

- [54] **SHIPPING PACKAGE**
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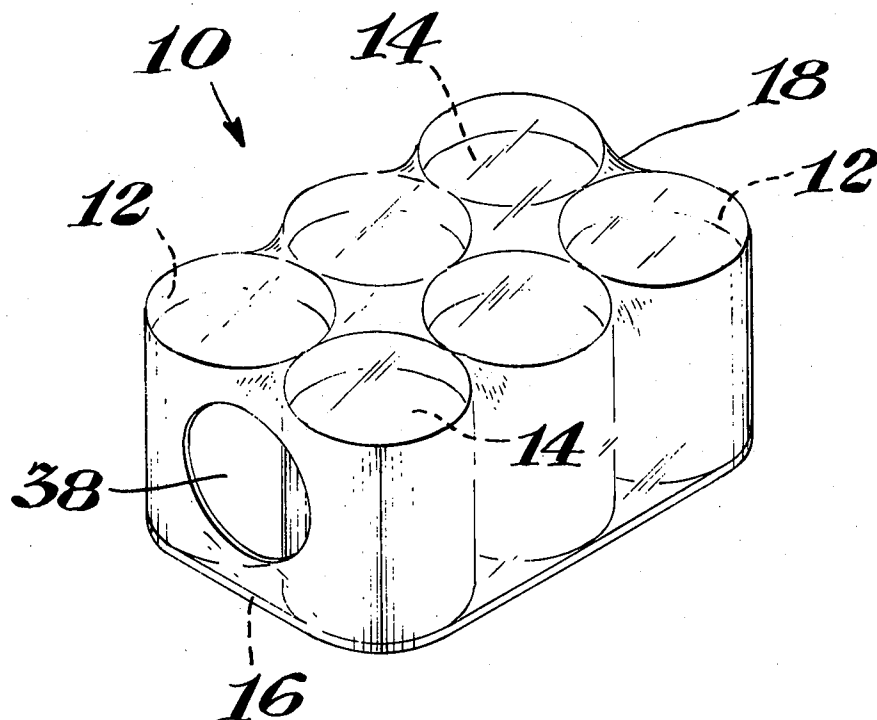
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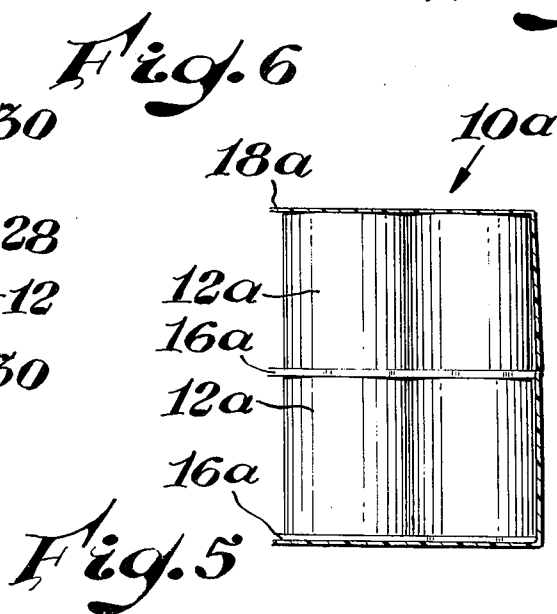
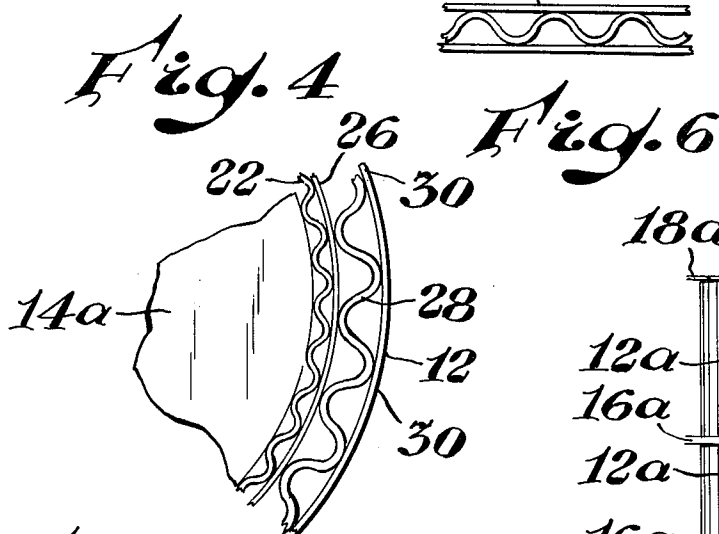
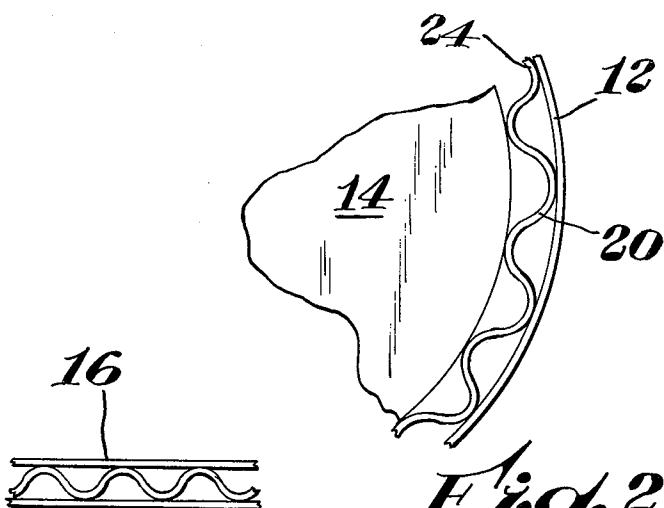
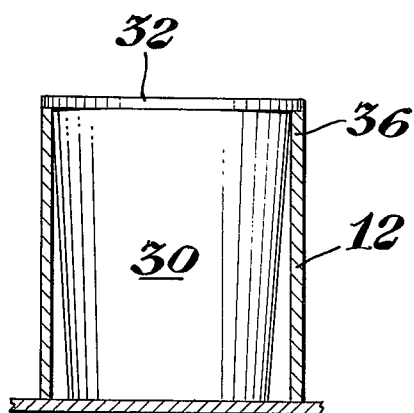
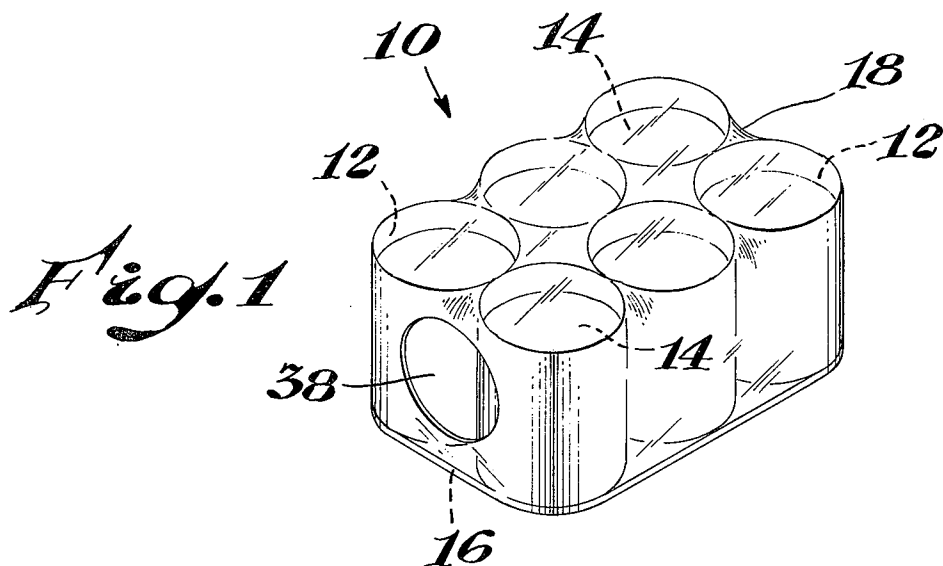
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[57] **ABSTRACT**

A shipping package for unitizing and distributing and/or storing products, and comprising a plurality of side-by-side hollow sleeves, each individually containing a product or a product grouping, an optional preferably flat member pressed flushly against one end of the sleeve assemblage, and an overwrap of film disposed in tension about such assemblage and support member, and tightly binding the same together as a unit. The resultant package among a variety of advantages, reveals optimum vertical loading strength, secure compartmentized and dust-free protection of the product, free viewing thereof for ease and quickness in product identification, and certain material economies and saving in its over-all design and structure.

1 Claim, 6 Drawing Figures





SHIPPING PACKAGE

BACKGROUND OF THE INVENTION

The present invention broadly relates to a shipping package for grouping and unitizing a plurality of products for shipment of the same to the market, or for storage purposes. The invention has particular applicability as a protective shipping container for products of the general class having a low compressive strength or load strength in the vertical direction.

For example, lightweight plastic tubs as are used for cottage cheese, margarine, sour cream, and many like products, have a tendency to fail or crush when stacked or palletized to any considerable height.

Conventional practice has in the past called for corrugated shippers or boxes as the means for distributing such product. Some vertical stacking height is obtained via the strength at each of the corners of the shipper. The shipper also provides cleanliness as it completely or substantially completely encloses the product, but does have the drawback that the product usually cannot be identified without opening the shipper, unless, of course, the latter is suitably printed with a product identifying legend. This is not always most practical, however, such as where a variety of products are packaged at one plant, and a common shipper would be desired to reduce inventory. Also, while the corrugated box shipper does lend somewhat to vertical load strength, unless supporting ribs or the like are provided, the product contained therein will normally be required to share part of the load, which can contribute to failure or other disfigurement or impairment of the product.

More recently there has been some suggested alternatives to replace corrugated shipping containers for various packaging applications. One such alternative is to use a flat board having a plurality of openings die cut therein and which each individually receive a product unit. The die cut board and product units are firmly bound together by a film overwrap heat shrunk tightly thereabout. Such a package has certain over-all economies and advantages of some importance, particularly cheapness of material since film is normally a cheap substitute for corrugated board. The package as a drawback, however, has tendency to strip the lid from the contained product units, such as where a snap-on lid closure is employed with a lightweight tub. Moreover, such structure substantially exposes the product to impact damage, and lends little support for palletizing. Known palletizing for such product and package design calls for a plurality of load dividing shelves, such shelves being positioned one over the other, and thus negating the need for high compressive strength by reason of dividing the stack often enough to avoid compressive failure. Understandably this gives rise to certain inefficient distributing and palletizing practices.

Yet another shipping package which has received some acclaim is much like the above in that it consists of a tray which receives a plurality of product units, the units and tray being tightly bound together in like manner by an overwrap of tensioned film. However, for some of the same reasons as exemplified above, and other obvious reasons, this type package construction has not fully satisfied the demands of the market, particularly as to certain types of product units.

Accordingly, a basic objective of this invention is to provide a competitive shipping container or package

assemblage, which is a valid substitute for cardboard shipping boxes, and particularly where the container is so constructed as to maximize its vertical loading capabilities.

It is yet a further objective of the present invention to provide such a shipping container or assemblage which effectively resists product damage by impact, which permits ready identification of the product by means of free viewing thereof, and which compartmentizes the units of the contained product in a substantially dust and dirt-free environment.

Yet another objective of the invention is to provide an improved shipping container or assemblage particularly adapted for products of low compressive strength, which contains such products protectively in compartmentized fashion, and which is of sufficiently lightweight construction for shipping advantage.

Yet still another objective of this invention is to provide an improved shipping container or package assemblage, that depending on its specific materials and construction, can provide one or more of the advantages, when compared to the prior art, of remarkable palletizing or stacking strength, material cost savings, weight savings, impact resistance, maintenance of product, cleanliness, ready product identification, and still other attributes and advantages as will become even more evident from the further disclosure of invention which follows.

BRIEF SUMMARY OF THE INVENTION

Briefly, then, the present invention contemplates a shipping package comprising a plurality of hollow sleeves preferably of corrugated board, and wherein each sleeve individually contains a product or product grouping. The sleeves are arranged side-by-side, preferably in parallel rows, and are tightly bundled together as a unit by means of an overwrap of film disposed in tension thereabout, such as by heat induced shrinkage. By such construction, the major amount of board making up the shipping container is placed in a vertical plane for vertical load bearing advantage. An optional flat sheet of corrugated board or the like may be positioned flushly against one end of the sleeve assemblage to give the package additional strength and stability against twisting force or the like, by denying the ability of the sleeves to slip relative to each other, and thus loosen the overwrap thereabout. Depending somewhat on the diameter of the sleeves, surprisingly it has been found that less material may be required than in a box shipper, and also it may be further noted that material prefabricated or die cut to any sophisticated degree is not necessary. Also, the sleeves may be and are desirably constructed of single-faced as opposed to the double-faced corrugated board normally used in box construction.

Further features and advantages in accordance with the present invention will become more apparent from the following specification taken in conjunction with the drawing wherein:

FIG. 1 is an isometric view illustrating in some detail a preferred embodiment of a shipping container or assemblage constructed according to the general teachings and principles hereof;

FIG. 2 is an enlarged partial view of the sleeve structure of the container assemblage of FIG. 1, as viewed from the top;

FIG. 3 is a view like FIG. 2 only showing a modified form of the invention;

FIG. 4 is a cross-sectional view showing a sleeve structure modified somewhat from that illustrated in FIG. 1;

FIG. 5 is a partial elevational view illustrating yet another modified form of the invention as relates particularly to a container assemblage generally like that illustrated before, but wherein the package includes two levels achieved via stacking the sleeves, and the use of intermediate support member or panel; and

FIG. 6 is a partial view illustrating the preferred structure of a flat support member used in the package construction herein.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS. 1 and 2 illustrate a shipping or package assemblage 10 embodying the general teachings hereof, comprising a plurality of sleeves 12, each individually containing a product unit, or alternately a product grouping 14. The sleeves are arranged side-by-side in parallel rows to define a compact, uniform package shape, which, preferably, is generally rectangular in appearance, in order to optimize stacking and palletizing efficiencies. However, the invention is not limited to such, but may embody cylindrical or other package shapes as may be found convenient or necessary for a particular or certain packaging application.

A support member 16, preferably a flat panel or the like, is flushly disposed against one end of the sleeve assemblage, and in this instance forms what may be referred to as a base member or base support for package 10. The entire assemblage, including the support member, is overwrapped by a film envelope or overwrap 18, which is in sufficient tension, preferably heat induced, to tightly bind or bundle the components of package 10 together, substantially as a unit.

Referring now more particularly to the structure of the various components of package 10, sleeves 12 may be formed of a wrapping of fiberboard or paperboard secured such as by tape, pasting, stapling, or like conventional fastening means. Alternately sleeves 12 can comprise seamless tubing, such as spirally wound paper tubing cut to the desired length.

Most preferably, each sleeve 12 comprises a corrugated or fluted material. In FIG. 2, for example, sleeve 12 is illustrated as comprising a corrugated or fluted medium or layer 20 forming the inner surface of the sleeve, and a solid or non-corrugated layer 24 which forms the outer surface thereof. The sleeve material shown in FIG. 2 can be reversed so that the fluted layer forms the outer surface of the sleeve. The latter can accord some material savings by permitting a small reduction in the required sleeve diameter per a given product unit size. In FIG. 3 a generally like sleeve construction is shown, but wherein the corrugated material is "built up" to include a fluted layer 22 at the inner surface of the sleeve, an intermediate solid layer 26, a second or intermediate fluted layer 28, and a second solid layer 30 which forms the outer facing or surface of the sleeve.

The preferred sleeve construction is lightweight, and provides excellent compressive strength in the axial direction, together with a cushion about the side areas of the product. Also the corrugated construction, as it is orientated and employed herein, further permits the

sleeve material to be intimately and firmly wrapped circumferentially about product units 14, such as where the sleeve is to be formed by seaming, taping, or the like.

For yet further exemplary purposes, still other materials appropriate for sleeve 12 construction preferably include fluted but non-faced paper sheet or board material, rigid or semi-rigid plastic, preferably a reprocessed low-priced plastic of corrugated structure.

Each sleeve 12 may be cylindrical in shape as shown, and in tight conformity about the product units; or where the cross-section of the product unit is non-cylindrical in shape, the sleeve may be tightly wrapped to conform thereto and thus might be of rectangular or of other shape, depending on the product unit. In the optimum practice of the invention, the sleeves 12 are in sufficiently intimate contact about the side areas of product units 14 to restrain substantial lateral movement thereof within the sleeve.

The sleeves 12 may be of sufficient height to extend upwardly beyond the top of each product unit, respectively, in which case the sleeve is in a position to bear substantially the entire load in palletizing, as is illustrated in FIG. 1. Alternately the sleeve can be of less height than the product, as illustrated in FIG. 4, wherein such product might comprise, for example, a glass or plastic jar 30 having a closure or lid member 32 such as of plastic, metal, or the like. A ledge or lip 34 defined underneath the lid, can rest continuously on the top edge 36 of sleeves 12; and in such circumstance, permits a reduction in height of the sleeve and thus a savings in packaging materials used. Since the lid in this instance is of fairly sturdy non-damageable character, the delicate part of the product unit still remains securely protected by the surrounding association of the sleeves thereabout, respectively.

Support member 16 is preferably of corrugated material, such as paperboard or fiberboard, which may be "built up" or alternately may be double-faced paperboard having a fluted medium or layer between the opposed faces thereof, as is illustrated in FIG. 6. Such construction provides a lightweight, yet multi-axially stiff bottom support that stabilizes and strengthens package 10 significantly. The function of the support member 16 is to uniformly distribute the load in vertical stacking, and also it stabilizes the package against twisting movement or the like, by retaining the sleeves from slippage relative to each other in the axial direction. Support member 16 is preferentially used in all instances where the product is relatively heavy, and by virtue of its weight in handling, would create substantial twisting or bending force, thus tending to disarrange and loosen the film binding. As may also be noted, the use of support member 16 provides cushioning adjacent the critical bottom area of each product unit 14, that negates substantially against damage of the same in shipment and handling.

The overwrap of film 18 about the package need not be hermetically tight. For example, such can comprise a discreet length of film wrapped circumferentially about the components of the package, and secured longitudinally such as by an overlap or fin seam, and which is then fed through a conventional shrink tunnel, whereby through heat induced shrinkage, the film is reduced to a condition of tight binding tension about the package components. Such construction leaves open areas at the opposite ends of the package such as is in-

licated at 38 in FIG. 1 (only one such end being illustrated in the drawing). However, the film is drawn tautly over the top of each sleeve 12 to protectively enclose product units 14 in cleanly fashion. Examples of shrink film for application in this invention include polyethylene, polypropylene, and polyvinyl chloride shrink films as are presently available in the market, and in extensive use in the shrink film bundling industry. Other suitable films for application in these teachings may include, for example, polyester shrink films, irradiated polyethylene, and the like.

The invention further contemplates an overwrap wherein the opposite ends therein are closed such as by heat sealing or the like, such that a substantially airtight film enclosure is formed about the components of the package. Also seamless tubing may be used where desired. Furthermore, the film, rather than being placed in tension through application of heat, may be mechanically stretched tightly about the package components and secured in such a manner as to place the film in sufficient tension to tightly retain the unitary character of the package.

Referring now to more general aspects of this invention, a support member 16 may be employed at the top as well as the bottom of the sleeve assemblage. The individual sleeves may house more than one product unit, such as a stacked product grouping. Moreover, the sleeves can be stacked as shown in FIG. 5, separated preferably by an intermediate support member 16a. Still as a further variation, sleeves 12 can be mixed with product units, not contained in sleeves, but dispersed among the sleeves, and substantially protected thereby.

The invention may be employed for packaging practically any package unit such as the aforementioned plastic tubs containing, for exemplary purposes only, margarine, cottage cheese, sour cream, and like products. It may also be used in packaging delicate glasswares, such as drinking glasses, which are susceptible to a high rate of breakage, filled glassware such as bottles or jars, aerosol products, and the like, to name but a few of the potential applications for this general construction.

Most beneficially, package assemblage 10, because of its ability to bear maximum load in the vertical direction, provides an ideal solution for packaging products of relatively low compressive strength or sensitivity to compressive load. Delicate glassware products can be advantageously distributed using the principles of this invention. Also the invention advantageously applies to the aforementioned. Lightweight plastic tub parts with or without a snap-on lid would be exemplary of a type of product sensitive to disfiguration and damage under a compressive load such as by stacking the product. Typical examples of the general construction of certain of such tub parts or tubs are illustrated in U.S. Pat. Nos. 3,344,974; 3,353,707; and 3,409,123. While such parts, in a filled condition, are normally unable without special provision to be stacked to any considerable height, the present invention permits the entire load, if desired, to be supported by the shipping package, rather than the contained product. Thus it is possible to package and palletize such products without placing substantial compressive strain thereon, to any desired and practical height, such as 5, 10, 15, 20 or more feet.

This is obtained by straightforwardly designing sufficient load strength into the package, particularly by the design of the vertical load strength of sleeves 12.

By way of further illustration of the invention, a package assemblage 10 is designed utilizing a sleeve construction of single-faced paperboard of "A" flute size. The material of the face layer is 26 pound weight, that is understood to mean 26 pounds per thousand square feet. The flute layer is also 26 pound weight. The sleeve is formed by circumferentially wrapping the sleeve firmly around the product units to be packaged, with the flutes aligned parallel in the axial direction and facing inwardly. The sleeve is secured by abutting the opposite edges of the wrap together and forming a tape seam. The product units comprise cottage cheese tubs of the general type aforementioned. Each is filled with one pound of product. Each sleeve contains two stacked tubs, and is extended upwardly beyond the contained product units. The package is essentially rectangular, being comprised of two rows each containing three sleeves.

A support member 16 is employed in combination with the above and is comprised of a corrugated paperboard having a center flute layer of "C" size, and face layers on each side thereof. The flute layer is 26 pound material. The face layers each comprise 33 pound material.

The film overwrap component is Polyfilm 303 film, a non-irradiated polyethylene shrink film available from The Dow Chemical Company. Such film is about 2 mils in thickness.

The resultant package is observed to be of sturdy, unitary character, resisting bending in all directions. The package readily supports the weight of a man without compressive strain or noticeable deformation to the contained tubs, or collapse or noticeable damage to the sleeve structure. The package appears tightly bound by the overwrap without apparent need for attachment between the sleeves, or between the sleeves and the support member.

While certain representative embodiments and details have been shown for the purpose of illustrating the invention, it will be apparent to those skilled in the art that various changes and modifications can be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. A shipping and/or storage receptacle comprising a plurality of hollow and open-ended sleeves of generally uniform height, the opposite ends of such sleeves being generally coplanar, said sleeves comprising a paperboard including a corrugating medium, the longitudinal axis of the waves of said corrugating medium being aligned generally with the axis of said sleeves, an object contained in each such sleeve, respectively, a support member generally flushly disposed against the coplanar ends of such sleeves at one of such opposite ends, a flexible envelope in heat induced tension about such sleeves and support member, and bundling the same together, said objects comprising formed plastic containers filled with product, and wherein such objects rest against such support member, and are recessed within said sleeves.

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