

United States Patent

Richter

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[54] PACKAGING STRUCTURE

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[52] U.S. Cl. 229/14 C, 206/46 FN

[51] Int. Cl. B65d 25/14

[58] Field of Search 229/14 C; 206/46 FN

[56] References Cited

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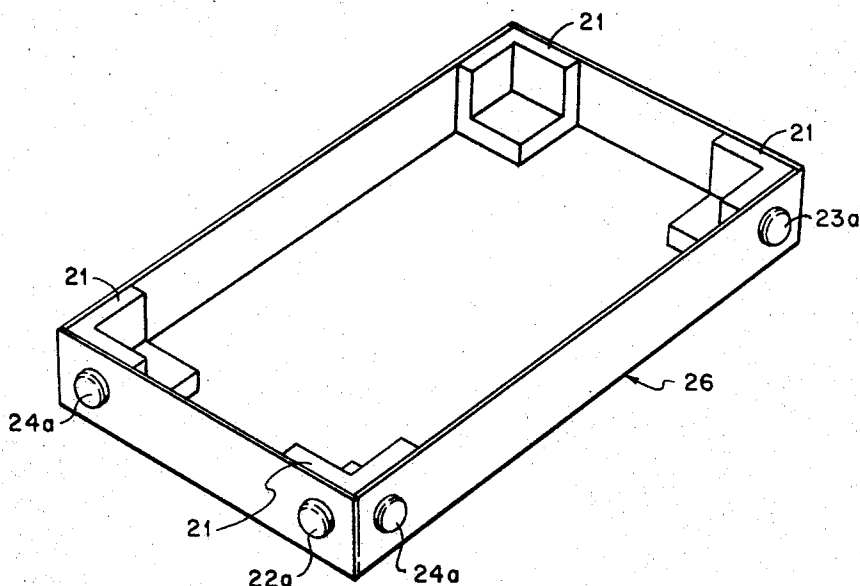
3,356,209	12/1967	Pezely, Jr.	229/14 C X
3,399,797	9/1968	Freeman	229/14 C X
2,376,530	5/1945	Dittman	229/14 C
2,560,249	7/1951	Risch	229/14 C X

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[57] ABSTRACT

A resilient member having three round projections on each outer side for use in a packaging container for receiving and carrying articles to be protected against shock as may be experienced in loading, transporting, and storing. In ordinary application, a cardboard tray is supported at each corner with a resilient member with the projections of such member being in registration with openings in each corner of the tray to position the resilient members, hold the tray sides together, and to form a resilient cushion at each corner for supporting an article transported in the container. In the usual circumstance, there are two trays per container, one at the bottom of the article and one at the top.

5 Claims, 6 Drawing Figures



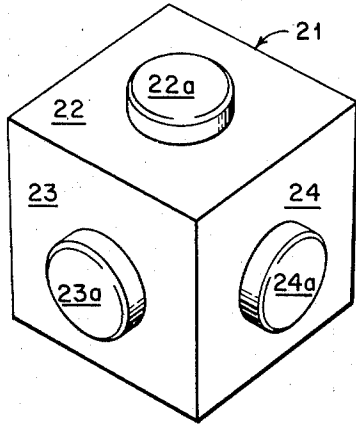


FIG. 1

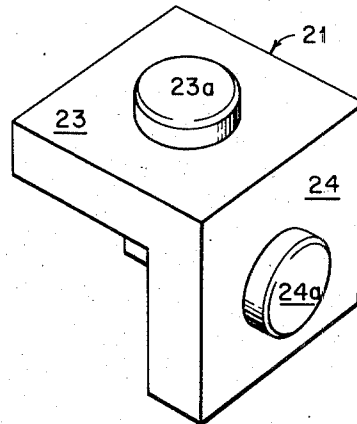


FIG. 1a

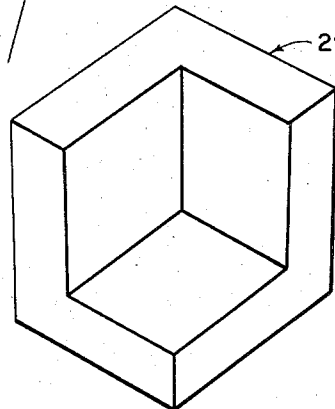


FIG. 1b

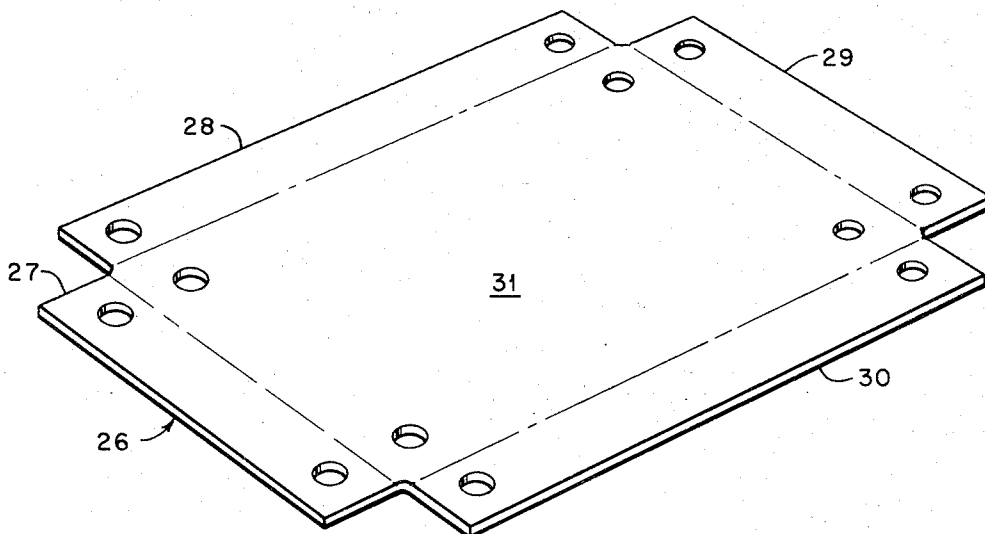
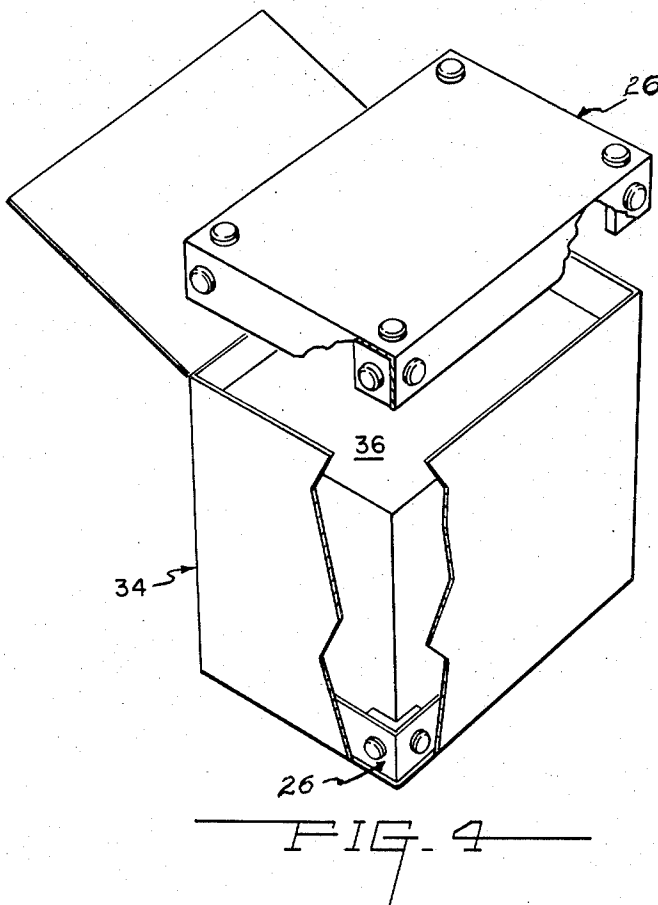
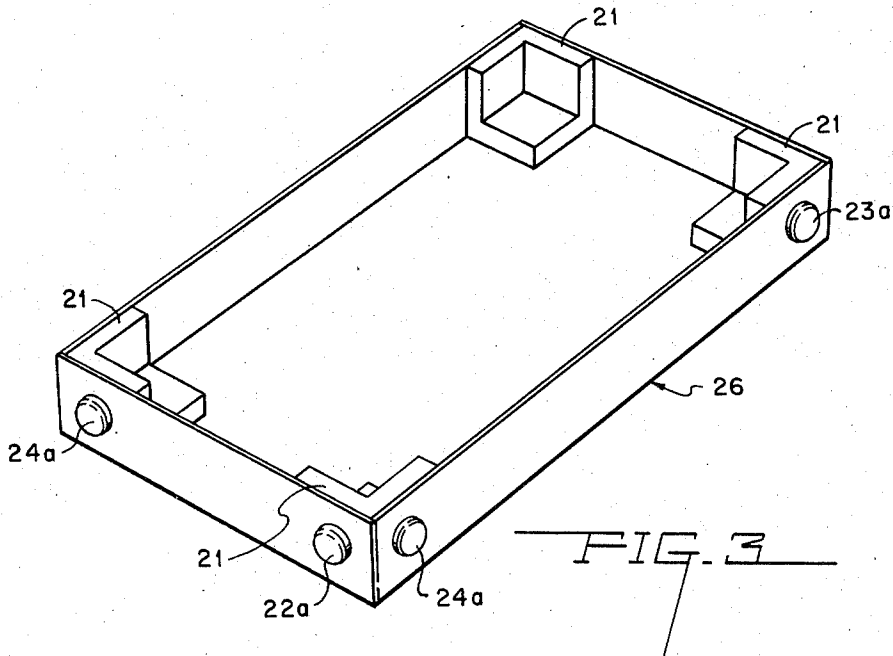


FIG. 2

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PACKAGING STRUCTURE

This invention relates to a packaging container of improved construction having corner cushioning members, which may be made of expanded polystyrene, which cushioning members are held in relation to one another and to the article being transported, by connection to a packaging tray.

The tray has a base and four leaves or flaps which are folded 90° relative to the tray base and each flap has an opening at each end and there is an opening in the tray base at each corner of the base. Resilient corner members have extending from each external side thereof a cylindrical projection which fits into the holes of the flaps and tray base to hold the flaps in 90° relation to the base. The tray may then be placed in the bottom of a container, the article to be carried by the container may be placed over the tray and onto the four cushioning and positioning members. A tray of similar construction having a resilient member at each corner thereof, may then be placed over the article and the container sealed.

With this construction, stresses and distortions experienced by the container during shipping, loading, or storing, can be accommodated with minimum injury to the article.

In the past, cushioning members as shown in the U.S. Pat. No. 3,356,209 to Pezely, wherein the cushioning members are held rigidly to a panel member, were easily broken away from the panel due to their rigid connection thereto during the normal usage of the container. Also, registration of a square projection into a square hole has proved awkward and time consuming.

Other efforts to solve this problem are shown in U.S. Pat. No. 3,399,797 to Freeman, which uses relatively complicated individual plugs having slotted means therein for use with overlapping sides of a cardboard blank having complicated openings of both curved and straight sides making the plugs and cardboard units more expensive and complicated for use, requiring many more resilient members, and do not provide the positioning and locating features of this invention.

These and other objects and advantages will become more apparent when a preferred embodiment is explained in connection with the drawings, in which:

FIG. 1 is a perspective view of a resilient member showing the three exterior sides, each having a protection therefrom;

FIG. 1a is a view in perspective from another direction of the member of FIG. 1;

FIG. 1b is a view in perspective showing the interior locating surfaces of the embodiment of FIG. 1;

FIG. 2 is a perspective view of the tray blank used in the preferred embodiment of this invention;

FIG. 3 is a perspective view of the tray blank of FIG. 2 assembled and having in each corner thereof a resilient member of FIG. 1; and

FIG. 4 is a cutaway view in perspective of a container having a lower tray in position and an upper tray about to be positioned upon the article in the container.

Looking now at FIG. 1 is seen a resilient member 21 having external sides 22, 23, and 24. The material of the member 21 may be expanded polystyrene having a density of 1.35 pounds per cubic foot. Each side 22, 23, 24 has a cylindrical projection 22a, 23a, and 24a extending therefrom respectively. FIG. 1b shows the interior surfaces of the resilient member 21 which sides

are formed to locate and position the article to be carried by the container as later explained.

FIG. 2 shows a perspective view of the tray 26 having flaps 27, 28, 29, and 30 hinged to a base 31. Each flap has a round opening at each end thereof and base 31 has a round opening at each corner thereof.

By placing a resilient member 21 in each corner of base 31 with a plug projection being inserted in the respective hole at the corners, and by bringing the flaps up so that the holes and the flap ends are inserted over the plug projections of the insert 21, the construction of FIG. 3 is obtained wherein it is seen that in each corner of the tray is a resilient member 21 and the projections are inserted through the holes in the tray flaps and extend therethrough for contact with the container 34 as shown in FIG. 4.

In FIG. 4 is shown container 34 having a tray inserted in the bottom with article 36 placed in the tray so that the article 36 is supported by the four resilient members 21 at the corners of the tray.

After article 36 has been inserted in the container, then a second tray is placed on the top thereof with resilient members 21 again supporting the corners of the article. The container box may then be closed and sealed.

With this construction, it is seen that the container can undergo substantially severe handling which would cause the tray sides to move, twist, and be generally distorted due to such handling, yet the corner inserts will not be broken away from the tray, due to the fact that there is just one plug extending from each exterior side of the inserts and this plug has a cross section which permits it to rotate or move relative the tray flap or base.

Also, due to the extension of the plugs 22a, 23a, 24a from the tray flaps, 27, 28, 29, 30, there is a dual stage of rate of impact absorption; in the first stage, the impact is absorbed by the plugs due to their smaller cross section, and in the second stage the impact is absorbed by the body 21. In this way, minor impacts will be readily cushioned by plugs 22a, 23a, and 24a with virtually no affect on article 36. Major impacts are absorbed in two stages, first by the plugs and then by the body 21 again minimizing the affect on article 36 due to the graduated absorbing capability of the device of this invention.

It is, of course, apparent that the resilient member 22a, 23a, 24a can take different shapes and the cross section of the plugs can be different providing that they permit rotative movement between the plugs and the flaps to which they are connected, and other modifications may be made without departing from the scope of this invention which is claimed as follows.

What is claimed is:

1. Apparatus comprising,

a packing container for receiving and carrying articles to be protected against shock as may be experienced in loading, transporting, and storing, a plurality of resilient means, each having a plurality of sides, said means being in said container for acting as an energy absorber between the container and the article carried therein,

said last means each having a single projection from a plurality of said sides, each projection having a predetermined cross section,

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a connecting member for connecting said plurality of resilient means in a predetermined relation to one another,
said connecting member having openings therein to receive each of said projections and said openings conforming to predetermined cross sections of said projections,
said predetermined cross sections being proportional so that the projections are held in said openings but are free to rotate in said openings, whereby said connecting member and said resilient means are capable of substantial relative movement without shearing or permanently deforming said connecting member or resilient means or disconnecting said plurality of resilient means from said connecting member.
2. The apparatus of claim 1 with said openings and predetermined cross sections being round.
3. The apparatus of claim 1 with each of said resilient means having three exterior sides,
each of said exterior sides having one of said projections extending therefrom,
each of said resilient means having an interior sur-

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face adapted to receive, locate, and position the article to be packaged and protected.
4. The apparatus of claim 3 with said connecting member having one of said resilient means at each corner thereof,
said connecting member having a base and four leaves, each leaf being angularly related to said base,
each of said leaves having two openings therein and said base having an opening in each corner thereof,
two projections from each of said resilient members being inserted into the openings in said leaves and the third projection being inserted in an opening in said base, to hold said leaves in said angular relation to said base, and to form a tray.
5. The apparatus of claim 4 with said packing container having a tray at one end thereof and a second tray spaced from said first tray,
said trays facing one another so that the interior surfaces of said resilient means can receive, locate, and position the article to be packaged and protected.

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