

United States Patent

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[54] CONTAINERS WITH HANGERS AND METHOD OF PREPARING THE SAME

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[57]

ABSTRACT

A method of manufacturing container provided with a flexible hanging member including an annular flat rim and a hanger with its roots connected to the rim. The rim is firmly secured to the bottom of the container by means of a hollow jacket heat shrunk around the main body of the container and on the rim.

4 Claims, 4 Drawing Figures

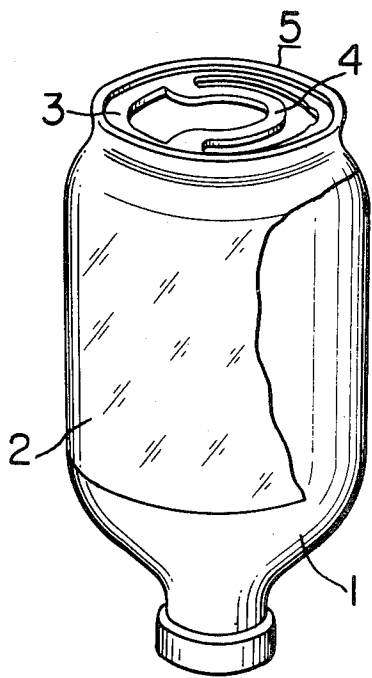


FIG. 1

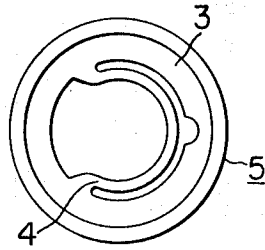


FIG. 3

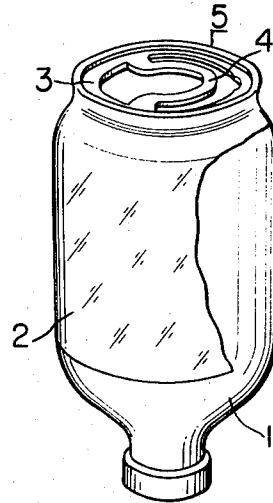


FIG. 2

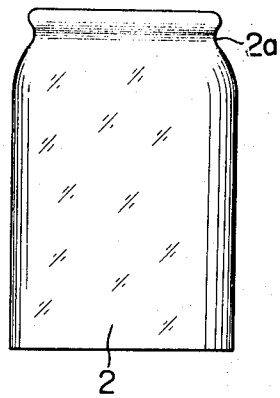


FIG. 4



CONTAINERS WITH HANGERS AND METHOD OF PREPARING THE SAME

BACKGROUND OF THE INVENTION

This invention relates generally to a container and more particularly to a container or bottle coated with a heat-shrinkable synthetic resin jacket which is utilized to secure the bottom of the container a hanging member including a flat annular rim and an integral hanger.

Bottles for medical uses such as used for blood or other liquid transfusion and vials are positioned upside down when they are used so that it is necessary to provide suitable hanger at the bottom thereof.

Heretofore such hangers, usually made of aluminum, lead, alloys thereof or tinned plate, were attached to suitable depressions or grooves on the bottle manually before filling liquid in the bottles. Consequently, to attach hangers to the bottles, considerable labor was required. In addition, since it has been necessary to form such depressions or grooves during molding of the bottles together with scales, thus increasing the cost of manufacturing. Further, such a prior method requires an additional step of applying labels.

SUMMARY OF THE INVENTION

It is, therefore, an object of this invention to provide a novel container having a hanger at its bottom which can be attached thereto very simply by an automatic machine.

Another object of this invention is to provide a container having a novel hanger which is not expensive to manufacture and can be readily applied to the bottom of the container.

Yet another object of this invention is to attach a hanger to the bottle by a simple method.

According to this invention there is provided a hanging member comprising a flat annular portion or rim and an arcuate hanger extending along the inner periphery of the annular portion. The opposite ends or roots of the hanger are integrally connected to the annular portion. Normally the rim and hanger are in the same plane. Such a hanging member may be readily prepared by stamping a flexible sheet of plastic or rubber. The bottle having the hanging member mounted on the bottom thereof is slipped in a cylindrical jacket of a heat-shrinkable synthetic resin in such a manner that the upper edge of the jacket extends somewhat beyond the plane of the hanging member. Then heat is applied to the jacket of heat-shrinkable resin to cause it to shrink around the body of the bottle. Portions of the jacket extending above the hanging member is caused to shrink upon the entire or at least the outer peripheral portion of the rim whereby the hanging member is firmly secured to the bottom of the bottle. Since the hanger normally lies in the same plane as the rim it does not obscure in any way handling of the bottle. However, to hang the bottle in the upside-down position, the hanger is raised from the bottom of the bottle to serve as a hanger or handle.

BRIEF DESCRIPTION OF THE DRAWING

In the accompanying drawing:

FIG. 1 is a plan view of a hanging member for a container according to the invention;

FIG. 2 is a side elevation view of a heat-shrinkable jacket;

FIG. 3 is a perspective view of a bottle after application of the jacket; and

FIG. 4 is a similar perspective view with the hanger raised.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the accompanying drawing, more particularly to FIGS. 3 and 4, there is shown a bottle or container 1 for medical use provided with an outer jacket 2 and a hanging member 5 secured to the bottom of the bottle in a manner to be described hereunder. As shown in FIG. 2, the jacket has a generally cylindrical configuration with its upper portion slightly constricted as at 2a and is molded from a heat-shrinkable

synthetic resin such as polyvinyl chloride, irradiated polyethylene and the like. The inner diameter of the jacket 2 is only slightly larger than the outer diameter of the bottle. As shown in FIGS. 1 and 3, the hanging member 5 comprises a flat annular rim 3 and an arcuate hanger 4 extending along the inner periphery of the rim, the roots of the hanger 4 are integral with the annular rim 3. Such a hanging member can be readily prepared by stamping a sheet or relatively flexible material such as polyethylene, vinyl chloride and rubber. As shown in FIGS. 1 and 3, the rim and the hanger 4 are normally in the same plane. To attach the hanging member to the bottom of the bottle, the hanging member is placed on the bottom of the bottle and a jacket is then slipped over the assembly until the constricted portion 2a rests on the hanging member. Alternatively, the hanging member may be placed on the inner shoulder defined by the constricted portion. Therefore, the assembly is heated to cause the jacket to shrink around the periphery of the body of the bottle and on the entire or at least the peripheral portion of the rim 3 to firmly secure the hanging member in place.

Following examples show methods of fabricating the packed bottles of this invention.

EXAMPLE 1

Hanging members, each 75-mm. diameter, and 2 mm. thick, and including an annular rim and an integral hanger, as shown in FIG. 1 were stamped from a polyethylene sheet. Cylindrical jackets were also prepared from a heat-shrinkable synthetic resin, polyvinyl chloride, for example, each one of the jackets having a diameter of 135 mm., a length of 180 mm. and a thickness of 0.1 mm. The upper portion of the jacket is opened and was subjected to a preliminary heat-shrinking treatment to form a constricted portion 2a. In this example, the hanging member was placed on the inner shoulder formed by the constricted portion 2a while 500-ml. bottles for medical liquid transfusion were mounted in upside-down positions on a conveyor having stainless bases provided with openings adapted to receive necks of the bottles. While bottles were being successively conveyed by the conveyor, jackets with hanging members were slipped over respective bottles and the assemblies were passed through a hot air tunnel having a length of 90 cm. and in which the temperature was maintained at about 200° C. The speed of the conveyor was selected such that the temperature of the assembly is sufficiently elevated to cause the jacket to shrink to firmly enclose the bottle and the hanging member in about 10 seconds.

EXAMPLE 2

In this example, a plurality of pedestals, each having a height of about 15 cm. and a diameter considerably smaller than that of the bottom of the bottle were mounted on a conveyor at a definite spacing. Then bottles of the same dimensions as in example 1 were mounted on respective pedestals in upright positions with hanging members interposed between pedestals and the bottom of the bottles. Then a cylindrical jacket of heat-shrinkable material having a diameter of 135 mm., a thickness of 0.2 mm. and a length longer than the height of the bottle was slipped over each bottle with the lower edge of the jacket projected downward beyond the bottom of hanging member. Thereafter the conveyor was passed through a hot air tunnel having a length of 90 cm. and a temperature of 150° C. to cause the jacket to shrink, in a manner as above described.

EXAMPLE 3

The same process steps as in example 2 were followed except that a strip of irradiated polyethylene, 170 mm. wide and 0.1 mm. thick, was loosely wrapped around each bottle. After a predetermined number of convolution has been formed, the strip was severed and the severed end was bonded to the outer convolution by welding. Hot water at 90° C. was then sprayed upon each assembly for 20 seconds to cause the irradiated polyethylene film to shrink.

Although the invention has been described in terms of bottles or vials for medical use it is to be understood that the invention can also be applied for various containers for different applications having different configurations.

When compared with prior containers having hanging members of aluminum or the like which are received in depressions or grooves on the surface of the containers, the novel containers have following advantages.

1. Hanging members can be fixed to containers by automatic machines.

2. Since containers are not required to be formed with depressions or grooves for receiving hangers of aluminum or the like, they can be molded more readily, thus reducing the cost of manufacturing.

3. The shockproofness of the bottom of the bottles is improved by the hanging member and jacket covering the bottom.

4. By printing scales on the jacket it is not necessary to form scales on the surface of the mold, thus eliminating the necessity of positioning the bottles always in a definite orientation so as not cover the scale by the label, whereby the workability is improved.

5. By printing labels on the jacket, the step of applying the labels to the bottles can be eliminated.

6. Since the packed bottles have no projections they can be ready packed in cartons.

7. Degradation of the content can be prevented by shielding external light. By using light-shielding jackets contents of the bottles which are affected by light can be well protected. In addition, inspection of the bottle whether the liquid therein contains foreign matters or not is easy.

We claim:

1. A container comprising, on the bottom of said container a hanging member including an annular flat rim having substantially the same outer diameter as said bottom and a flexible arcuate hanger extending along the inner periphery of said

rim, the hanger having roots integrally united to said rim, and a heat-shrinkable jacket heat shrunk around the body of said container and on said flat rim to firmly secure said hanging member to said container.

2. The container according to claim 1 wherein said hanger member comprises a flexible material selected from the group consisting of synthetic resins and rubber.

3. A method of preparing a container with a hanger comprising the steps of providing a container to which a hanger is to be secured to the bottom thereof, applying a hanging member to the bottom of said container, said hanging member including a flat rim having substantially the same outer diameter as said bottom and having a flexible arcuate hanger extending along the inner periphery of said rim, the roots of said hanger being integrally united to said rim, applying a heat-shrinkable hollow jacket in position enclosing said container and said hanging member with a portion of said jacket overlying said hanging member, and heating said jacket to shrink it around said container and on at least the peripheral portion of said rim to firmly secure said hanging member to said container.

4. A method of manufacturing a container with a hanger comprising, providing a container on which a hanger is to be secured on the bottom thereof and a heat-shrinkable hollow, open-ended jacket preheated to form an inwardly directed construction defining a shoulder inwardly of said jacket adjacent one of the open ends of the jacket, placing a hanging member in said jacket on said shoulder said hanger member having a rim and an arcuate hanger with roots thereof integral with said rim, placing said jacket over said container with said hanger member disposed on the bottom of said container, applying heat to the jacket to shrink it around said container and on said rim to firmly secure said hanging member to said container.

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