Aug. 14, 1962 A. H. STONE 3,049,260

CUSHIONING MATERIAL

Filed July 13, 1960

FIG. 1

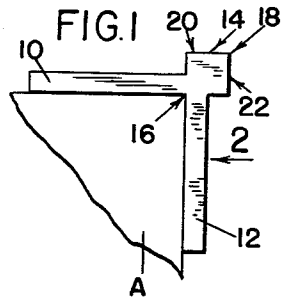


FIG. 2

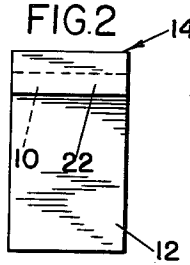


FIG. 3

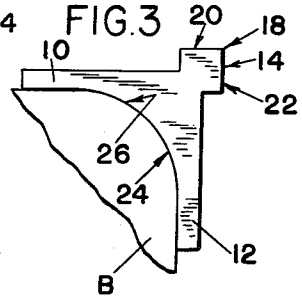


FIG. 4

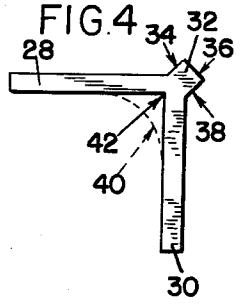


FIG. 5

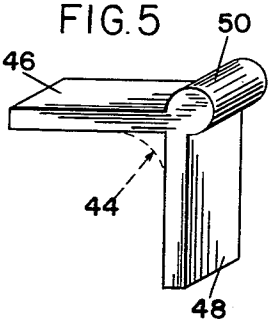


FIG. 6

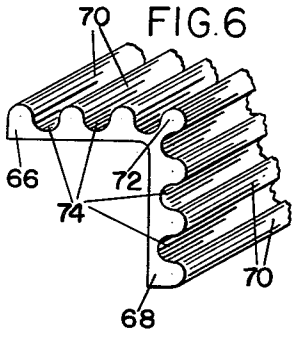


FIG. 7

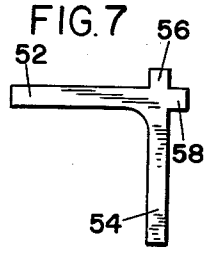


FIG. 8

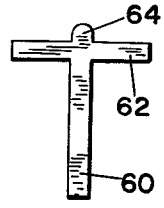


FIG. 9

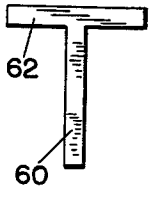


FIG. 10

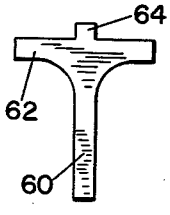


FIG. 11

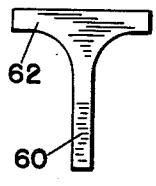


FIG. 12

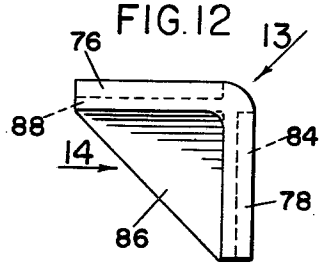


FIG. 13

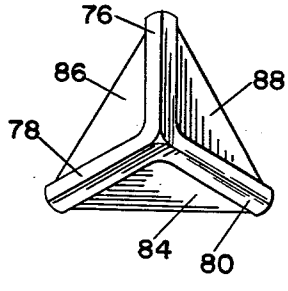
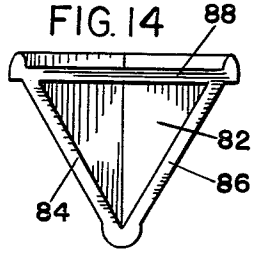


FIG. 14



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3,049,260

CUSHIONING MATERIAL

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1 Claim. (Cl. 217—53)

This invention relates to a new and improved expanded plastic cushioning material particularly in the packaging field. The plastic used is of an expansible nature and it provides in molded form an expanded plastic (polystyrene or polyurethane) relatively strong article which may be inserted between a crate or other package and the object being crated for instance at the corners and along the side edges thereof in order to clearly protect the object from damage within the crate.

Besides preventing damage to the article being packaged or crated, the devices have the added function of maintaining the material packaged in its position within the crate or the package so that it does not shift back and forth.

One of the principal objects of the present invention resides in the provision of a new and improved article as above described which provides a maximum of protection with a minimum of material necessary to be used so as to provide the protection required at a minimum of expense, and to this end the protective articles may be for instance in the form of a corner packaging unit or a side angled-shaped unit, the same being provided with relatively thin side wall members having extending portions of greater volume, principally at the junction of the sides, said portions of greater volume extending outwardly therefrom to provide an adequate clearance between the package or crate, particularly at the corners, and the article which is being carried therein, the expanded plastic article as described herein spacing the article packaged from the crate or other packaging material.

Other objects of the invention include a rippled or corrugated member which provides not only additional volume of material at the juncture or edges or corners thereof of the articles, but also a corrugated or rippled effect along the side edges, giving added strength and protection with a minimum of material; and the provision of a generally T-shaped packaging member which may serve the purpose as an edge protector for dual packaging, between the packages, between multiple articles in the package itself.

The invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly set forth in the appended claim.

Reference is to be had to the accompanying drawings, in which:

FIG. 1 is a view in side elevation showing a form of the invention;

FIG. 2 is a view in rear elevation looking in the direction of arrow 2 in FIG. 1;

FIGS. 3 and 4 are side elevations showing modified forms of the invention;

FIG. 5 is a perspective view showing a modified form of the invention;

FIG. 6 is a perspective view showing a modified form of the invention;

FIGS. 7, 8, 9, 10 and 11 are all views in elevation illustrating further modifications;

FIG. 12 is a view in side elevation of a corner packing unit;

FIG. 13 is a view looking in the direction of arrow 13 in FIG. 12; and

FIG. 14 is a view looking in the direction of arrow 14 in FIG. 12.

The material of which the articles are made is well known in the art and is generally referred to as an expansible plastic or expandible polystyrene or polyurethane or other similar material. Other suitable materials may be used. The method of obtaining the expansion is provided in a mold but the actual method is not germane to the present invention, any method and any molding scheme being usable for this purpose as long as the plastic expands.

Referring now to FIG. 1, there is shown a generally L-shaped edge packing unit which has an arm 10 and an arm 12 at angles to each other, the same being joined by an integral enlarged corner member generally indicated at 14. This corner member provides a dimension from a point at 16 to a point at 18 of the kind required for packaging units but saves a good deal of material as represented by the relative thinness of arms 10 and 12 as compared to the thickness of the corner member 14.

The corner member 14 also has sides at 20 and 22 which are generally parallel to the respective sides 10 and 12 and these of course contact the inner edge of the crate or packaging material which serves to package the object the edge of which is indicated by the reference character A.

It will be seen that this member provides a strong yielding crush-proof packaging member in which the extension 14 provides additional protection as well as serving to hold the piece in position in the package but at the same time it is made less expensively than in the prior art because less material is needed to carry out the purposes of the invention.

FIG. 3 shows a modification which is generally the same as in FIG. 1, but in this case instead of having the corner square as at 16, the piece has a rounded edge at 24 to conform to a rounded edge 26 on the piece B which is being packaged. Otherwise the various surfaces are generally the same and have been so marked in the drawing.

In FIG. 4 there is shown a similar piece which has arms at 28 and 30 which are equivalent to those at 10 and 12 and an angular projection 32 which extends into the corner of the package or crate, and is the equivalent of the piece 14, but the angular surfaces thereon are arranged a little differently, i.e., at inclinations to the equivalent surfaces 20 and 22, see 34, 36 and 38 in FIG. 4. However, the invention is substantially the same as before.

The dotted line 40 merely represents the fact that instead of having the sharp inner angle 42, the piece shown in FIG. 4 can be rounded off as in FIG. 3. The same is true as to FIG. 5, see dotted line 44. In this case the arms 46 and 48 are the same as before described as to FIG. 1, but the projection is given a bulged or semi-cylindrical shape as at 50 rather than the square shape as shown in FIG. 1. Otherwise, however, the construction is substantially the same as before.

The FIG. 7 construction again is a slight variation in which arms 52 and 54 are the same as those shown in FIG. 1 at 10 and 12 but in this case there are two separate projections extending at 90° to each other, see 56 and 58.

FIGS. 8, 9, 10 and 11 all show relative T-shaped members each of which is provided with a staff member 60 and a crosshead member 62. In some cases as in FIGS. 8 and 10 there is an additional material extending upwardly as at 64 for contact with the inner surface of the package or crate, but in some cases as shown in FIGS. 9 and 11 this is not necessary to be used. In all cases in FIGS. 8, 9, 10 and 11 the reference numerals 60 and 62 point out equivalent members and the same forms a variation of the edge protector for dual packing or between the package protectors or between different articles to be packaged in a single package or crate, and all can have either

the 90° angle shown in FIGS. 8 and 9 or the curved side as shown in FIGS. 10 and 11.

Referring now to FIG. 6, this device shows an edge packaging member which has the arms **66** and **68** generally equivalent to those at **10** and **12** but in this case the outer surfaces thereof are corrugated as at **70** and this will clearly provide additional strength as well as the extending member **72** at the corner and may be used in place of the device shown in FIG. 1, etc., but still considerable material is saved by reason of the indentations at **74**.

Referring now to FIGS. 12, 13 and 14, there is here shown a corner unit which is based on the same inventive concept as above described, because in this case there is provided a generally pyramidal member having outwardly extending ribbed constructions as shown at **76**, **78** and **80**, these being in the form of the edges of the pyramid, the same being hollow as shown at **82** and having considerably reduced side walls **84**, **86** and **88**. Thus the material is saved as at these side walls but still the side portions of the corner of the device are clearly protected and the device is made crush-proof from any direction, no matter where the pressure should come from. Again it is pointed out that the interior of the pyramid may be square cornered or rounded without departing from the scope of the invention in any way.

It will be seen that this invention provides a maximum of crush-proofing and packaging protection with a minimum of expense due to the fact that a maximum of material is saved with, however, retention of the crushproof and protective faculties of the material and the articles involved.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claim, but what I claim is:

A protective packaging device comprising a pair of flat

arms of expanded cellular plastic material, said arms being joined at corresponding ends in a one-piece unitary device in the form of a right angle providing an exterior surface and an interior surface, and a series of integral, spaced ridges of the expanded cellular plastic material extending out from the exterior surface of each arm, the ridges providing a corrugated effect, and one ridge being located at and along the juncture of the exterior surfaces of the arms, all said ridges being parallel to the ridge at the juncture of the exterior surfaces of the arms and extending transversely of the surfaces across the respective arms.

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