April 22, 1969 L. G. WIENECKE, JR 3,439,860

PROTECTIVE PACKING MATERIAL

Filed June 5, 1967

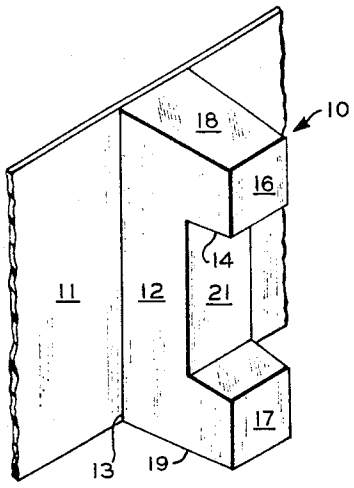


FIG. 1

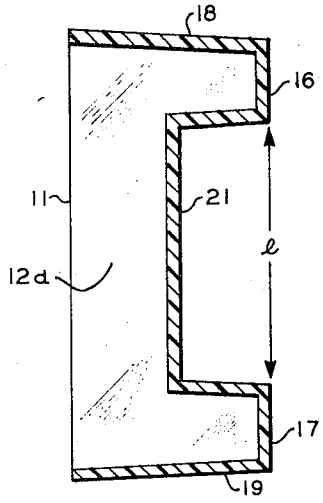


FIG. 2

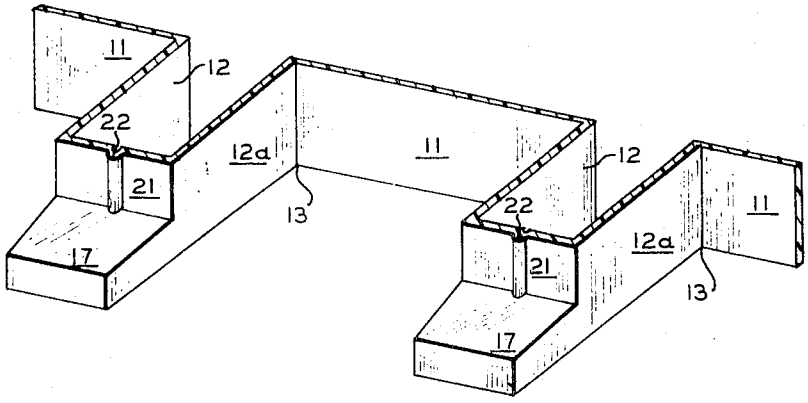


FIG. 3

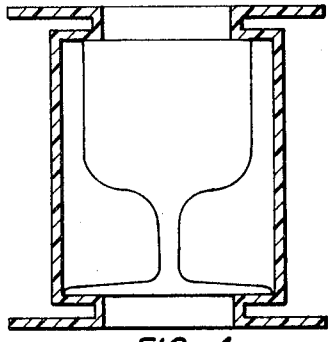


FIG. 4

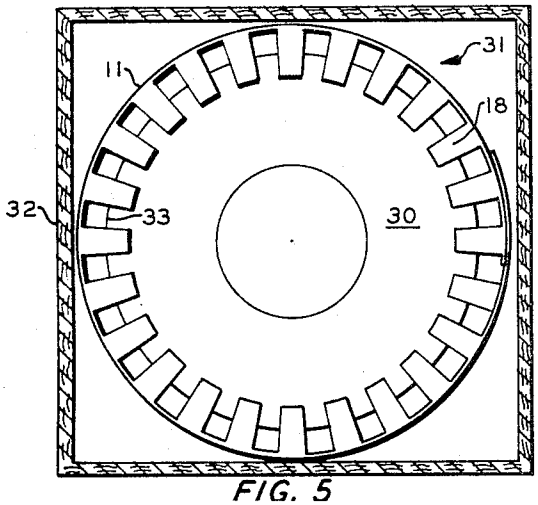


FIG. 5

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PROTECTIVE PACKING MATERIAL

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U.S. Cl. 229—14 8 Claims

ABSTRACT OF THE DISCLOSURE

A cushioning packing strip of flexible thermoplastic material having linked units of a bottom protrusion supporting the item, a middle portion abutting the edge of the item and an upper protrusion protectively overhanging the item. The units are linked by a flexible back wall and surround the periphery of the item.

This invention relates to a protective packing material. In one aspect the invention relates to shipping fragile items. In another aspect the invention relates to a flexible cushioning packing strip.

Shock and vibration conditions are part of a package's transportation and handling environment. The basic function of a package is to protect the item contained therein against these and other conditions.

Conventionally, fluted corrugated board is used to form a packing carton. When the packaged item is fragile, liners, pads, partitions and other auxiliary corrugated constructions are necessary for the interior packaging. Some fragile items require additional cushioning materials such as excelsior, shredded paper, foam rubber, and the like, which of course increase the cost of packaging.

The protective packing material of the invention eliminates the need for auxiliary corrugated construction and additional cushioning materials when packaging fragile items. The packed item is protected on the sides, top and bottom by the flexible packing material of the invention.

Accordingly, it is an object of the invention to provide an improved protective packaging material.

Another object is to reduce breakage of packaged items during shipping.

Another object of the invention is to reduce the cost of packing fragile items.

Other objects and advantages will be apparent to one skilled in the art upon consideration of the disclosure, figures and appended claims.

FIG. 1 is an isometric view of an individual unit of the packing strip of the invention.

FIG. 2 is a longitudinal cross section of the unit shown in FIG. 1.

FIG. 3 is a transverse cross section of the packing strip.

FIG. 4 is a cross-sectional view of the packing strip encompassing fragile glassware.

FIG. 5 depicts the packing strip of the invention placed about dishes in a carton.

According to the invention, there is provided a protective packaging material comprising a cushioning and suspension strip for encompassing the periphery of a fragile item. The packaging strip is fabricated from a flexible thermoplastic material. The packing strip comprises a plurality of linked units, each unit having an upper protrusion spaced a vertical distance apart from a lower protrusion forming a channel-shaped midportion which encompasses the edge of a fragile item or the thickness of a plurality of stacked items. The unit is formed with two horizontally spaced apart vertical side walls, the back edge of the side wall being straight and the inner edge having a channel-shaped cutout portion. The side walls are joined to each ohter by top and bottom end walls and a front wall conforming to the shape of the inner edge

thus forming the protrusions and channel-shaped midportion. A back wall extends normally from the back edge of one side wall and is connected to the side wall of another unit to link the units and form the packing strip.

The packing strip of the invention can be easily fabricated from flexible thermoplastic sheet material by thermoforming or other conventional methods. Polyethylene is one preferred material of construction because of its strength and flexibility characteristics under various conditions.

Referring now to the drawings wherein like reference numerals are used to denote like elements in the different figures, FIG. 1 shows an individual unit **10** of the packing strip as having a back wall **11** joined to a side wall **12** at the back edge **13** of wall **12**. The front edge **14** has a cut out portion to form an upper protrusion **16** and a lower protrusion **17**. A second side wall **12***a* (not shown) is joined to side wall **12** at the top and bottom edges by end walls **18** and end wall **19** (not shown) and by front wall **21** at the channel-shaped edge **14**. When polyethylene or like thermoplastic materials having sufficient stress-cracking resistance are used in fabrication of the packing strip, a self-hinge is formed at edge **13**, allowing the strip to be flexed so as to encompass the periphery of irregularly shaped items.

FIG. 2 is a longitudinal cross section through the center of the unit and shows the construction of top end wall **18**, bottom end wall **19** and front wall **21**. Forces applied to a package in which the packing strip is used are cushioned by the upper protrusion **16**. The lower protrusion **17** supports the item and also cushions against shock. The length of the channel-shaped midportion **1** is determined by the thickness of the item or items to be packed. The depth of the channel is sufficient to securely encompass the edge of the packed item.

FIG. 3, a transverse cross section, depicts the individual units joined together to form a portion of the packing strip of the invention. The packing strip of course can be any desired length. The spacing between individual units is determined by the weigth and strength characteristics of the item to be packed and the type of handling the package will receive. In this embodiment, front wall **21** is fabricated with a crimp or ridge **22**, providing additonal strength and protecting against crushing of the packing strip.

FIG. 4 illustrates the packing strip in cross section, encompassing fragile glassware.

FIGURE 5 depicts a stack of dishes **30** packed within the packing strip **31** in a carton **32**. The periphery **33** of dishes **30** is supported on and cushioned by the packing strip of the invention. The back walls **11** provide a cushion against lateral movement and shock. If desired, the end unit of the packing strip can be nested into the first unit, to secure the packing strip about the item. As shown in the drawing, packing strip **31** is secured around the dishes by overlapping and nesting the two end units into the first two units to form a continuous band. This feature reduces the time necessary to pack the item and facilitates handling of the packed item. If it is desired to fasten the ends more securely, the nested units can be clipped or stapled together. Other suitable fastening devices are known in the art.

In a test of the invention a stack of four dishes, packed as illustrated in FIGURE 5, were air mailed in a package which was not marked "fragile" from Fulton, N.Y., to Bartlesville, Okla., without breakage. The packing strip of the invention is easily and quickly installed about an item, thus reducing the labor costs of packing items. The thermoplastic material can be colored to provide an attractive display unit and convenient shelf container.

Reasonable modification and variation are within the

scope of the invention which sets forth a novel protective packing strip.

That which is claimed is:

1. A flexible thermoplastic packing strip fabricated from thermoplastic sheet material comprising a plurality of linked units, each unit comprising a plurality of walls of said sheet material as follows:

first and second horizontally spaced-apart vertical side walls, each having a top edge, a bottom edge, a straight back edge, and a front edge with a channel-shaped cutout portion;

a first end wall joining said side walls at the top edges;

a second end wall joining said side walls at the bottom edges;

a front wall joining said side walls at the channel-shaped front edges to form an upper protrusion, a lower protrusion, and a channel-shaped midportion of sufficient channel width and depth to encompass the periphery of an item to be packed, said channel-shaped midportion being spaced from said straight back edge; and

a back wall extending from the back edge of said first side wall to the back edge of the second side wall of an adjacent unit to link the individual units, said back wall being substantially planar and being joined to said side walls along straight lines formed by said back edges whereby said packing strip can be wrapped around an object to be packed.

2. The article of claim 1 wherein said front wall is formed with a ridge in the center of the channel width.

3. The article of claim 1 wherein said thermoplastic has sufficient stress-cracking resistance to form a self-hinge at the juncture of the back edge of said side walls and said back wall.

4. The article of claim 3 wherein said thermoplastic is polyethylene.

5. A package formed of a packing strip of claim 1 wherein the end unit of said plurality of linked units overlaps and nests into the initial unit to form a closure of the packing strip.

6. A package formed of a packing strip of claim 1 wherein a plurality of said end units overlap and nest into a plurality of initial units to form a closure of the packing strip.

7. The package of claim 5 wherein said nested end unit is secured to said initial units by a fastening means.

8. The package of claim 6 wherein said plurality of end units are secured to said plurality of initial units by a fastening means.

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