

[54] **SHIPPING CONTAINER FOR SUPPORTING AND PROTECTING A PLURALITY OF ARTICLES**

[75] Inventors: John S. Amneus, Woodlawn; Malcolm H. Thomas, Cincinnati, both of Ohio

[73] Assignee: The Procter & Gamble Company, Cincinnati, Ohio

[22] Filed: Dec. 20, 1971

[21] Appl. No.: 209,717

[52] U.S. Cl.206/65 R, 206/DIG. 18, 206/65 E, 206/65 S, 229/14 C

[51] Int. Cl.B65d 81/00, B65d 85/62

[58] Field of Search206/65 R, 65 C, 65 E, 206/65 S, 65 Y, 80 R, DIG. 18; 229/28 R, 14 C

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Primary Examiner—William T. Dixson, Jr.
Attorney—Richard C. Witte et al.

[57] **ABSTRACT**

The disclosure is directed to a shipping container or package that is particularly adapted for enclosing and protecting a plurality of individual articles, preferably plastic bottles or the like. The generic concept contemplates providing a base or tray member having its support surface coated with a pressure sensitive adhesive. An array of bottles is placed on the tray so that their bodies are in contacting relationship in the area of their greatest cross-sectional dimension. The bottles are immobilized at their bases by adherence to the adhesive coating on the tray support surface. The upper ends of the bottles are immobilized for lateral movement by the provision of suitable means, such as an immobilizing spacer, sheet member or the like, which retains the upper portion of the bottles in their proper relative relationship with respect to the tray member. An essentially U-shaped cover member is placed over the tray member and bottles such that its ends are supported by the tray member whereupon a shrinkable plastic film is fitted over the entire assemblage and thereafter shrunk to hold the several elements of the combination in rigid assembled relationship.

8 Claims, 5 Drawing Figures

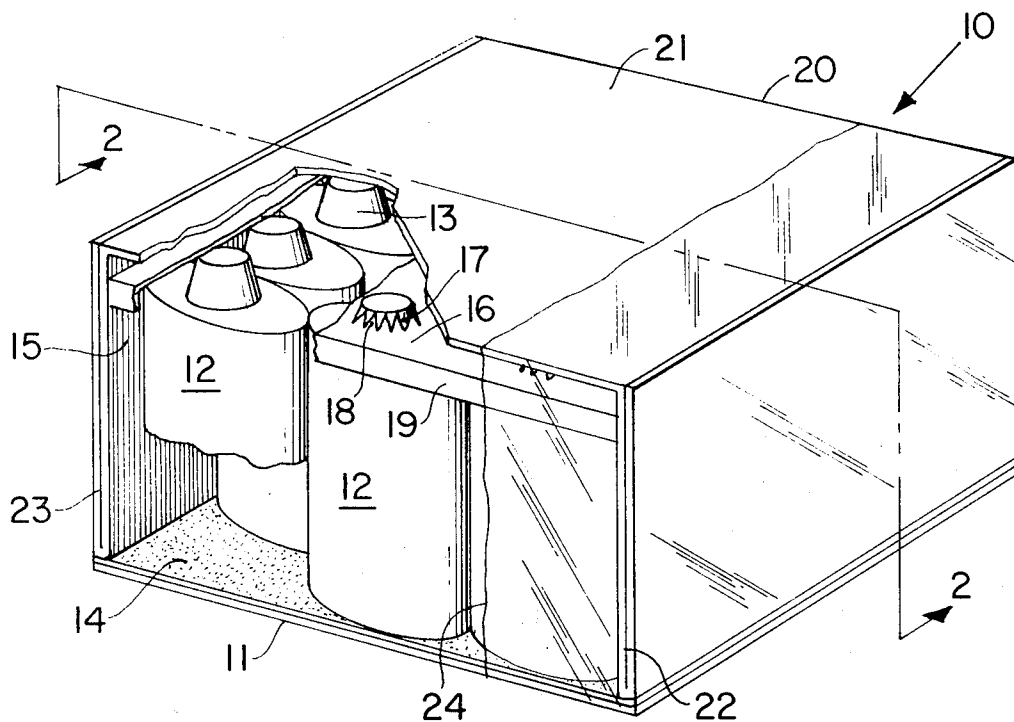


Fig. 1

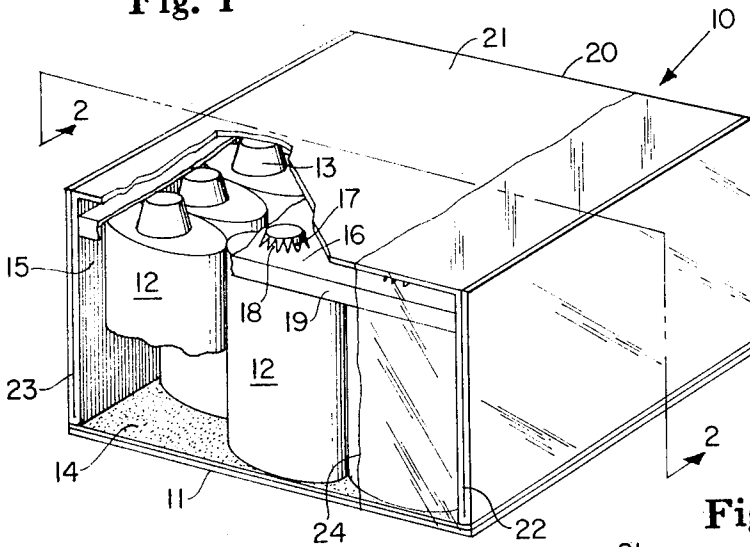


Fig. 2

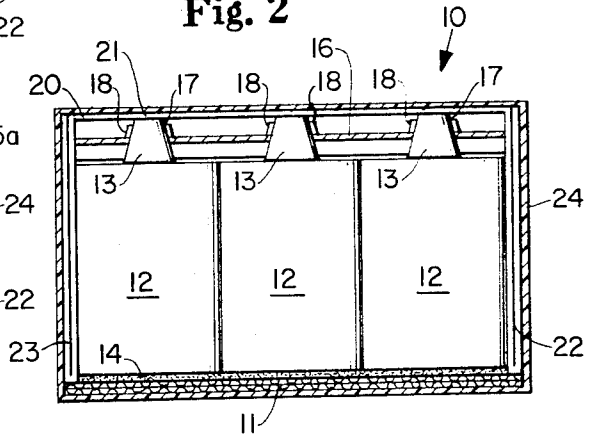


Fig. 4

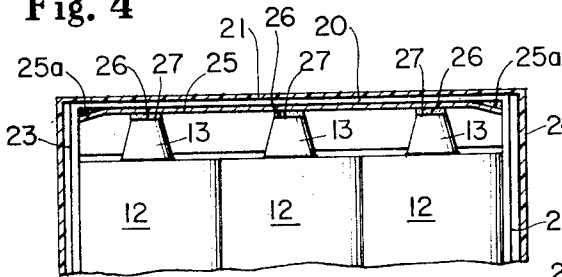


Fig. 3

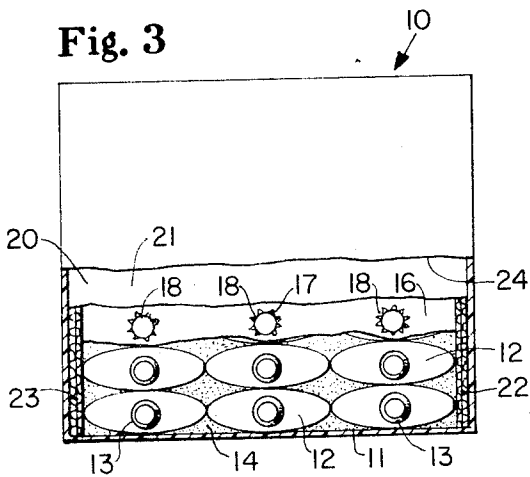
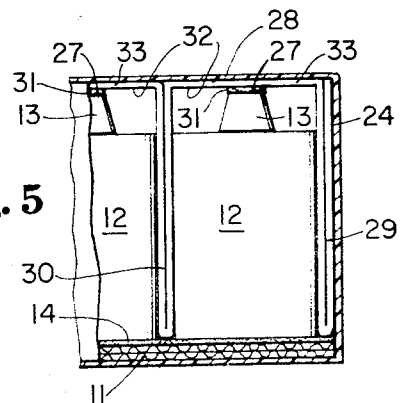


Fig. 5



INVENTORS
 John S. Amneus
 Malcolm H. Thomas
 BY *Frederick A. Brown*
 ATTORNEY

SHIPPING CONTAINER FOR SUPPORTING AND PROTECTING A PLURALITY OF ARTICLES

BACKGROUND OF THE INVENTION

The invention relates broadly to the field of shrink-wrapped packages or containers for individual articles such as plastic bottles or the like. More particularly, it is directed to an improved shipping container, case or package which includes means for immobilizing a group of bottles or like articles thereby attaining numerous advantages over commonly employed shipping cases presently in commercial use.

It is presently a common practice to provide shipping containers, or cases, for individual retail size bottles which consist of large corrugated paperboard boxes having adhered overlapping end flaps on their top and bottom walls. Individual bottles are spaced and separated within the container, or package, by the use of a series of interlocking divider or partition walls which adds strength to the package and also prevents the individual bottles from moving laterally within the container.

As presently known, packages of the above character are relatively expensive in relation to the number of individual bottles that are shipped therein. That is, the amount and weight of the materials such as corrugated paperboard or the like, used to encase and protect a given number of bottles is relatively great in relation to the number of bottles. Such containers also suffer from an inherent disadvantage in that they enclose the product in such a manner that the container can not be subsequently used as a display device. They are also bulky, difficult to handle, and this leads to relatively high unit labor costs when the package is received and opened in a typical retail outlet.

Those skilled in the art will be familiar with many other types of packages of this general character that have been developed to overcome some of these problems such as illustrated in U.S. Pat. Nos. 3,365,110 — Salomone et al. issued on Jan. 23, 1968; 3,425,544 — Ayer et al. issued on Feb. 4, 1969; 3,347,365 — Funkhouser, issued on Oct. 17, 1967; and 2,744,624 — Hoogstoel et al., issued on May 8, 1956. None of these, however, has solved all of the problems associated with such containers in the manner of the present invention.

SUMMARY OF THE INVENTION

The nature and substance of the invention will be more readily appreciated after giving consideration to its major aims and purposes. The principle objects of the invention are recited in the ensuing paragraphs in order to provide a better appreciation of its important aspects prior to describing the details of a preferred embodiment in later portions of this description.

The major object of the invention is the provision of a shipping container for supporting and protecting a plurality of articles, such as bottles.

Another object of the invention is the provision of a shipping container as aforesaid which permits immobilization of the bottles, as well as denser packing of the bottles, thereby promoting warehouse efficiency without any sacrifice in strength or protection of the bottles.

Another object of the invention is the provision of an improved shipping container which provides efficient protection from moisture, dirt and bottle scuffing with-

out any sacrifice in opening ease and with a minimum hazard of damaging the bottles during opening.

Still another object of the invention is the provision of an improved shipping container which can be constructed with relatively less material, thereby reducing its cost, and yet one that is of simplified construction such that it results in labor savings when the container is processed and opened at a retail outlet.

A further object of the invention is the provision of a shipping container for supporting and protecting a plurality of bottles or like articles which has a built-in tray construction so that the protective portions of the container can be removed, thereby allowing the tray portion of the container to be used for making a display of the articles at a typical retail outlet.

These and other objects are achieved in the present invention by providing a shipping container for supporting and protecting a plurality of articles such as bottles which includes a tray member having its support surface coated with a pressure sensitive adhesive to support, retain, and immobilize a plurality of articles after placement thereon. The articles are placed on the tray such that their bodies are in contacting relationship and means are provided for immobilizing the upper ends of the articles by restraining them from movement in a direction parallel to the tray member. A substantially U-shaped cover member is supported by the tray member such that its top surface extends over the articles supported by the tray member and the entire assemblage is covered by a shrink film which is ultimately shrunk in place to hold the several elements of the container in snug assembled relationship.

BRIEF DESCRIPTION OF THE DRAWING

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter regarded as forming the present invention, it is believed the invention will be better understood from the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a fragmented perspective view illustrating the assembled container and showing each of the several elements which comprise its construction.

FIG. 2 is an elevation in cross-section taken on the line 2—2 of FIG. 1.

FIG. 3 is a fragmentary top view of the container of FIG. 1 illustrating the relationship of the articles as well as the immobilizing spacer member.

FIG. 4 is a fragmentary cross-section in elevation, similar to FIG. 2, showing an alternate form of construction for immobilizing the top portions of the bottles.

FIG. 5 is a fragmentary side elevation, similar to FIG. 2, illustrating an alternate form of cover member that provides additional stacking strength.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, particularly FIGS. 1, 2, and 3 thereof, a preferred construction of the shipping container 10 is illustrated. The container 10 includes a separate base or tray member 11 used for initially supporting the article to be packaged which are illustrated, by way of example, as being a plurality of bottles 12, each of which is provided with a suitable closure cap 13. The tray member 11 has a support surface 14 which is coated with a pressure sensitive adhesive so that

when an array of bottles 12 is placed on the surface 14, they are immediately immobilized at their bases to prevent their lateral movement in the area of the surface 14. The tray member 11 is preferably made from a double layer or thickness of corrugated paperboard material with the flutes running either at right angles in the two layers or they may all be parallel, preferably in the direction perpendicular to the open end 15 of the container 10 to maximize compressive strength in the direction of the flutes.

The pressure sensitive adhesive applied to the support surface 14 is preferably selected so that it will maintain the bottles 12 in adherence thereto. Nevertheless, the properties of the adhesive should be such that the bottles can be readily removed from the tray element 11 when the shipping container of the invention is disassembled. It has been found that a pressure sensitive adhesive identified as 113-DEV manufactured by Franklin Chemical Company of Columbus, Ohio, is suitable to achieve these objectives.

As already indicated, the pressure sensitive adhesive on the surface 14 is used to immobilize the bases of the bottles 12. As illustrated in FIG. 3, it is desirable that the bottles be placed on the surface 14 in an array such that they are in contact with other bottles in the same row as well as in adjoining rows in the area of the largest cross-sectional dimension of the bottles 12. This is an additional factor in rigidifying the final structure and in minimizing the amount and cost of packaging materials used in the container.

In addition to the above, means are provided for immobilizing the upper ends of the bottles 12 to prevent any substantial movement in a plane parallel to the tray member 11. In the embodiment of FIGS. 1, 2 and 3, the immobilizing means comprises a spacer member 16 having a plurality of punched openings 17 formed by the provision of which form a plurality of radial tongues 18 and radial slits as will be appreciated by those skilled in the art. Openings 17 are formed so that they correspond to the position of the caps 13 when the array of bottles 12 is placed in contacting relationship upon the surface 14 of the tray element 11. As illustrated in the drawings, the spacer member 16 is preferably placed over the caps 13 so that it is essentially parallel to the tray element 11. As will be seen from an examination of FIG. 2, the tongues 18 tend to hold the spacer member 16 a distance equal to their length away from the cover member 20. The spacer member 16 may be provided with a flange element 19 to obtain additional rigidity it being understood that a similar flange (not shown) will be provided at the other end thereof. The spacer member 16 may be constructed from paperboard, cardboard, corrugated board or any like material.

The structure is strengthened by the provision of a cover member 20 having a top surface 21 and downwardly extending side walls 22 and 23. In the illustrated embodiment, the side walls 22 and 23, respectively, are folded over and are of double thickness for the purpose of vertically reinforcing the completed structure. It will be understood, of course, that this is not always necessary and is only used where additional reinforcing is desirable. Single thickness side walls will suffice to carry out the objects of the invention in many instances. Preferably, the material of the cover member 20 is a corrugated paperboard material in which the flutes are arranged such that they run vertically in the side walls 22

and 23 in order to maximize the compressive strength of the finished package.

The shipping container 10 of the invention is completed by surrounding the assembled components with a well-known plastic shrink film material 24 and, thereafter, subjecting the shrink film 24 to sufficient heat so that it will shrink snugly into place and hold the several elements in assembled relationship. Shrink films for this purpose are well known to those skilled in the art and they are typically provided in the form of a "sleeve" which is, in effect, a cylindrical tube of shrinkable plastic material which can be readily slipped over the assemblage and, thereafter, heated and shrunk in place to simplify the final assembly steps.

An alternate embodiment of the invention is illustrated in FIG. 4 which employs another form of immobilizing means for the upper ends of the bottles 12. In the embodiment of FIG. 4, a simple and more economical immobilizing means is used which comprises a flexible sheet member 25 of paperboard, heavy kraft paper, or the like material, which is adhered at its opposite edges in the areas 25a to the inner surface of the top wall 21. The sheet member 25 is also adhered in the areas 26 to the top surfaces 27 of the caps 13. The sheet 25 may be adhered in the areas 25a and 26 by the use of a pressure sensitive adhesive having the necessary properties for immobilizing the upper ends of the bottles 12 to prevent substantial movement in a plane parallel to the tray member 11. The use of a flexible sheet 25 allows limited vertical movement of the bottles 12 but this is not detrimental to the overall rigidity of the finished container. The other elements of the container of FIG. 4 are substantially similar to those previously described and do not need additional discussion for a thorough understanding thereof.

In the event additional strengthening of the container is desired for the purpose of resisting compressive forces acting thereon, the concept of the present container can be varied as illustrated in FIG. 5. It will be noted in FIG. 5 that the cover member 28 includes a side wall 29 of double thickness and additionally includes a double thickness intermediate spacer wall 30 between each of the long rows of bottles 12. Additional intermediate spacer walls can be provided between each of the long rows, thereby substantially increasing the compressive strength of the finished container. In the embodiment of FIG. 5, the use of a corrugated paperboard material has been found to be very effective. When such a material is used, it is preferred that the flutes of corrugations run such that they are vertical or, in other words, essentially parallel to the axis of the bottles 12 in the assembled container.

It will also be apparent that in the FIG. 5 embodiment the bottles in the same row can be placed in contacting relationship although adjoining rows are separated by the intermediate spacer wall 30. By placing the bottles 12 of each row in contact with the spacer wall 30, the beneficial effects of direct contact of the bottles 12 in adjoining rows is incorporated into the completed container of FIG. 5.

The upper immobilizing means has been heretofore described as comprising either a spacer member 16, as in FIGS. 1-3, or a sheet member 25 as in FIG. 4. It will be noted in FIG. 5 that another form of immobilizing means is used. In this later structure, the top surfaces 27 of the caps 13 are adhered directly in the areas 31 to the undersurface 32 of the top wall 33. In this way,

essentially similar advantages are obtained without the use of an additional structural member. The elimination of a separate structural member for the immobilizing means may be desirable to balance the added cost of incorporating the intermediate spacer walls 30. As in the other cases, the choice of a particular pressure sensitive adhesive is a matter that will be readily made by those skilled in the art.

While particular embodiments of the invention have been illustrated and described, it will be obvious to those skilled in the art that various changes and modifications can be made without departing from the spirit and scope of the invention, and it is intended to cover in the appended claims all such changes and modifications that are in the scope of this invention.

What is claimed as new is:

- 1. A shipping container for supporting and protecting a plurality of articles, said container comprising:
 - a. a tray member having a support surface for supporting a plurality of articles,
 - b. a pressure sensitive adhesive coating on said support surface to immobilize said articles and adhere them to said tray member after placement thereon, said articles being placed on said support surface so that adjoining articles in a given row are in contacting relationship at their maximum cross-sectional dimension,
 - c. immobilizing means securing the upper ends of said articles to immobilize them from any substantial movement in a plane parallel to said tray member,
 - d. a cover member supported by said tray member, said cover member having a top wall extending over the articles supported by said tray member,
 - e. a shrink film surrounding said tray and cover members, said film being shrunk to hold said elements in snug assembled relationship around said articles.
- 2. A shipping container for supporting and protecting

a plurality of articles as claimed in claim 1 wherein said immobilizing means comprises a spacer member, a plurality of openings in said spacer member defined by a plurality of radially projecting tongues, said openings engaging the upper ends of said articles.

3. A shipping container for supporting and protecting a plurality of articles as claimed in claim 1 wherein said immobilizing means comprises a sheet member adhered to the upper ends of each of said articles.

4. A shipping container for supporting and protecting a plurality of articles as claimed in claim 1 wherein said immobilizing means comprises adhering the upper ends of each of said articles to the undersurface of the top wall of said cover member.

5. A shipping container for supporting and protecting a plurality of articles as claimed in claim 1 wherein said cover member includes side walls extending downwardly from its extremities and an integral intermediate spacer wall extending downwardly to said tray member, said intermediate spacer wall extending longitudinally between adjoining rows of articles to increase the compressive strength of said shipping container.

6. A shipping container for supporting and protecting a plurality of articles as claimed in claim 5 wherein said immobilizing means comprises a spacer member, a plurality of openings in said spacer member defined by a plurality of radially projecting tongues, said openings engaging the upper ends of said articles.

7. A shipping container for supporting and protecting a plurality of articles as claimed in claim 5 wherein said immobilizing means comprises a sheet member adhered to the upper ends of each of said articles.

8. A shipping container for supporting and protecting a plurality of articles as claimed in claim 5 wherein said immobilizing means comprises adhering the upper ends of each of said articles to the undersurface of the top wall of said cover member.

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