United States Patent

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[54] HOLDER FOR TETRAHEDRON PACKAGES

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[52] **U.S. Cl.** .....**229/42,** 206/62 R, 206/65 T
[51] **Int. Cl.** **B65d 5/50,** B65d 71/00
[58] **Field of Search** .....206/62 R, 65 T; 229/22, 14 C, 229/42

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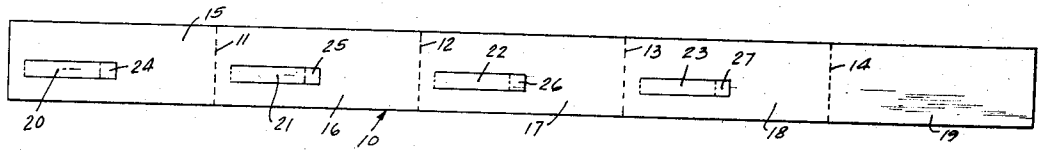
Attorney—Hill, Sherman, Meroni, Gross & Simpson

[57] **ABSTRACT**

A support device for tetrahedron packages consisting of a single strip of material folded into a pleated structure consisting of alternating V- and inverted V-shaped compartments, the vertices of the V's being proportioned to snugly receive the vertical fins of the tetrahedron packages, and a support strip extending across each of the open ends of the V's arranged to support the horizontal fins of each of the tetrahedron packages.

7 Claims, 5 Drawing Figures



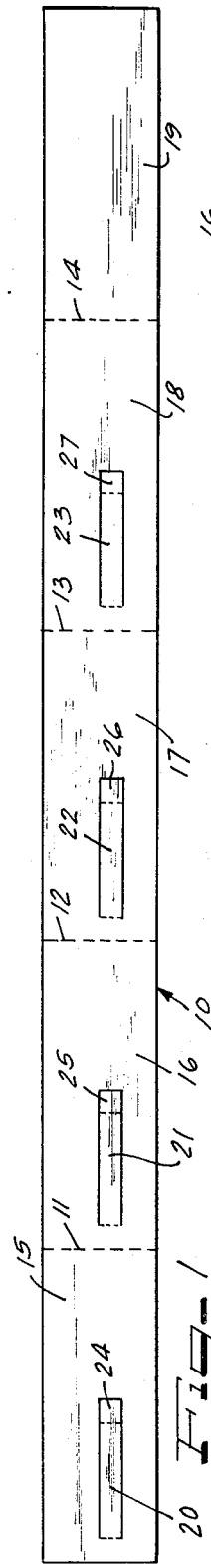


Fig. 1

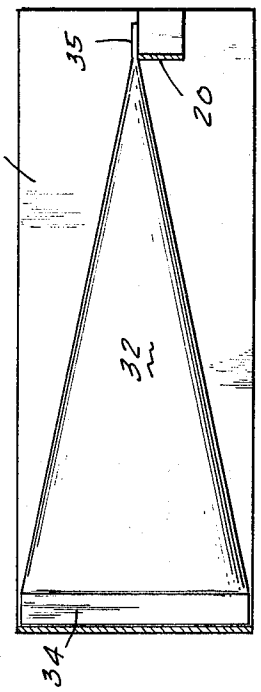


Fig. 4

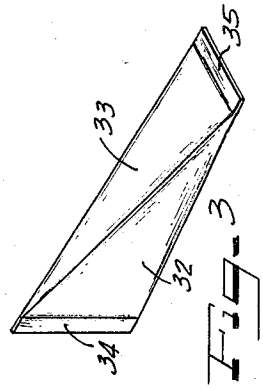


Fig. 3

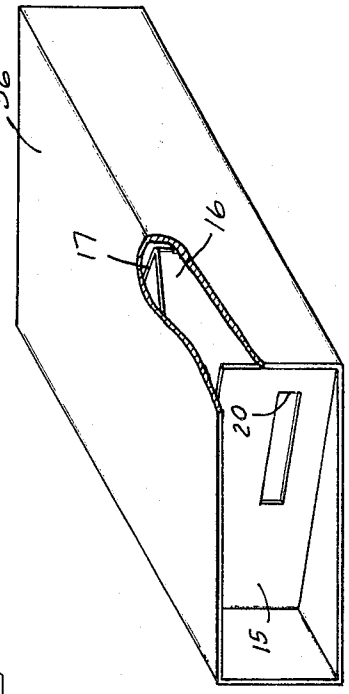


Fig. 5

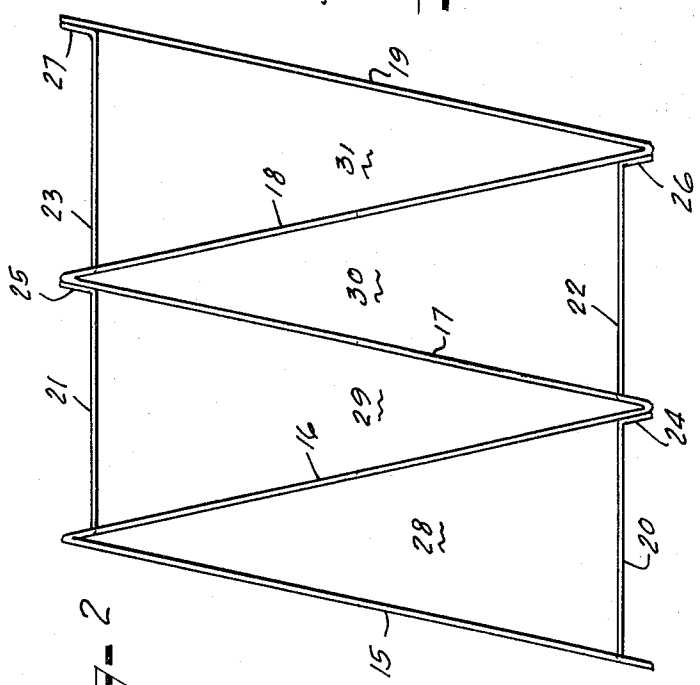


Fig. 2

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HOLDER FOR TETRAHEDRON PACKAGES

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention is in the field of shipping or storage cartons for tetrahedron-shaped packages, the cartons containing a support device which is foldable on conventional machinery from a single strip to provide triangularly shaped compartments which receive the tetrahedron packages in stable relationship.

2. Description of the Prior Art

The tetrahedron-type package, usually composed of paper lined with polyethylene or other moisture barrier, consists in a four-sided figure, each side being triangular in shape. The corners between the four surfaces may be sharp or they may be rounded, depending on the design of the package. The ends of the tetrahedron package take the form of two fins. When the package is lying on one of the surfaces, one of the fins is horizontally disposed and the other is vertically disposed. This type of package has become quite popular for packaging liquid foodstuffs particularly in Sweden and Japan and to some extent in the United States.

The tetrahedron package is much lower in cost than metal or fiber cans, plastic or glass bottles, or flat pillow-shaped pouches, since the tetrahedron pack requires less packaging material, and uses lower cost packaging materials to contain an equal amount of product. Several different types of machines have been provided for making these packages, these machines usually employing a roll of flexible packaging material that is formed into a tube over a vertical round mandrel, with heat sealing of the seams.

The peculiar shape of the tetrahedron package, however, makes it difficult to handle and to group, nest or stack into compact arrangements for shipping and for retail store display on shelves or in stacks. One package heretofore suggested for storing these materials consists of a "satchel" pack which is a generally triangularly shaped support structure into which the tetrahedron packages are mounted at an angle to each other, with a handle being provided for carrying purposes. Still another means for storing these packages consists of a fan-type pack in which the individual tetrahedron packages are offset from each other and stored in a generally rectangular box. Still another storage device for such packages consists of a package in which the tetrahedron packages are mounted upright with the weight of the contents of the package resting on one of the seams. A still further packaging scheme for such packages has been the so-called random pack where the tetrahedron packages are deployed in a carton in random orientation.

All of these previous support structures for tetrahedron packages have some disadvantages. In many cases, they do not make a completely efficient utilization of space. In other cases, the containers are difficult to manufacture and expensive. In still other cases, the tetrahedron packages are disposed in the containers with significant loads being presented on the fins of the packages due to the static pressure of the liquid contained in the package.

SUMMARY OF THE INVENTION

The present invention provides an improved support structure for tetrahedron packages which is compact, makes a maximum utilization of space, and provides adequate support and protection for the contents of the packages. Specifically, the support device of the present invention is formed from a single strip of material which is folded into a pleated structure and consists of alternating V- and inverted V-shaped compartments, the vertices of the V's being proportioned to snugly receive the vertical fins of the tetrahedron packages, with a support strip extending across each of the open ends of the V's arranged to support the horizontal fins of each of the tetrahedron packages. The support strips are struck from the single strip and have their free ends adhesively or otherwise secured to vertical walls of the resulting compartments. In order to provide adequate support, the upper edges of the support strips are substantially one-half the height of the vertical walls of the compartments

BRIEF DESCRIPTION OF THE DRAWING

Other objects, features and advantages of the invention will be readily apparent from the following description of a preferred embodiment thereof, taken in conjunction with the accompanying drawing, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure, and in which:

FIG. 1 is a plan view of a blank which can be used for forming the support structure of the present invention;

FIG. 2 is a plan view of the resulting support structure formed on the type of blank shown in FIG. 1;

FIG. 3 is a view in perspective of a tetrahedron package of the type with which the present invention is concerned;

FIG. 4 is a cross-sectional view showing the manner in which a tetrahedron package is supported with one fin in the vertex of the V-shaped compartment, and the other fin being supported on a support strip; and

FIG. 5 is a view in perspective, partially broken away, to illustrate a complete package in which the support structure may be included.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIG. 1, reference numeral **10** indicates generally a blank composed of a rigid material such as paperboard, corrugated board, or a synthetic resin strip. The blank **10** is divided by means of score lines **11**, **12**, **13** and **14** into individual panels **15**, **16**, **17**, **18** and **19**. In the particular form of the invention shown in the drawings, the support structure is arranged to handle four tetrahedron packages, but of course the strip can be made to accommodate any number of packages, from two up.

Each of the panels **15** through **18** has a support strip **20** to **23**, respectively, struck out from the body thereof on three sides, and each of the support strips **20** to **23** is provided with suitable score lines to define tabs **24** through **27**, respectively.

The blank **10** is then folded in pleated fashion as shown in FIG. 2 to provide a series of triangular V-shaped and inverted V-shaped compartments **28**, **29**, **30** and **31**. The tab **24** is adhesively or otherwise secured to the vertical wall provided by the panel **16**, the tab **25** is secured to the vertical wall provided by the panel **17**, and so on. The upper edge of the support strip **20** through **23** is located at substantially one-half the vertical height of the compartment, as best illustrated in FIG. **4** of the drawing.

The type of package with which the present invention is particularly concerned is illustrated in FIG. **3** of the drawing. It contains four triangular faces, two of which are identified at **32** and **33**, and are visible in FIG. **3**. When the tetrahedron package is resting on one of its faces, in the position illustrated in FIG. **3**, it has a vertical fin **34** and a horizontally disposed fin **35**. With the tetrahedron package inserted into the support structure shown in FIG. **4**, the horizontal fin **35** rests on the top surface of one of the support strips **20**, while the vertical fin **34** is snugly received within the vertex angle provided between two adjacent vertical wall sections of the support structure, In this manner, the support structure provides a load bearing device in which the weight of the contents is distributed throughout the vertical length of the tetrahedron package.

It is also advisable to provide medial score lies along the support strips **20**, **21**, **22** and **23** so that the support structure itself can be folded into a substantially flat package.

The support structure, together with the tetrahedron packages contained therein, can be enclosed, for example, into a hollow rectangular outer shell **36** as illustrated in FIG. **5** of the drawing. Alternatively, the loaded board structure can be overlapped on all sides with plastic film that is tightly heat shrunk around all six sides, providing a flat sided brick shaped

unit which is easy to stack, handle or display. Such a unit will support heavy top loads for stacking purposes.

I claim as my invention:

1. A support device for tetrahedron packages comprising a single strip of material folded into a pleated structure consisting of alternating V- and inverted V-shaped compartments, the vertices of the V's being proportioned to snugly receive the vertical fins of said tetrahedron packages, and a support strip extending across each of the open ends of the V's arranged to support the horizontal fins of each of said tetrahedron packages.

2. The support device of claim 1 in which each of said support strips is folded centrally thereof to permit folding of said strips of material into a compact flat package.

3. The support device of claim 1 in which said support strips are struck from said single strip and have their free ends adhesively secured to vertical walls of said compartments.

4. The support device of claim 3 in which the upper edges of said support strips are at substantially one half the height of the vertical walls of said compartments.

5. A blank for forming a support for tetrahedron packages comprising a single flat sheet having parallel spaced score lines formed therein permitting the blank to be folded into a pleated structure consisting of an alternating series of V- and inverted V-shaped compartments and integral strips formed in some of the walls of said compartments arranged to extend across the open ends of said V-shaped compartments into engagement with the adjoining wall.

6. The blank of claim 5 which includes a score line on each of said strips adjacent the end thereof, thereby providing tabs for securing said strips to said adjoining wall.

7. The blanks of claim 5 in which each of said strips has a score line centrally thereof.

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