

April 16, 1963

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3,085,375

NESTABLE CONTAINER WRAPPING

Filed Dec. 30, 1960

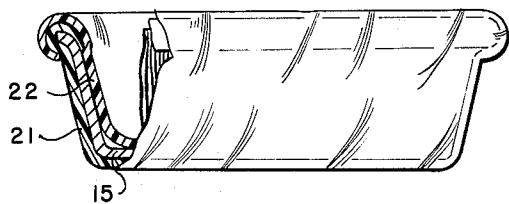


FIG. 1

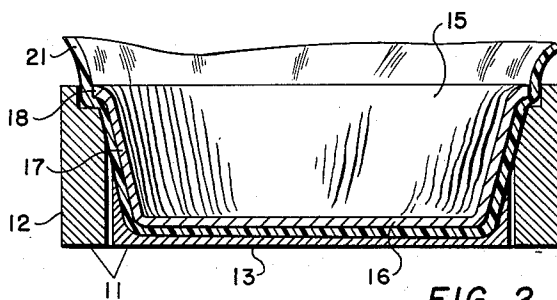


FIG. 2

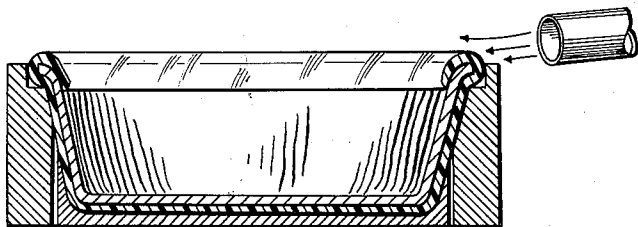


FIG. 3

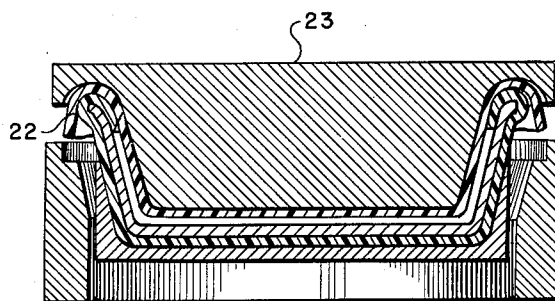


FIG. 4

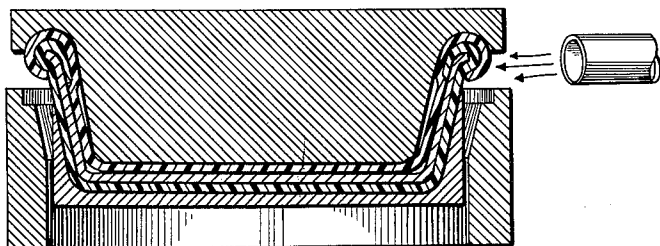


FIG. 5

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Filed Dec. 30, 1960, Ser. No. 79,813

6 Claims. (Cl. 53—30)

This invention relates to a method of enclosing an object within a protective wrapping or covering and more particularly to a method of enclosing a container within a protective wrapping or covering that closely conforms to the interior of said container. This invention also relates to the protectively wrapped container produced by the method of this invention.

Specifically this invention is concerned with covering containers so that the inner covering material closely conforms to the inner surfaces of the container so that little air space exists between the inner surface and the covering.

In packaging open topped containers it has been the practice heretofore to enclose the containers within a loose bag or a loose fitting overwrap of transparent material. Another method of packaging such containers is to tightly cover the object with the wrapping or covering material. Both methods have disadvantages. The loose fitting covering is unattractive. The tight fitting covering, while attractive, does not permit the nesting of one packaged container within another packaged container since the tight covering stretches over and closes the open top of said containers.

It is among the objects of this invention to provide a covering for the inner surfaces of a container which covering is transparent, clear, wrinkle-free, and closely conforms to the inner surfaces of the container. It is also an object to provide a covering for both the inner and upper surfaces that will permit nesting of the containers where their shape so permits.

Other and further objects, advantages and features of the invention will become apparent to those skilled in the art from the following description taken in conjunction with the accompanying drawings showing a specific embodiment of the present invention and in which:

FIGURE 1 is an elevational view in section of a container completely covered with a transparent protective material according to the present invention.

FIGURES 2-5 are elevational views in section disclosing various steps in the method of forming the covered container.

Referring to the drawings and in particular to FIGURES 2-5 which disclose the method of this invention for forming a tight-fitting covering for containers, there is shown a bottom mandrel designated generally as numeral 11 consisting of an outer ring 12 and a flat circular disc 13 which fits within said ring. Both the ring and the disc are supported from below with the ring riding on a cam (not shown) which permits the ring to be moved below the level of the disc as shown in FIGURE 4.

A sheet of heat shrinkable film 21, larger than the overall outer surface dimensions of the container, is placed over the bottom mandrel. A container, e.g., an aluminum pan generally designated as 15 having a circular bottom wall 16 and an outwardly inclining sidewall 17 which sidewall has a lip 18 on its upper edge is placed over said sheet of film 21 and pushed down into said bottom mandrel which is shaped to accommodate said container. The entire lower or outer surface of said container, i.e. the underside of the bottom wall, side wall and lip is in contact with said film and fits into the lower mandrel and only the edge of said film sheet 21 protrudes above said mandrel. Hot air is directed against the protruding film

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edge causing it to shrink and in so shrinking to be drawn in and over the lip of said container as shown in FIGURE 3. Heat is applied to the edge of the film until the film has tightly shrunk over the lip and upper portion of the side wall.

A second sheet of shrinking film 22 large enough to both cover the entire upper or inner surface area of the container and to have an excess of film extending beyond the edge of said container is placed over the top of said container. An upper mandrel 23 shaped so as to conform to the inner surface of said container as shown in FIGURE 4 is brought down by suitable means (not shown) into the cavity of the container thereby causing the second film sheet to conform to the inner surface of said container. The excess film extending over the lip of the sidewall is heat shrunk under the lip as shown in FIGURE 5 making an air-tight seal. The upper mandrel is removed and heat is applied lightly to the entire covered container to remove any wrinkles in the film covering. The wrinkles may be shrunk out of the covering without the film pulling very far from the internal surface of the container because the air-tight seal at the top of the sidewall prevents air from entering between the film and the pan. It is possible to reverse the order of applying the film sheets, e.g., first covering the top or inner surface of the container and subsequently covering the lower or outer surface of the container.

The covered container with wrinkles removed is shown in FIGURE 1. This package is transparent, wrinkle-free, attractive and permits one packaged container to be stacked within a like packaged container. The types of containers that may be packaged according to this invention are quite varied and include but are not limited to metal, glass and plastic containers which may be square, rectangular, circular, oblong or almost any geometrical shape. The bottom wall need not be flat but may be curved, ridged, etc. The sidewalls may be straight, inclined or curved and the upper edge may terminate in a bead, flange or other projection or may have no projection.

Any heat shrinking plastic film that does not melt or decompose at the temperature required for heat shrinking may be employed as a covering material in this invention. Examples of such film materials include but are not limited to heat shrinkable, irradiated biaxially oriented polyethylene, oriented polypropylene, oriented copolymers of vinylidene chloride, e.g. saran films, oriented polyvinyl chloride and oriented polyethylene terephthalate.

With some films there may be a slow leakage of air through the film allowing the upper film sheet to pull away from the inner surface of the container where it had formerly been held by atmospheric pressure. This will not be serious where the containers are nested together. It can, however, be prevented by employing film materials that are relatively gas impermeable, or laminated films that are gas impermeable or by coating a film with a gas impermeable coating.

The most convenient heat source for shrinking the film is hot air, although other heat sources may be employed, e.g., radiant heat, etc.

While for many purposes it will be desirable to cover both sides of the container in the manner heretofore described, in many instances it will be only necessary to cover the inner surface of the container.

Although the applicant has described a particularly suitable method of securing the peripheral edge of the film sheets to the container, other methods may be employed to seal the film sheet edges to the top of the container, e.g. adhesives, heat seals, etc.

The invention described in detail in the foregoing specification is subject to changes and modifications without departing from the principle and spirit thereof. The

terminology used is for purpose of description and not of limitation, the scope of the invention being defined in the claims.

I claim:

1. A method of protectively packaging an open-topped container which comprises covering the inner surfaces of said container with a sheet of heat shrinkable film material and causing said sheet to conform to the inner surfaces of said container, sealing the unconformed peripheral portion of the film sheet along and to the top of said container, and then heat shrinking the film sheet within the container so as to tighten the film while maintaining said sheet in substantial conformity with the inner surfaces of said container.

2. A method of protectively packaging an open-topped container which comprises covering the inner surfaces of said container with a sheet of heat shrinkable material and causing said sheet to conform to the inner surfaces of said container, heat shrinking the unconformed peripheral portion of the film sheet protruding above the container causing it to shrink over and around the top edge of the container so as to be locked to said container and so as to form a tight seal around the top edge of said container, and then heat shrinking the film within the container to tighten the shrinkable sheet material while maintaining said sheet in substantial conformity with the inner surfaces of said container.

3. A method of packaging an open-topped container which comprises placing a sheet of heat shrinkable film material larger than the total inner surface area of the container over the top of said container, causing the film sheet to conform and to cover the inner surfaces of said container, applying heat to excess unconformed film extending above the top of said container causing it to shrink over and under the top of said container so as to become locked to and form a tight seal about said container, and then heat shrinking the film within the container to tighten the film while maintaining said sheet in substantial conformity with the inner surfaces of said container.

4. A method of packaging an open-topped container which comprises covering the outer surfaces of said container with a first sheet of heat shrinkable film material, sealing the edge of said first film sheet along the top of said container, covering the inner surfaces of said container with a second sheet of heat shrinkable film material causing said second sheet to conform to the inner surfaces of said container so that substantially no air space exists therebetween, sealing the unconformed peripheral portion of said second film sheet along and to the top of said container, and then heat shrinking both film sheets to tighten the film, while maintaining said second film sheet in substantial conformity with the inner surfaces of said container.

5. A method of packaging an open-topped container which comprises covering the outer surfaces of said container with a first sheet of heat shrinkable film, heat

shrinking the peripheral edge of said first film sheet over the top of said container locking said film sheet to said container, covering the inner surfaces of said container with a second sheet of heat shrinkable material causing said second sheet to conform to the inner surfaces of said container so that substantially no air space exists therebetween, heat shrinking the unconformed peripheral portion of the film sheet protruding above the top of the container causing it to shrink over and around the top edge of the container so as to become locked to said container and so as to form a tight seal, and then heat shrinking the film sheets to tighten same, while maintaining said second sheet in substantial conformity with the inner surfaces of said container.

6. A method of packaging an open-topped container composed of inner and outer surfaces which comprises covering the outer surfaces of said container with a first sheet of heat shrinkable film material larger than the total outer surface area of said container, heat shrinking the peripheral edge of said first sheet protruding above the top of said container over the top of said container, locking said film sheet to said container, placing a second sheet of heat shrinkable film material larger than the total inner surface area of said container over the top of said container, causing said second film sheet to conform to and cover the inner surfaces of said container so that substantially no air space exists therebetween, applying heat to the excess unconformed film extending above the top of the container causing said film to shrink over and under the top of said container so as to become locked to and form a tight seal about said container, and then heat shrinking the film sheets to tighten same, while maintaining said second sheet in substantial conformity with the inner surfaces of said container.

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