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(54) **TRANSLUCENT CONTAINER**

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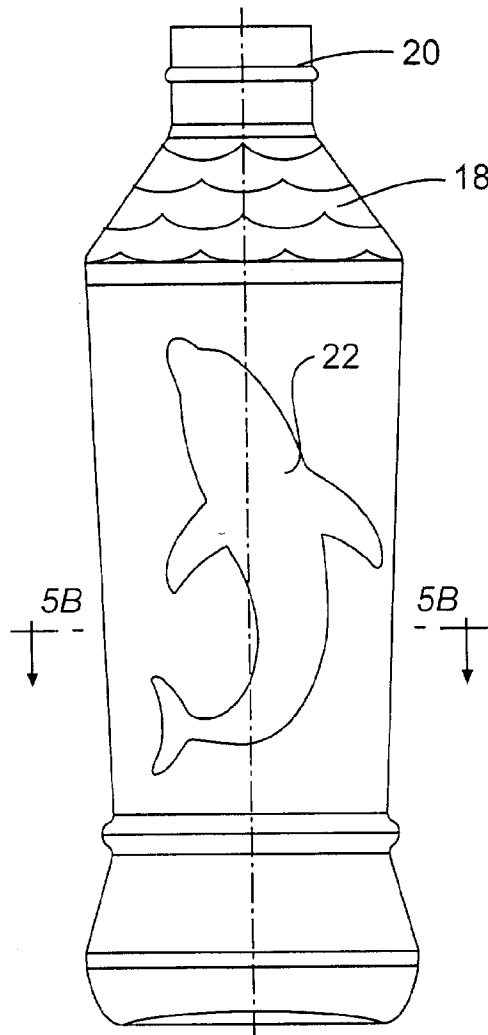
(57) **ABSTRACT**

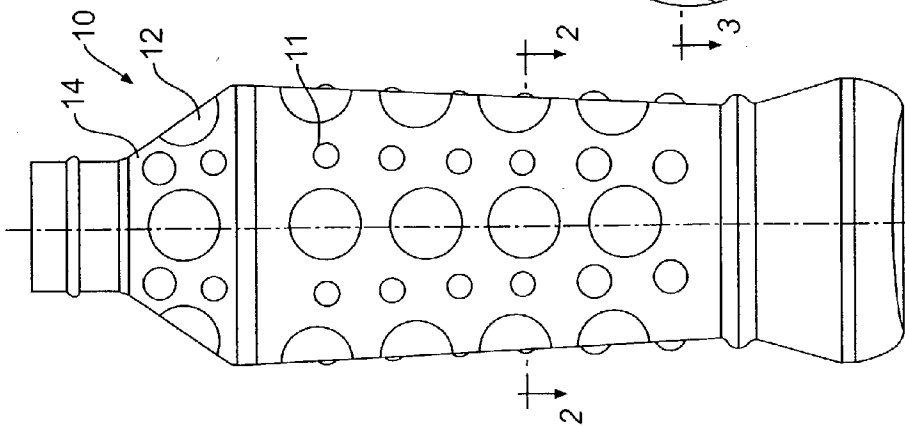
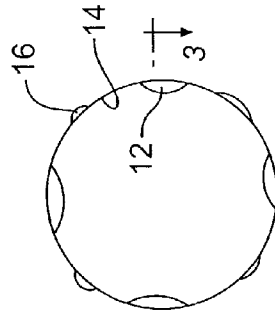
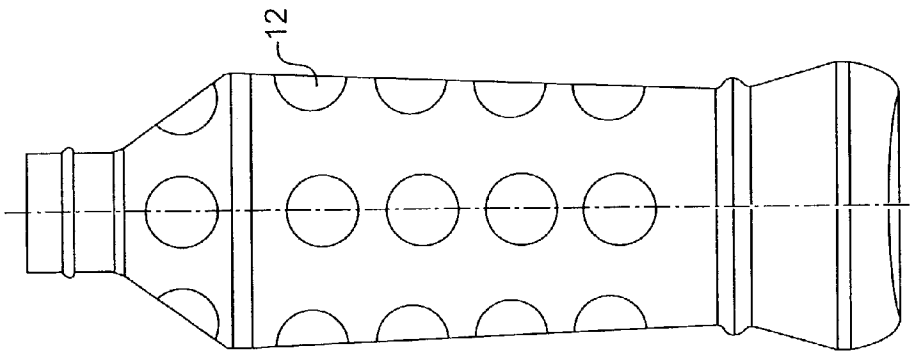
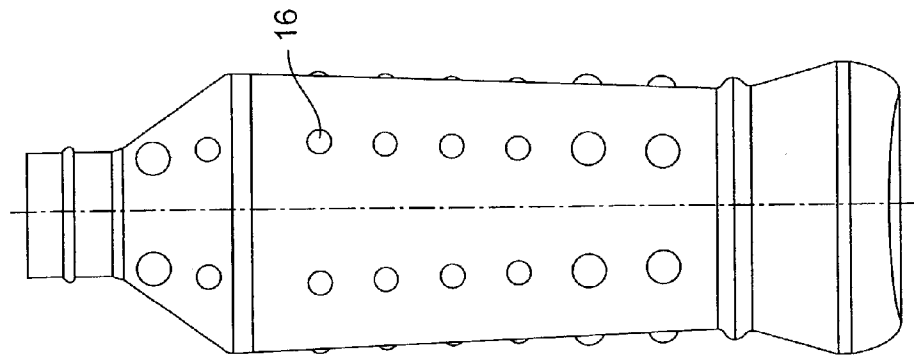
A container for storing a liquid includes at least one translucent or transparent side wall with a first image formed on an interior surface thereof and a second image formed on an exterior surface thereof. The first image is formed in a manner such that it is not visible when the container is filled with the liquid. When the container is substantially empty of the liquid, the first and second images become visible to form a composite image.

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(21) Appl. No.: **10/359,199**

(22) Filed: **Feb. 6, 2003**





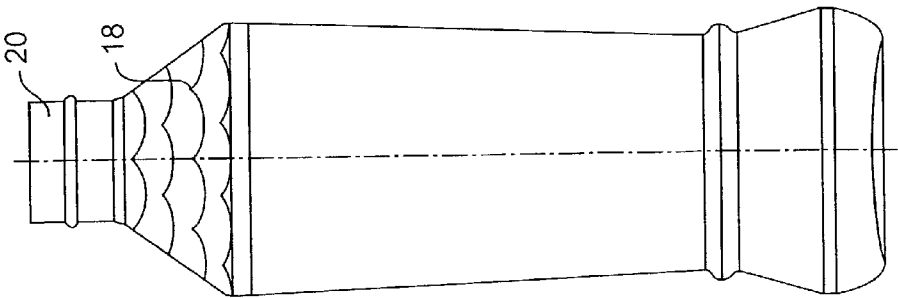


FIG. 7

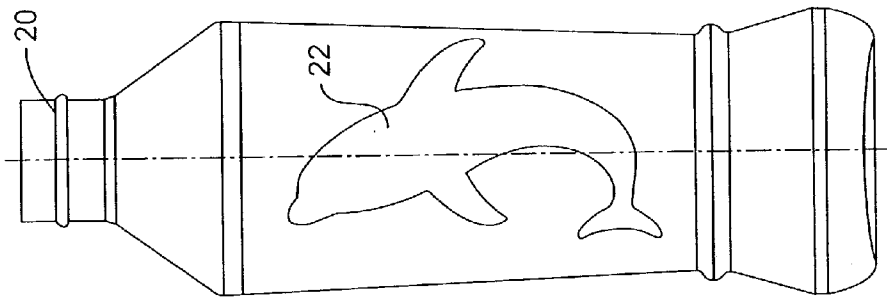


FIG. 6

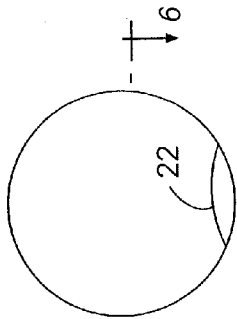


FIG. 5B

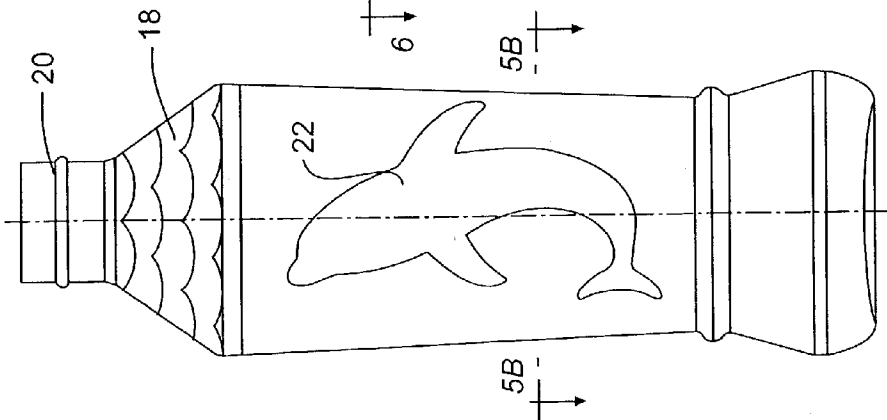


FIG. 5A

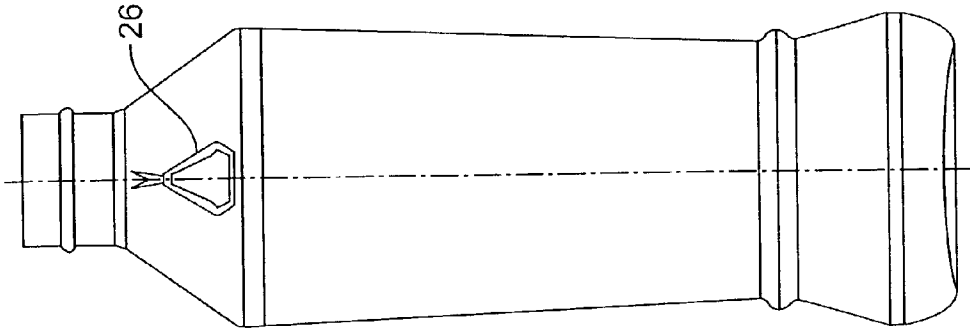


FIG. 10

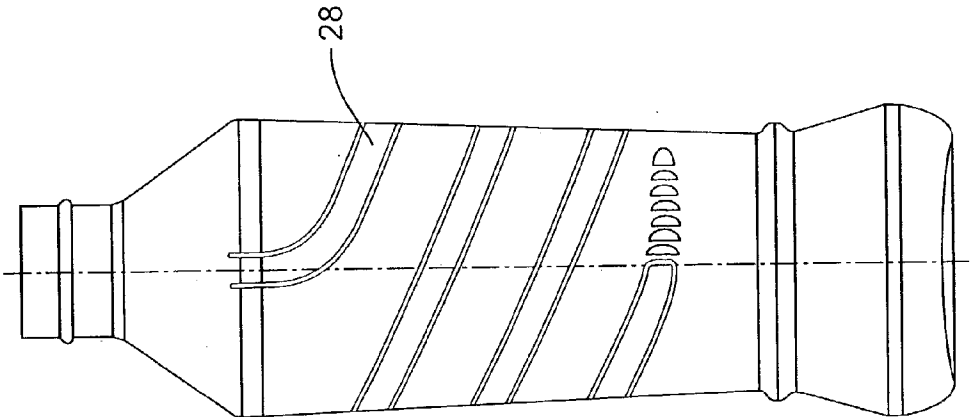


FIG. 9

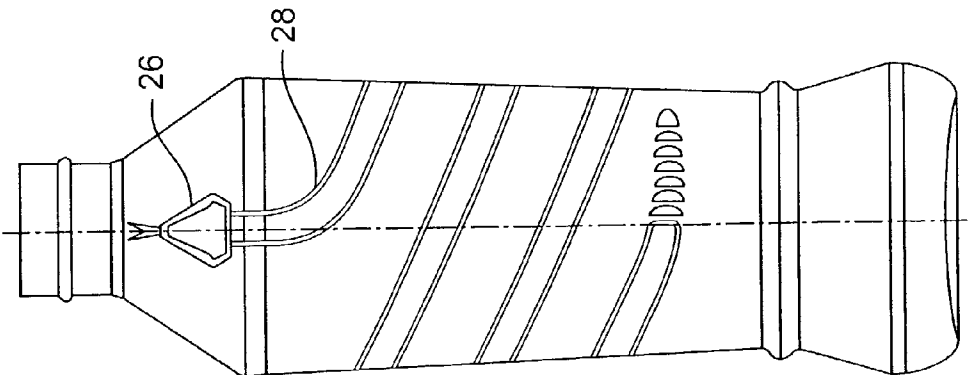


FIG. 8

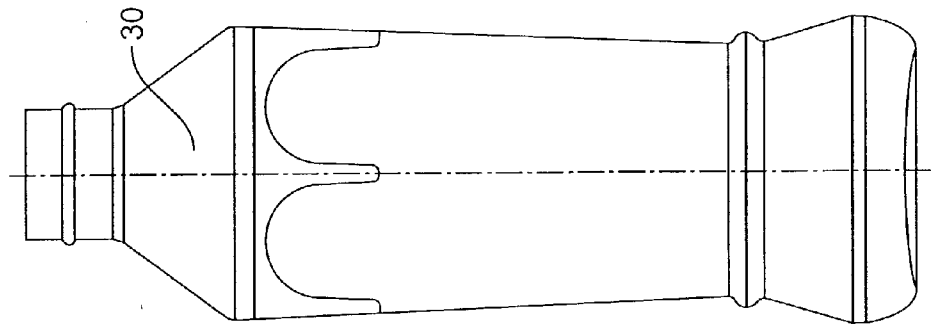


FIG. 11

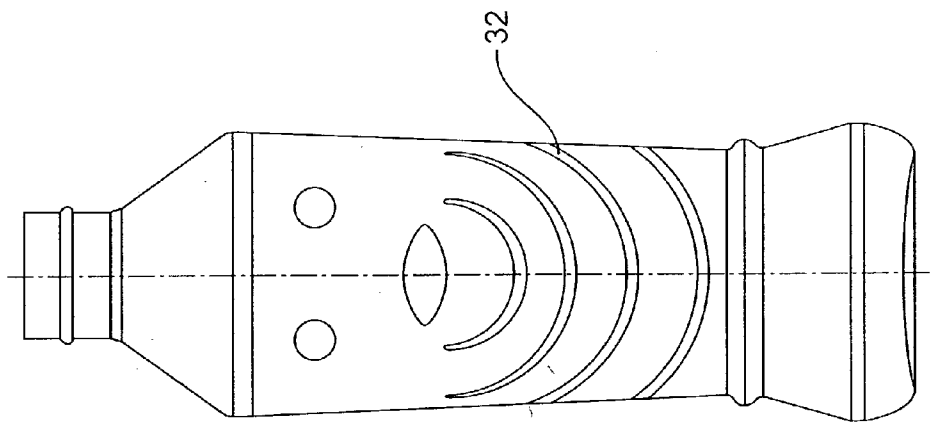


FIG. 12

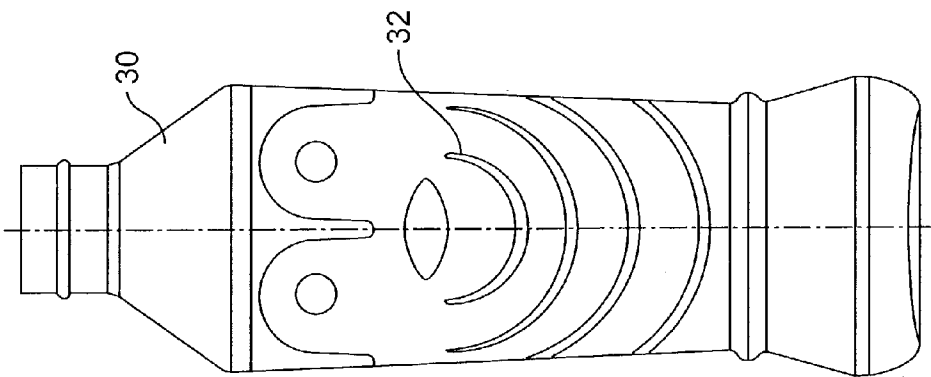


FIG. 13

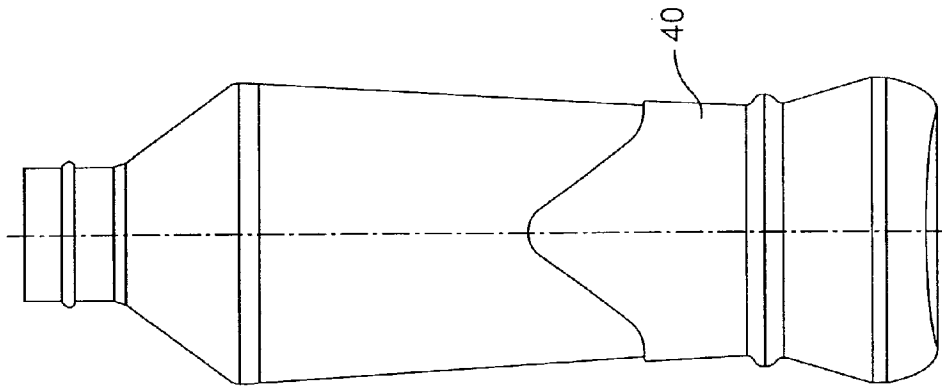


FIG. 16

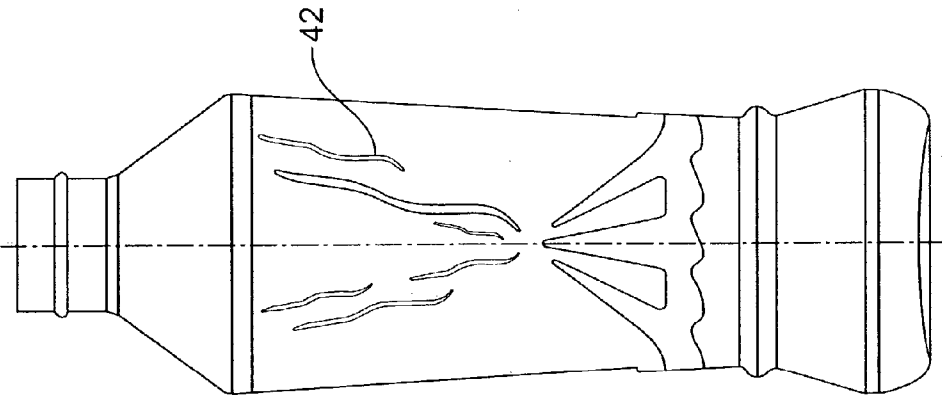


FIG. 15

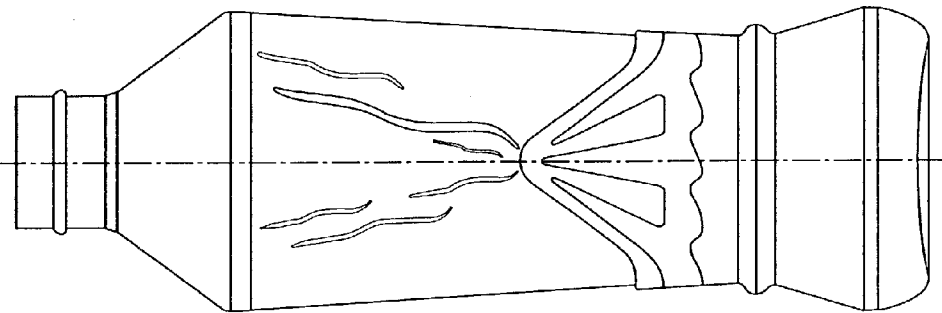


FIG. 14

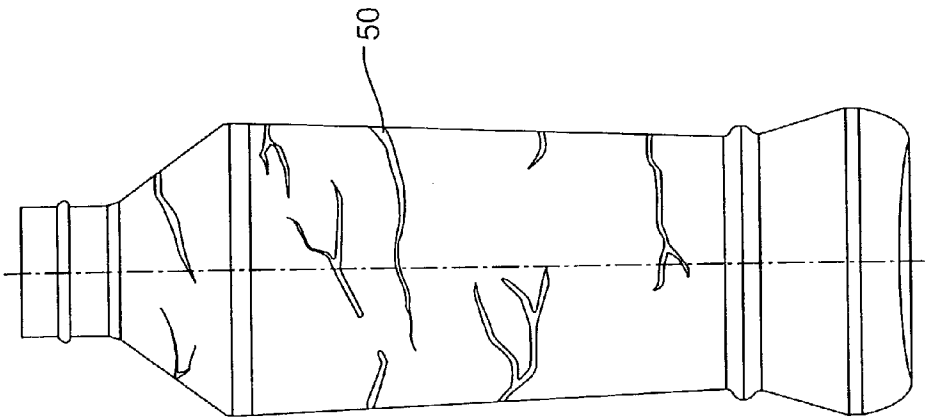


FIG. 17

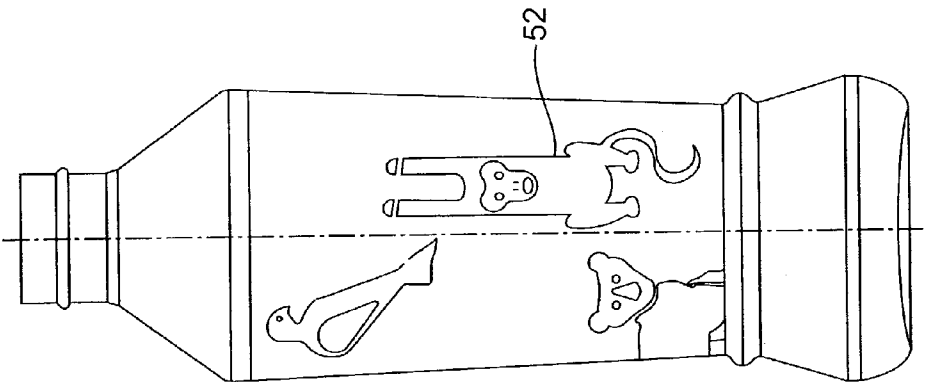


FIG. 18

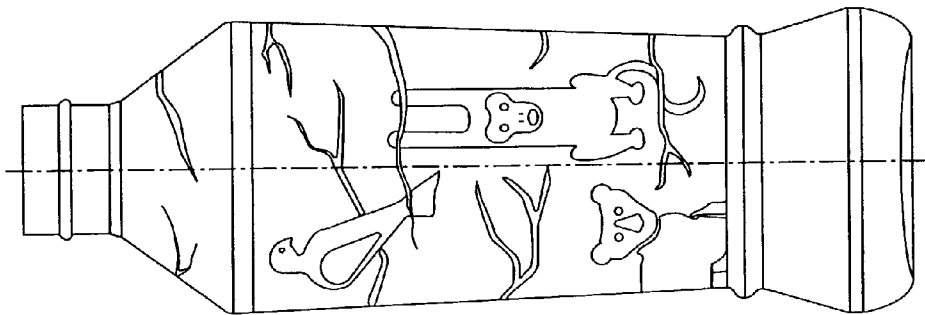


FIG. 19

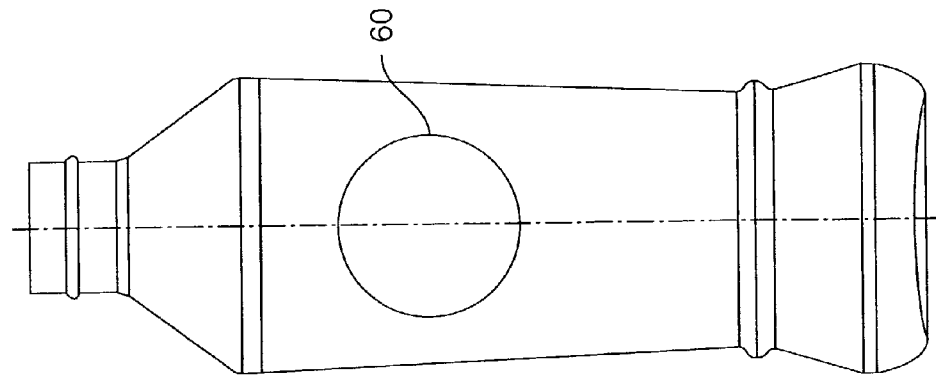


FIG. 22

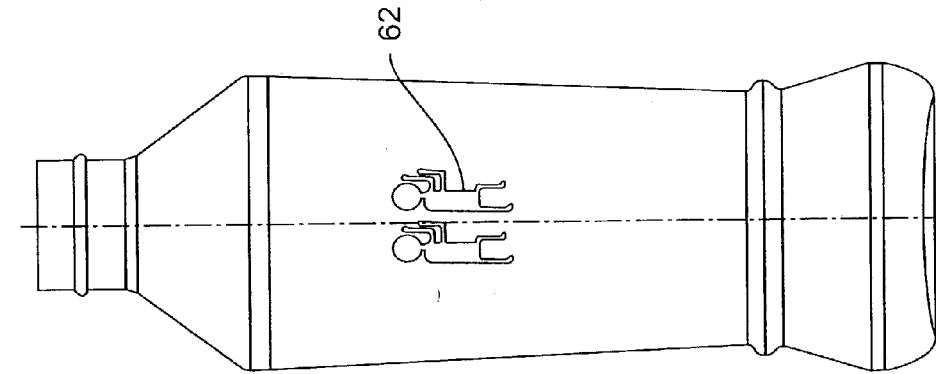


FIG. 21

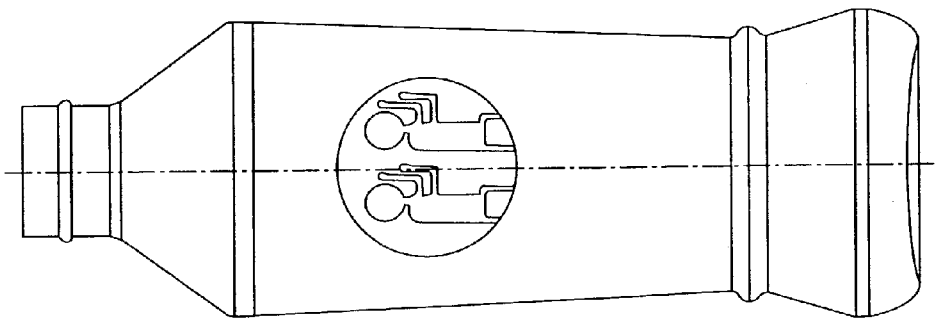


FIG. 20

TRANSLUCENT CONTAINER

[0001] This application claims the benefits of Provisional U.S. Patent Application No. 60/354,273, filed Feb. 6, 2002.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a translucent or transparent container, preferably a glass bottle, for containing a liquid beverage or the like, which has an internal surface containing an embossed or debossed design and an external design on the outer surface of the bottle that consists of a label, painting, coating or the like, including etching or debossing. Preferably, these designs are positioned in predetermined registration to form a composite design or image.

[0004] 2. Description of the Related Art

[0005] It has been found that glass bottles, and other containers, can be formed with an embossed or debossed inner surface design which will be invisible when the container is filled with a liquid, including transparent liquid water. These inner surfaces can be embossed or debossed by known techniques. For example, in the formation of a glass bottle, a glass preform or parison (similar in shape to a test tube with a threaded neck) is formed by injecting molten glass into a hollow mold. The mold surfaces forming the exterior of the preform can be carved or etched so that external embossments are molded on the preform. The preform is then removed from the small mold and placed in a larger mold. The larger mold will have, for example, flat or smoothly curved surfaces located to engage the embossments molded on the hot exterior surface of the preform. As a result, when air is blown into the preform, the outer surface thereof is pressed against the flat surfaces of the finished bottle mold. This forces the embossments to the interior of the preform, i.e., thereby reversing the embossment to the interior of the bottle. Filling the bottle with a liquid will cause the interior embossments to become invisible. When the liquid is dispensed from the bottle, the interior embossments become visible.

SUMMARY OF THE INVENTION

[0006] The present invention can provide a container for a product in which the overall image of the container changes from its full state to its empty state.

[0007] In one aspect, the present invention relates to a container for storing a liquid including at least one translucent or transparent side wall, means for forming a first image on an interior surface of the side wall, the first image not being visible when the container is filled with the liquid, and means for forming a second image on an exterior surface of the side wall. When the container is substantially empty of the liquid, the first and second images are visible to form a composite image.

[0008] According to another aspect, the present invention relates to a method for forming a container for storing a liquid. The method includes the steps of providing at least one translucent or transparent side wall, forming a first image on an interior surface of the side wall such that the first image is not visible when the container is filled with the liquid, and forming a second image on an exterior surface of

the side wall such that when the container is substantially empty of the liquid, the first and second images are visible to form a composite image.

[0009] According to yet another aspect of the present invention, the present invention relates to a container for storing a liquid including at least one translucent or transparent side wall having structure on an interior surface thereof forming a partial design, the structure forming the partial design not being visible when the container is filled with the liquid, and structure forming a complementary design provided on an exterior surface of the side wall. When the container is substantially empty of the liquid, the partial and complementary designs are visible to form a complete design.

[0010] The above, and other aspects, features and advantages of the present invention will be apparent from the following detailed description of the illustrated embodiments thereof which are to be read in connection with the accompanying drawings wherein:

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIGS. 1-4 depict a first embodiment of the present invention. FIG. 1 is an elevational view of an empty container according to the first embodiment, showing interior and exterior features, FIG. 2 is a cross-sectional view along section line 2-2 in FIG. 1, FIG. 3 is a cross-sectional view of the container taken along section line 3-3 of FIG. 2, showing only the interior features of the container, and FIG. 4 is an elevational view showing only the exterior features of the container of FIG. 1, i.e., showing the container when filled with liquid.

[0012] FIGS. 5A, 5B, 6 and 7 depict a container of a second embodiment of the present invention. FIG. 5A is an elevational view of the empty container, showing interior and exterior features, FIG. 5B is a cross-sectional view taken along section line 5B-5B of FIG. 5A, FIG. 6 is a cross-sectional elevation view taken along section line 6-6 of FIG. 5B, showing only the interior features and FIG. 7 is an elevational view of the container when filled, showing only the exterior features.

[0013] FIGS. 8, 9 and 10 depict a container of the third embodiment of the present invention. FIG. 8 is an elevational view of the empty container, showing interior and exterior features, FIG. 9 is a cross-sectional view showing only the interior features thereof, and FIG. 10 is an elevational view of the filled container showing only the exterior features.

[0014] FIGS. 11, 12 and 13 depict a container of a fourth embodiment of the present invention. FIG. 11 is an elevational view of the container when empty, showing interior and exterior features, FIG. 12 is a cross-sectional view of the container showing only the interior features thereof, and FIG. 13 is an elevational view of the filled container, showing only the exterior features.

[0015] FIGS. 14, 15 and 16 depict a container according to a fifth embodiment of the present invention. FIG. 14 is an elevational view of the empty container, showing interior and exterior features, FIG. 15 is a cross-sectional view of the container showing only the interior features, and FIG. 16 is an elevational view of the filled container, showing only the exterior features.

[0016] FIGS. 17, 18 and 19 depict a container according to a sixth embodiment of the present invention. FIG. 17 is an elevational view of the empty container, showing interior and exterior features, FIG. 18 is a cross-sectional view of the container showing only the interior features, and FIG. 19 is an elevational view of the filled container, showing only the exterior features.

[0017] FIGS. 20, 21 and 22 depict a container according to a seventh embodiment of the present invention. FIG. 20 is an elevational view of the empty container, showing interior and exterior features, FIG. 21 is a cross-sectional view of the container showing only the interior features, and FIG. 22 is an elevational view of the empty container, showing only the exterior features.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] A method of forming the containers and details of examples of the containers themselves will now be described. Each container is designed with an interior surface design or image which registers with or complements an exterior surface design or image to form a composite design or image. Preferably, the interior image and the exterior image are partial images that complement one another. When viewed as a whole, the images will combine to give the appearance of a complete, composite image.

[0019] The interior surface design is intended to be invisible when the container is filled with a liquid, such as a beverage including water. In order to accomplish this, the interior surface is embossed or debossed by known techniques to form the interior image. In an ejection molding technique, a glass preform or parison is formed by injecting molten glass into a first, smaller, hollow mold. The mold surfaces forming the exterior of the preform can be carved or etched so that external embossments are molded on the preform. The preform is then removed from the first mold and placed in a larger, second mold. The second mold will have, for example, flat or smoothly curved surfaces located at positions so as to engage the embossed images molded onto the hot exterior surface of the preform by the first mold. When air is blown into the preform, the outer surface thereof is pressed against the flat or smoothly curved surfaces of the second mold. This forces the embossments into the interior of the preform, thereby reversing the embossments to the interior of the container or bottle. When the container is filled with a liquid, the interior embossments become substantially invisible. It is believed that this invisibility occurs as a result of diffraction of light through the liquid and the curved surfaces of the container or bottle, which causes the embossed edges of the interior image to visually disappear. Of course, the internal embossments can be formed by any other suitable method.

[0020] The exterior surface design can take any suitable form. In a preferred embodiment, the exterior image can also take the form of embossments or debossments. The second mold can be formed with cavities or recesses carved or etched into its surface to form the exterior design. At the time the preform is "inflated", the hot glass may enter the cavities or recesses in the surface of the second mold, so as to form the exterior design. When the container is completed and cooled, it will have molded designs on both its interior and exterior surfaces. These interior and exterior designs

preferably register with or complement one another. It is preferred that the exterior design be formed directly opposed to the interior design so that they are only separated by the thickness of the container. For example, the interior and exterior images can be provided on either surface of the front of the container. Thus, the interior and exterior images will more readily be perceived as a single composite image when the container is empty.

[0021] When the completed bottle is filled with a liquid, the interior embossments forming the interior design become invisible. When the liquid is dispensed from the container, the interior embossments become visible and, with the exterior embossments on the bottle, will form a complete and pleasing composite design.

[0022] The exterior design need not be embossed on the container. Rather, the exterior design may be formed by etching, labels, printing with ink, application of paint or the like.

[0023] Turning now to the drawings, FIG. 1 illustrates an empty bottle 10 constructed in accordance with a first embodiment of the present invention. As seen therein, the bottle has two sets of circle patterns. An internal set 12 is formed on the inner surface 14 of the bottle, and an external set 16 of smaller circles is formed on the outer surface of the bottle. The sets of circles may be randomly related or, preferably, positioned in a predetermined relation to one another or in registration with respect to each other to form a complete predetermined pattern, i.e., a composite image, as shown in FIG. 1.

[0024] As seen in the cross-sectional view of FIG. 2, the internal set of circles 12 is formed as internal embossments on the inside surface of the bottle, while the external circles 16 are embossments on the outer surface of the bottle. These embossments are formed by the creation of a parison or preform, as described above.

[0025] FIG. 3 is a cross-sectional view taken along line 3-3 of FIG. 2, and shows the interior of the front face of the bottle, as viewed in FIG. 1, with the set of embossments 12 thereon.

[0026] FIG. 4 is an elevational view with the bottle filled, showing that the inner embossments 12 are invisible and only the external embossments 16 may be seen.

[0027] FIGS. 5A-7 are similar to FIGS. 1-4, and disclose another embodiment of the invention.

[0028] Again, FIG. 5A shows a bottle constructed in accordance with the present invention which is empty. In this case, the bottle has an external wave pattern 18 embossed thereon near its neck 20, and an internal pattern embossed on the inside of the bottle in the shape of a dolphin 22 (see FIG. 5B). When the bottle is empty, both designs can be seen as in FIG. 5A.

[0029] FIG. 6 is a sectional view taken along line 6-6 of FIG. 5B, and shows the embossment 22 on the interior surface of the bottle.

[0030] FIG. 7 is an elevational view showing the bottle when filled. In this condition, as described above, the interior design becomes invisible as a result of the liquid in the bottle and only the external wave pattern 18 is visible.

[0031] FIGS. 8-10 are similar to FIGS. 5-7, showing yet another design in accordance with the present invention. In this case, the empty bottle depicts a complete design of a snake, including a head 26 and a body 28. The body 28 is embossed on the inside of the bottle, as shown in the sectional view of FIG. 9, while the head 26 is on the outer surface of the bottle, near the neck, and is the only thing that is visible when the bottle is full, as shown in FIG. 10. As with the previously described embodiments, the head 26 can be embossed or molded into the surface of the bottle during the blow molding process. Alternatively, it may be printed or painted onto the bottle, or may simply be an adhesive label. The key point is that it is located on the bottle in registration with the interior embossment so that the completed bottle forms a finished, composite design.

[0032] FIGS. 11-13 show yet another design formed on the bottle by an exterior embossment 30 on the head and neck of the bottle, which creates the image of a helmet. The internal design 32 is formed by internal embossing on the inside of the bottle in the form of a face (FIG. 12). Thus, in the empty bottle the two images in registration form the image of a face with a helmet (FIG. 11), while when the bottle is full only the helmet is visible (FIG. 13).

[0033] FIGS. 14-16 show yet another design having an embossed outer surface 40 in the general form of a mountain (FIG. 16), and an inner design 42 on the inside surface of the bottle creating a partial image of a volcano, including smoke escaping from its vent (FIG. 15). The combined designs are in registry and appear as a composite image as in FIG. 14 when the bottle is empty.

[0034] FIGS. 17-19 show the components of yet another registered design on a bottle in accordance with the present invention. In this case, a series of animals 52 are embossed on the inside surface of the bottle (FIG. 18), while branches or trees are either embossed or debossed, printed or painted on the exterior surface of the bottle (FIG. 19). Those elements 50 are visible when the bottle is full, but the animals 52 embossed on the inside surface are not. When the bottle is empty the registered designs form a montage of animals within or about the tree branches (FIG. 17).

[0035] FIGS. 20-22 show yet another bottle in accordance with the present invention, wherein a circular window type design 60 is embossed on the outer surface of the bottle (FIG. 22), and an internal design (in this case consisting of FIG. 62) is formed on the inner surface of the bottle (FIG. 21). Thus, when the bottle is empty, the inner design registers with the window and the design appears as in FIG. 20. Again, as noted above, the exterior design elements are positioned on the bottle in registration with the interior design elements and may be formed in any of a number of different ways.

[0036] It would be obvious to one skilled in the art that the designs to be used in accordance with the present invention can take any of a myriad of forms, and that the shape of the container itself is not limited to the particular shapes illustrated in the drawings.

[0037] While the present invention has been described as to what is currently considered to be the preferred embodiments, it is to be understood that the invention is not limited to them. To the contrary, the invention is intended to cover various modifications and equivalent arrangements within

the spirit and scope of the appended claims. The scope of the following claims is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures and functions.

We claim:

1. A container for storing a liquid comprising:

at least one translucent or transparent side wall;

means for forming a first image on an interior surface of said side wall, said first image not being visible when the container is filled with the liquid; and

means for forming a second image on an exterior surface of said side wall,

wherein when the container is substantially empty of the liquid, the first and second images are visible to form a composite image.

2. The container according to claim 1, wherein the first image is complementary to the second image.

3. The container according to claim 1, wherein said means for forming the first image comprises embossing or debossing on the interior of said side wall.

4. The container according to claim 1, wherein said means for forming the second image comprises embossing on the exterior surface of said side wall.

5. The container according to claim 1, wherein said means for forming the second image comprises printing or painting on the exterior surface of said side wall.

6. The container according to claim 1, wherein said means for forming the second image comprises a label on the exterior surface of said side wall.

7. The container according to claim 1, wherein said means for forming the second image comprises etching on the exterior surface of said side wall.

8. The container according to claim 1, wherein the first image is formed within a first predetermined region on the interior surface and the second image is formed within a second predetermined region on the exterior surface, the first and second predetermined regions being directly opposed to one another through the thickness of said side wall so as to appear to at least partially overlap when viewed from the side of the container.

9. A method for forming a container for storing a liquid, said method comprising the steps of:

providing at least one translucent or transparent side wall;

forming a first image on an interior surface of the side wall such that the first image is not visible when the container is filled with the liquid; and

forming a second image on an exterior surface of the side wall such that when the container is substantially empty of the liquid, the first and second images are visible to form a composite image.

10. The method according to claim 9, wherein the first image is complementary to the second image.

11. The method according to claim 9, wherein said step of forming the first image comprises embossing or debossing the interior of the side wall.

12. The method according to claim 9, wherein said step of forming the second image comprises embossing the exterior surface of the side wall.

13. The method according to claim 9, wherein said step of forming the second image comprises printing or painting the exterior surface of the side wall.

14. The method according to claim 9, wherein said step of forming the second image comprises providing a label on the exterior surface of the side wall.

15. The method according to claim 9, wherein said step of forming the second image comprises etching the exterior surface of the side wall.

16. The method according to claim 9, wherein the first image is formed within a first predetermined region on the interior surface and the second image is formed within a second predetermined region on the exterior surface, the first and second predetermined regions being directly opposed to one another through the thickness of the side wall so as to appear to at least partially overlap when viewed from a side of the container.

17. A container for storing a liquid comprising:

at least one translucent or transparent side wall having structure on an interior surface thereof forming a partial design, said structure forming the partial design not being visible when the container is filled with the liquid; and

structure forming a complementary design provided on an exterior surface of said side wall,

wherein when the container is substantially empty of the liquid, the partial and complementary designs are visible to form a complete design.

18. The container according to claim 17, wherein said structure forming the partial design comprises embossing or debossing on the interior of said side wall.

19. The container according to claim 17, wherein said structure forming the complementary design comprises embossing on the exterior surface of said side wall.

20. The container according to claim 17, wherein said structure forming the complementary design comprises ink or paint on the exterior surface of said side wall.

21. The container according to claim 17, wherein said structure forming the complementary design comprises a label on the exterior surface of said side wall.

22. The container according to claim 17, wherein said structure forming the complementary design comprises etching on the exterior surface of said side wall.

23. The container according to claim 17, wherein the partial design is formed within a first predetermined region on the interior surface and the complementary design is formed within a second predetermined region on the exterior surface, the first and second predetermined regions being directly opposed to one another through the thickness of said side wall so as to appear to at least partially overlap when viewed from the side of the container.

* * * * *