

[54] STORAGE AND DISPLAY PACKAGE

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[22] Filed: Mar. 28, 1972

[21] Appl. No.: 238,898

[52] U.S. Cl.: 206/430, 206/431, 206/434, 229/87 R

[51] Int. Cl.: B65d 65/02, B65d 75/20

[58] Field of Search: 150/50, 48, 12, 1; 229/52 B, 57, 55, 88, 53, 87 R; 206/65 R, 72, 65 S; 211/49 R; 294/87 R

[56]

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[57]

ABSTRACT

A tray-like storage and display package is formed from a flexible material, which is preferably transparent, such as polyethylene which is wrapped about the sides of an array of containers and underlies at least a portion of the bottom of the array. Handles preferably formed by the film itself as a result of the folding pattern used in assembling the package, are provided. The film normally has little or no tension about the array of containers thereby allowing free removal of containers. The position of the handle means is such that the application of lifting force to them also imparts circumferential tension tightening the material thereby uniting the containers into an integral unit to allow handling.

6 Claims, 7 Drawing Figures

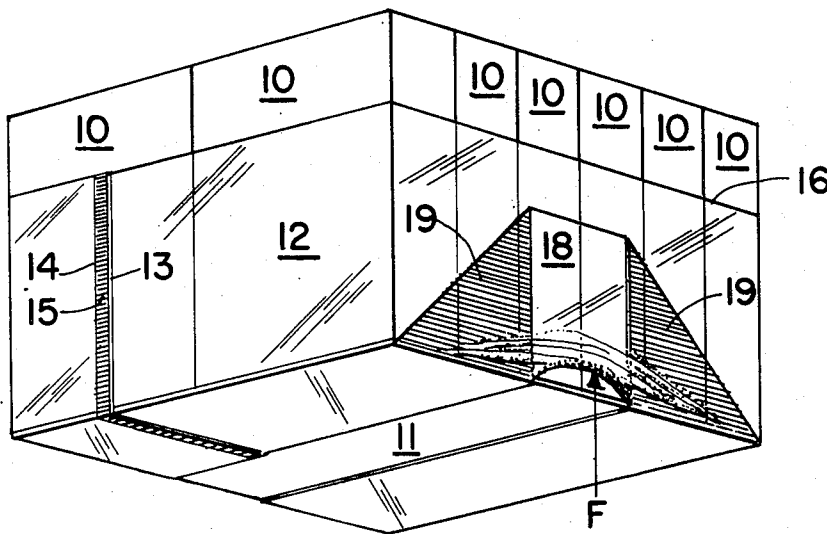


Fig. 4

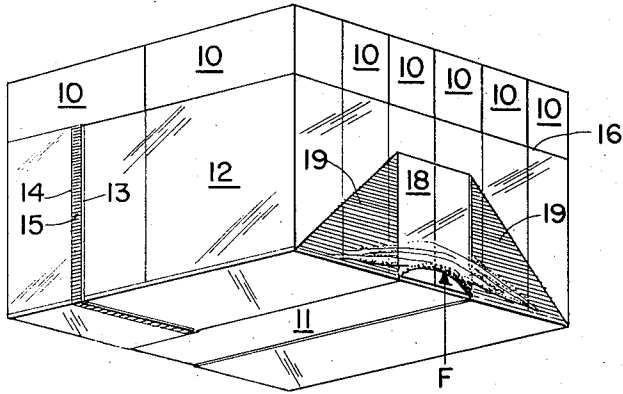


Fig. 5

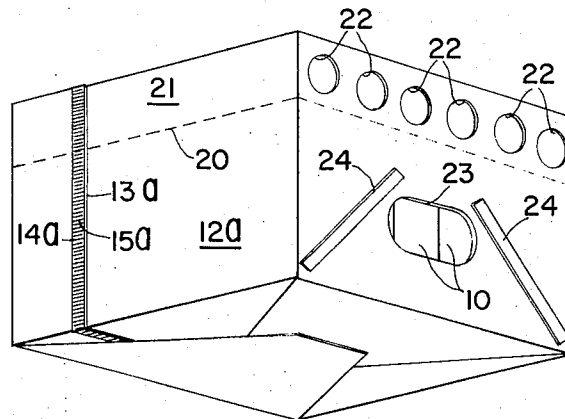


Fig. 6

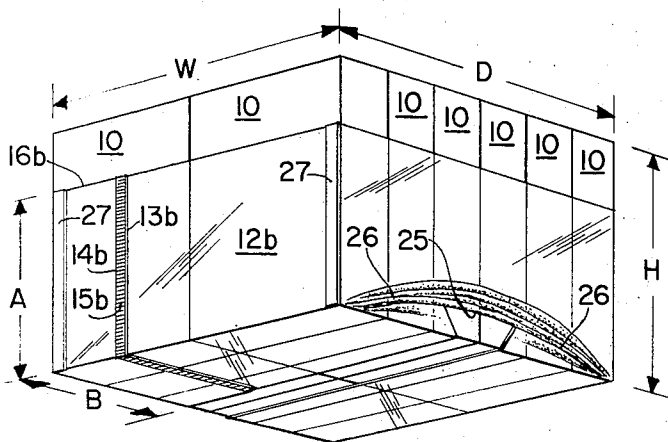
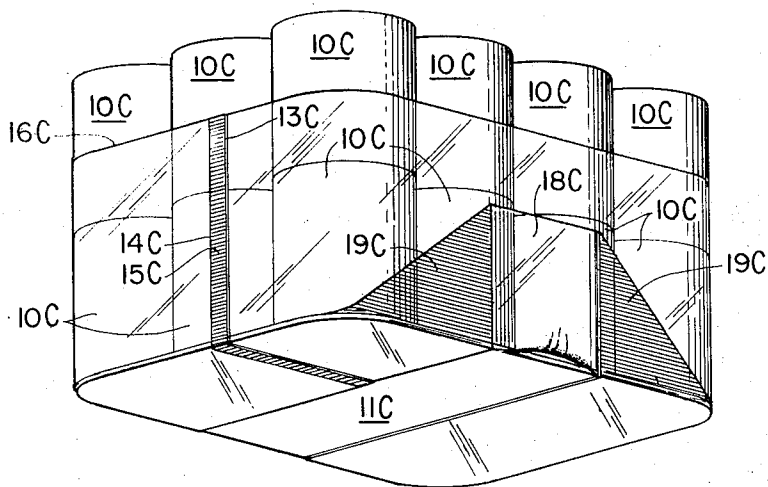


Fig. 7



STORAGE AND DISPLAY PACKAGE

BACKGROUND OF THE INVENTION

This invention relates to a package for a plurality of articles and more particularly to such a package adapted to form mass displays.

One of the major thrusts of the packaging industry has been to provide packages suitable for accommodating and displaying a plurality of articles such as containers of product. Prior art devices of this nature have been based on the premise that the display container must be suitable for handling the contained articles throughout the chain of distribution; i.e., they must be strong and rigid.

In accordance with this premise U.S. Pat. No. 3,519,125 issued July 7, 1970 to N. MacNeale and commonly owned by the assignee of this invention provides a tightly overwrapped package typically utilizing opaque materials such as kraft paper including tear strips to allow the top of the package to be separated and removed while the bottom serves as a low-walled display tray.

Various packages suitable for shipping as integral packages and for establishing a display have also been formed from tensioned clear films of shrinkwrapped polymers. U.S. Pat. Re 27,212 issued Nov. 2, 1971 to M. L. Brown discloses a package typical of these comprising a low-walled relatively rigid tray and tight overwrap of heat-shrunk polyvinylchloride. The prior art has also provided tension overwrapped packages including apertures through the overwrap to allow price-marking on the top or bottom of the contained product, tear strips to facilitate opening of the tensioned package and rigid trays within the package which allow the contained product to be handled after the overwrap is opened.

The provision of a tensioned wrapper completely covering the package contents, as illustrated by these prior art devices, has two major drawbacks. First, because these packages are to be used in the chain of distribution, without additional protection, they necessarily use more and stronger material than would be required of a package suitable for use within a retail store but lacking the structural integrity to make it satisfactory for use with most distribution systems. Second, the tight application of the wrapping material about the containers within the package makes removal of said containers, and especially the first one, difficult. The provision of tear strips and the like only partially obviates this problem.

An alternative to the approach taken by the above packages is to provide a package which is suitable for handling within, for instance, a retail store and which is suitable for forming mass displays but which lacks the structural integrity to allow it to be used, without other protection, throughout the chain of distribution. Preferably, such a package would not materially constrain removal of the enclosed containers and would be constructed of the minimum amounts of material consistent with its limited purposes. Such a package could be used, for instance, for containing and handling a portion of the contents of a larger shipping container. A large shipping container particularly well suited for use in shipping a number of packages of the present invention is shown in U.S. Pat. application Ser. No. 233,170, filed Mar. 9, 1972 commonly owned by the assignee of

this invention and now abandoned, and U.S. Pat. application Ser. No. 327,553, filed Jan. 29, 1973, as a continuation-in-part thereof.

OBJECTS AND SUMMARY OF THE INVENTION

Accordingly it is an object of this invention to provide a package which is suitable for handling its contents within a retail store and for forming mass displays.

It is another object of this invention to provide such a package which utilizes minimal amounts of material and which is easily formed.

It is a further object of this invention to provide a package from which the contents can easily be removed.

These and other objects are provided by a package for containing a multiplicity of items arranged in a rectangular array including a flexible sleeve extending vertically upward along the outward sides of said layer, said sleeve being substantially contiguous to the outward sides of said layer and having substantially no tension, whereby at rest items may be easily removed from said package. A bottom portion underlies at least the corners of the bottom and is connected to said sleeve. A pair of handles for lifting the package and the contained items is provided, located one on each of an opposing pair of the sides of said sleeve. Upon lifting the handles, the flexible sleeve stresses in circumferential tension so as to tighten about the contained items compressing them together and providing substantially increased structural integrity.

BRIEF DESCRIPTION OF THE DRAWINGS

Although 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 conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view showing a preferred embodiment of the invention;

FIGS. 2 and 3 are perspective views showing the assembly of the embodiment of FIG. 1;

FIG. 4 is a perspective view illustrating the use of the embodiment of the invention shown in FIG. 1; and

FIGS. 5, 6 and 7 are perspective views illustrating other embodiments and features of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Turning now to the drawings, FIG. 1 illustrates a preferred embodiment of the invention. A number of containers 10 are arranged in an array forming a rectangular parallelepiped having a height H, a width W and a Depth D. Underlying the array of containers 10 is preferably, but optionally, placed a support sheet 11 of corrugated board or the like. Encircling the containers 10 is a sheet of flexible and preferably transparent material 12. The material 12 can be cross-linked polyethylene about 3 mils thick, or any of the myriad of other materials known in the packaging art to be suitable and therefore not enumerated herein, and is sized such that one edge 16 may wrap around the width and depth of the array of containers 10 and allow the edges 13 and 14 to overlap so that a seam can be formed in the region 15 by heat sealing, adhesives, solvents or any other

means known in the art to be satisfactory for forming a seam in the material 12.

The material 12 preferably has a dimension along the edges 13 and 14 to allow it to extend a distance A, preferably at least equal to one-half the height H of the array, vertically upward along the containers 10 and to extend under the support sheet 11 by a distance B of which is typically from about one-third to one-half the depth D of the array.

The support sheet 11, if used, is preferably the same size as or slightly smaller than bottom of the array of containers and will typically be made of materials similar to the corrugated paperboard which would be used in forming a conventional case for the containers being handled. Its function is to prevent containers 10 from slipping through the otherwise open portion of the package underlying the containers 10. It is obvious that this function can be provided in many other ways. For instance, the support sheet can be approximately the same size as the otherwise open area of the bottom of the package and be adhesively secured to the material 12. Alternatively, strips of plastic, tape, corrugated board or the like can be appropriately placed and secured to provide underlying support for at least a portion of each container 10.

The use of a support sheet 11 of substantially the same size as the bottom of the array of containers 10, as shown in FIG. 1 and 7, (or constructions as shown in the alternate embodiments of FIGS. 5 and 6 wherein the material 12 underlies a portion of each container 10) is preferred, for reasons of ease of construction, to the above alternatives. As discussed hereinafter, it is also possible to provide an embodiment of this invention wherein at least some containers 10 have no underlying support.

FIGS. 2 and 3 illustrate the manner in which the support sheet 11 and the material 12 are assembled about the array of containers 10. Referring now to FIG. 2, the containers 10 are disposed in the desired array and rest on their tops; i.e., inverted from the position shown in FIG. 1. The support sheet 11 is then put in place. The material 12 is then wrapped about the sides of the array extending vertically along said sides a distance A and the edges 13 and 14 are overlapped and a seam formed by any of the means previously described in the region 15 between said edges. Preferably little or no circumferential tension is applied to the material 12 in the course of forming the seam, and the circumference of the sleeve can be, for instance, one-half inch greater than the circumference of the array when using 3 mil polyethylene. A portion of the sleeve material extends beyond the support sheet 11 by a distance B.

As shown in FIG. 3, the portions of the material 12 extending beyond the support sheet 11 from the pair of opposing sides forming the width W dimension are folded downwardly into contact with the support sheet 11. This folding causes the remaining portions of the material 12, which initially extend beyond the support sheet 11, to fold down into the plane of the support sheet 11 and extend beyond the array of containers 10 in a wing-like manner as shown. The assembly is completed by folding the wing-like portions downwardly and attaching them to portion of the material 12 disposed on the faces forming the depth dimension D of the array preferably by heat sealing in the triangular regions designated 19 in FIG. 1.

As shown in FIG. 1, the last mentioned folding and sealing operation forms, on each of a pair of opposing faces of the array 18, a rectangular region having a height equal to dimension B, which comprises two layers of material 12, and two triangular regions 19 each comprising three thicknesses of material 12.

As stated previously, the material 12 is preferably formed about the array of containers 10 with little or no tension. Because of this, when the completed package of FIG. 1 is resting on its support sheet 11 (and the portion of the material 12 underlying said sheet) each of the containers 10 is unconstrained and can be easily removed.

FIG. 4 illustrates the manner in which the package of FIG. 1 is handled. A lifting force F is applied to the lower edge of the rectangular region 18 on each side of the array which serves as a lifting means. Because there is little or no circumferential tension in the material 12, a hand may be easily slipped between the containers 10 and the material 12 to apply the lifting force F. Application of the lifting force F causes upward displacement and bowing of the material 12 particularly in the region of the rectangular region 18. This displacement and bowing gathers some of material 12 together and imparts circumferential tension to the material 12, locking the containers 10 into a sufficiently rigid block to allow handling them much as they could be handled if enclosed within a rigid package such as a corrugated box.

As mentioned previously, the use of support sheet 11 is optional although preferable. The support sheet 11 can be eliminated if the portions of the material 12 underlying the containers 10 have a dimension B large enough that at least part of each container 10 is supported by the material 12. Even this requirement can be eliminated if the circumferential tension developed in lifting the package locks the containers 10 together with enough force to prevent slippage of a container 10 not supported from below. The "locking force" required to achieve this is reduced as the coefficient of friction between the faces of containers 10 is increased. Some containers will possess a sufficient coefficient of friction as manufactured to eliminate both of the above requirements and others will require additional treatment, by, for instance, the use of a sticky coating such as that commonly applied to large paper bags of product to allow them to be stacked on a pallet (commonly referred to as palletizing adhesive), to be suitable for use with a package of this invention in which some of the containers have no underlying support sheet 11 nor flexible film 12. The minimum requirement, of course, is that a portion of the material 12 (or some member attached to the material 12) underlie the array at the corners.

FIG. 5 illustrates another embodiment of the invention including several features which can be incorporated in any of the packages of this invention. In this embodiment, the wrapping material 12a encloses the entire array of containers 10. This provides additional protection for the containers 10 and eliminates the need for a separate support sheet. Preferably the wrapping material 12a will comprise a single sheet of material (which is opaque as illustrated but can be transparent) such as the 3 mil crosslinked polyethylene described above and will include perforations 20 to facilitate removal of the upper portion 21 allowing the lower portion to function as described with regard to the em-

bodiment of FIGS. 1 through 4. Tear strips or the like can also be used in place of the perforations 20.

Alternatively, the upper portion 21 of the package 21 can be replaced by a separate sheet of material which can be lighter in weight than the remainder of the package as it serves no structural purpose. Such a separate sheet can be joined to the remainder of the package by spots of thermoplastic adhesive or the like.

When the package covers all of the containers 10, apertures defined by cuts 22 are preferably provided in the package allowing pricemarking of said containers while still in the package. The apertures 22 can be aligned with any portion of the containers 10. In use, however, the packages may be stacked several high and the provision of apertures 22 on the sides of the package (provided each container 10 is adjacent one side of the package) allows all of the containers 10 in a stack of packages of such containers 10 to be pricemarked without rearranging the stacks.

Because no lifting means comparable to that available in the embodiment of FIGS. 1 through 4 is available in the embodiment of FIG. 5, an aperture defined by cut 23 is provided for this purpose. Such an aperture or even a separate handle can be used with any of the embodiments of this invention. Reinforcing members 24 which can, for instance, be clear tape are preferably used when, as in this embodiment, there is only one layer of film connecting the lifting means and the lower corners of the package.

FIG. 6 is still another embodiment of this invention, illustrating a variation in the formation of the lifting means. This embodiment is formed in a manner similar to that described in connection with FIGS. 2 and 3 except that the material after being sealed into a tubular form by the seam is preferably about 1 to 2 percent longer in the dimension along edge 16 than the embodiment of those figures; i.e., is loose about the containers 10. Again the material 12b extends up the sides of the containers 10 a distance A preferably at least one-half the height H of the containers 10 and extends under the containers 10 by a distance B. Dimension B is preferably sufficient to provide some vertical support for each container 10 by the material 12b; i.e., is nearly equal to one-half of the depth D of the array, thereby eliminating the need for a support sheet.

In this embodiment, only a very narrow lifting means would be provided if the material 12b were sealed in accordance with the teachings of FIG. 1. As mentioned, the material 12b is comparatively loose fitting about the containers 10 in this embodiment. The slack in the material 12b allows gathering material upwardly and outwardly along the containers to form a lifting means 25 which is wider than the opening at the lower edge of the containers 10. Preferably, the material 12c is gathered into the regions 25 and 26 as shown and held in this position while heat is applied to shrink the excess material 12b in said regions and heat seal it to itself, thus forming a permanent lifting means 25 and reinforcing regions 26. This shrinking and heat sealing is preferably done only to the degree necessary to form the lifting means 25 and reinforcing regions 26, and is not continued beyond that point. Thus, although some shrinking is employed, the material 12c is still loose enough (when not being lifted by the handles 25) about the containers to allow any of the containers 10 to be lifted from package. Although heat shrinking and sealing is the preferred way to secure the lifting means in

this embodiment, adhesives and other means known in the art can also be used.

The embodiment of FIG. 6 is superior to the other embodiments from a structural standpoint as a result of the nature of the reinforcing regions 26. The regions 26 are comprised of a number of layers of more or less superposed material 12c and connect the lifting means 25 with the lower corners of the array. Thus, these regions are comparatively strong (as a result of the multiple layers of material which they contain) and are ideally disposed to transmit the lifting force from its point of application on the lifting means 25 to the lower corners of the array where the force is needed to lock the array together (with the circumferential component of the force) and lift the rigid array by its bottom corners (with the vertical component of the force).

FIG. 6 illustrates a further feature which can be used with any of the packages of this invention. A pair of tear strips 27 are disposed on and sealed to the material 12c. Many of the tear strips known in the art are suitable for use with the material 12c being used to allow one panel of the package to be torn away to provide a completely unobstructed view of the packages 10. After using the tear strips 27 to separate the panel to be removed along vertical lines, the panel is cut with a knife or the like along the remaining horizontal line of attachment; i.e., its lower edge. The horizontal separation can also be effected by a horizontally-disposed tear tape.

It should be noted that the tear tapes 27 are disposed transversely of the direction of the circumferential tension in the package and therefore the tear tapes 27 should be designed so as not to appreciably weaken the material 12c. With 3 mil cross-linked polyethylene as the material 12c strips of 3 mil polyethylene nine-sixteenth inch wide can be heat sealed to the material 12c to provide the tear strip feature without unduly weakening the package.

FIG. 7 illustrates the use of the present invention with cylindrical containers 10c such as those commonly used with canned goods or the like. As shown, the containers 10c are arranged two high. This two high configuration can also be used with any other type of container. An additional sheet of corrugated board or the like can be interposed between the layers of containers 10 or omitted as in the illustration. The support sheet 11c is preferably contoured to match the containers 12c, thereby allowing all of the circumferential tension in the material 12c to be applied to the containers 10c (as opposed to the support sheet 11c) upon lifting the package.

Many modifications of the invention can be made and it is not intended to limit the invention to the particular structures described, all reasonable equivalents thereof being intended to fall within the scope of this invention.

What is claimed is:

1. A package for a multiplicity of items such as containers or the like to enable such items to be packaged for shipping, storage and display thereof as a unit while being yet easily removable therefrom for subsequent handling as individual items wherein each of such items has at least a base portion of generally upstanding parallelopiped configuration and such multiplicity of items is arranged with the base portions in a closely packed rectangular array, said package comprising:

a. a sleeve of flaccid material extending peripherally continuously around and vertically upward from

outward lowermost edges of the sides of said array, said sleeve being substantially contiguous to the outward sides of said array and being of sufficient peripheral extent as to be at least as large as said array and therefore substantially unstressed by the enclosed array when the bottom thereof is supported on a surface so that such items may be easily lifted upwardly therefrom and removed from said package for handling as individual items when the same is at rest;

b. a bottom portion extending generally perpendicularly inwardly of said sleeve underlying at least each of the corners of the bottom of said array and connected with said sleeve; and

c. means for enabling lifting of the package and the enclosed array as a unit and defining a pair of handles connected with said sleeve, one on each of an opposing pair of the sides of said sleeve generally centered between a pair of said bottom corners and spaced upwardly thereof a distance such that upon the application of lifting force to said handles, tensile stresses are induced in said sleeve between said handles and the adjacent ones of said bottom corners to provide resultant components directed inwardly of the array to cause at least the bottom portion of the sleeve to tighten about at least the base portion of the enclosed items and compress them together with a force sufficient to maintain said array substantially coherent through frictional forces developed thereby between adja-

cent ones of said items and to thereby provide substantially increased structural integrity to said package during such lifting.

2. The package of claim 1 wherein said sleeve portion is of sufficient peripheral extent and of sufficient pliability to enable said handles to be defined by portion of the lower edge of said vertical sleeve displaced upwardly of the lower edge of said array by such lifting force.

3. The package of claim 2 wherein said upwardly displaced handle defining portions are provided by a gathered and secured portion of said sleeve, thereby also forming reinforcing regions on said sleeve extending angularly outwardly and downwardly of said handles towards the adjacent bottom corner.

4. The package of claim 1 wherein said sleeve is provided with an aperture defined by an upper edge which provides at least one of said handles.

5. The package of claim 1 wherein said sleeve is of substantially transparent plastic film material and is about 3 mils thick.

6. The package of claim 1 wherein a support sheet is interposed beneath at least some of said items extending between said bottom portions of said package and said containers and underlying and supporting said items and precluding inadvertent passage of said some of said items through any gap between said bottom portions.

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