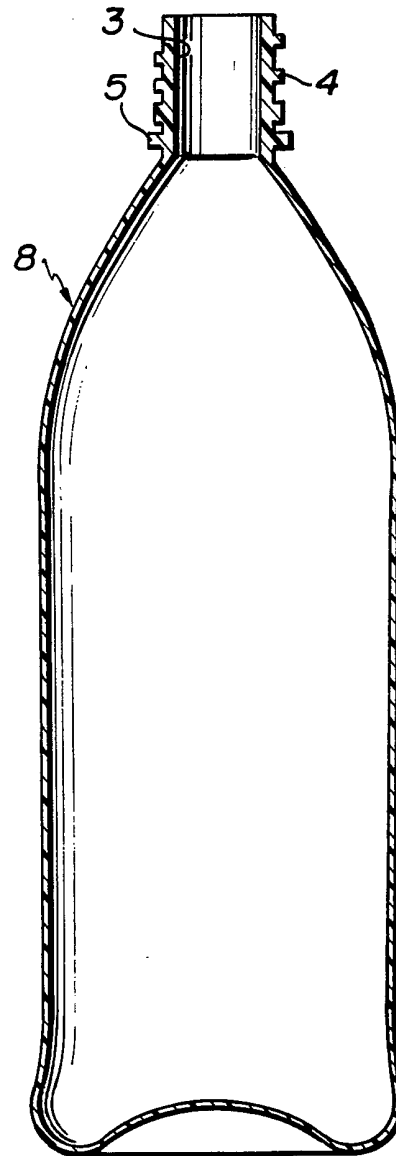


FIG. 4



SPECIFICATION

Tubular parison for molding bottle-shaped container of synthetic resin

5 This invention relates to a bottle-shaped container of synthetic resin and, more particularly, to a tubular parison for molding a bottle-shaped container of biaxially oriented synthetic resin and a bottle-shaped container blow-molded from the tubular parison for adaptively filling, for example, drinking water containing carbon dioxide gas or cooling beverage containing no carbon dioxide gas.

10 Glass bottles are heretofore employed for filling drinking water containing carbon dioxide gas or cooling beverage containing no carbon dioxide gas. Such glass bottles are heavy and expensive in handling the heavy bottles together with its inconvenience. For the purpose of eliminating these disadvantages, light synthetic resin is used as the material of the bottles to enhance the mechanical strength the bottles of synthetic resin by means of biaxial orientation. However, the bottles feasibly result in incomplete biaxial orientation at the bottom center and shoulder thereof and further in thinner walls at the integral part between the peripheral edge of the bottom wall thereof and the lower end of the body thereof than the other portions to thereby cause the strength of the portions to be weakened.

20 It is, therefore, a primary object of this invention to provide a tubular parison for molding a bottle-shaped container of biaxially oriented synthetic resin which can easily be molded by biaxial orientation without aforementioned disadvantages of the conventional bottles of synthetic resin.

25 It is another object of this invention to provide a tubular parison for molding a bottle-shaped container of biaxially oriented synthetic resin which can approach the orientation magnification at the shoulder and bottom portions to that of the body of finally biaxially oriented bottle-shaped container to the same degree.

30 It is a further object of this invention to provide a bottle-shaped container of biaxially oriented synthetic resin blow molded from a tubular parison which is much stronger than the conventional bottle due to advantageous biaxial orientation at the shoulder and bottom portions thereof.

35 It is still another object of this invention to provide a tubular parison for molding a bottle-shaped container of biaxially oriented synthetic resin which is much simple in construction thereof and less expensive than the conventional bottle.

40 The above and other related objects and features of the invention will be apparent from a reading of the following description of the disclosure found in the accompanying drawings and the novelty thereof pointed out in the appended claims.

45 *Figure 1* is a longitudinal sectional view of a tubular parison constructed according to this invention;

Figure 2 is a longitudinal sectional view of a tubular parison set in a mold for biaxially orientation blow molding the same;

50 *Figure 3* is a view similar to *Figure 2* but showing

the state that the tubular parison is axially oriented in the mold; and

Figure 4 is a longitudinal sectional view of the bottle-shaped container blow-molded from the parison.

55 Referring to the drawings, particularly to *Figure 1* showing one preferred embodiment of a tubular parison constructed according to the present invention for molding a bottle-shaped container of biaxially oriented synthetic resin, wherein like reference numerals designate the same parts in the following views, reference numeral 1 generally designates a tubular parison with a bottom and an upper opening for molding a bottle-shaped container of biaxially oriented synthetic resin. The synthetic resin includes, for example, preferably saturated polyester resin, or polypropylene, vinyl chloride, etc. adapted for a biaxial orientation. This tubular parison 1 is formed by an injection molding process.

60 The body 2 of the tubular parison 1 is formed in cylindrical shape preferably. The parison 1 is formed with an upper port forming portion 3 at the top thereof and with threads 4 prefinished on the outer periphery of the upper port forming portion 3 thereof for engaging in mesh with a cap (not shown). The parison 1 is further formed with a flange 5 directed outwardly for engaging the lower end of the peripheral wall of the cap (not shown). The upper portion forming portion 3 is formed above the flange 5 at the parison 1, and is so formed as to be capable of becoming the neck portion as it is of a finally blow-molded bottle-shaped container.

65 The tubular parison 1 of this invention is advantageously so formed that the shoulder forming portion 6 located between the upper port forming portion 3 and the body 2 thereof and a bottom forming portion 7 are approx. 80% thick or less as compared with the body 2.

70 A bottle-shaped container 8 of biaxially oriented synthetic resin as shown in *Figure 4* is blow-molded from the tubular parison 1 by the steps of heating the tubular parison 1 to temperature above glass transition temperature below crystallization temperature to set it in a blow-molding mold 9 (*Figure 2*), clamping them port forming portion 3 of the parison 1 in the mold 9 to elevationally movably insert a push rod 10 slidably supported by a bushing 15 into the interior of the tubular parison 1 as shown in *Figure 2*, and then pushing down the push rod 10 to axially orient the parison 1 as shown in *Figure 3*. The tubular parison 1 is mainly oriented at the thinner portions such as at the shoulder and bottom forming portions 6 and 7 to thus reduce further the thicknesses of both the shoulder and bottom forming portions 6 and 7, respectively as shown in *Figure 3*. When the tubular parison 1 is further oriented to the bottom 13 of the cavity in the mold 9 while blowing high pressure air through blowing passages 11 and blowing inlet 12 perforated at the push rod 10 from the above state, it is urged at the shoulder and bottom forming portions 6 and 7 initially reduced in thickness toward the wall surface 14 of the cavity in the mold 9 and is then biaxially oriented at the body 2 toward the inner wall of the cavity in the mold 9 so as to thereby blow-mold a bottle-shaped container 8.

It is noted that the thickness ratio of the shoulder and bottom forming portions 6 and 7 to the body 2 depends advantageously upon the shape of a finally blow-molded bottle-shaped container and orientation magnification as desired for the bottle-shaped container but may preferably be determined to perform a desired bottle-shaped container by axially orienting the tubular parison 1 prior to the biaxial orientation of the body of the parison 1 to essentially eliminate the insufficiently biaxial orientation at the shoulder and bottom forming portions of the tubular parison 1. If the thickness ratio is excessively less, the tubular parison is simultaneously oriented at the body thereof upon axial orientation thereof at the shoulder and bottom forming portions resulting in insufficient effect.

It should be understood from the foregoing description that since the tubular parison thus constructed according to this invention is approx. 80% or less thick at the shoulder and bottom forming portions thereof than the body thereof, it is much easy to approach the orientation magnification at the shoulder and bottom forming portions of the tubular parison to that of the body of the parison to the same degree by axially orienting initially the tubular parison and then biaxially orienting it. It should also be appreciated that since the tubular parison thus constructed according to this invention is exactly biaxially oriented at the shoulder and bottom forming portions to blow-mold a bottle-shaped container, the bottle-shaped container thus blow-molded is much strong in construction. It should also be understood that since the tubular parison is constructed far simply, the finally blow-molded bottle-shaped container is less expensive.

CLAIMS

1. A tubular parison for molding a bottle-shaped container of biaxially oriented synthetic resin comprising;
an upper port forming portion,
a body,
a shoulder forming portion located between the upper port forming portion and the body, and
a bottom forming portion
wherein the shoulder and bottom portions are substantially 80% thick or less than the body.
2. A bottle-shaped container of synthetic resin fabricated by biaxially orienting the tubular parison claimed in claim 1 in a blow-molding mold.
3. A tubular parison for molding a bottle-shaped container of biaxially oriented synthetic resin, substantially as described herein with reference to Figures 1 to 3 of the accompanying drawings.
4. A bottle-shaped container substantially as described herein with reference to Figure 4 of the accompanying drawings.