

May 13, 1969

R. E. TAYLOR
CORNER PROTECTORS

3,443,684

Filed Sept. 5, 1967

Sheet 1 of 2

FIG. 1

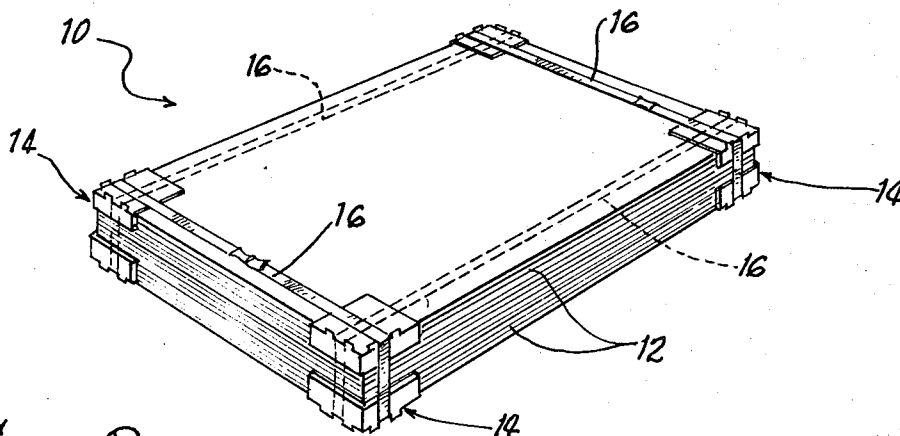


FIG. 2

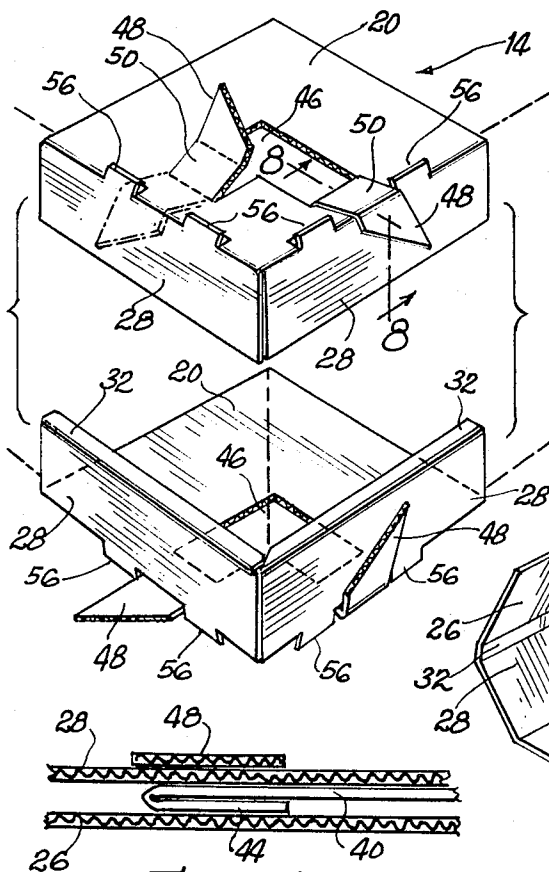


FIG. 3

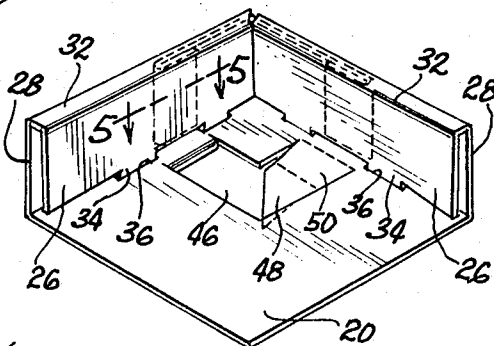


FIG. 4

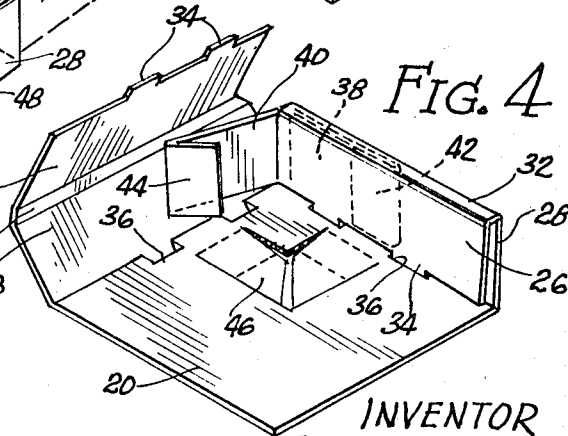
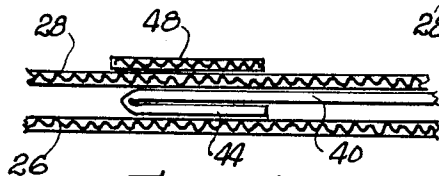


FIG. 5



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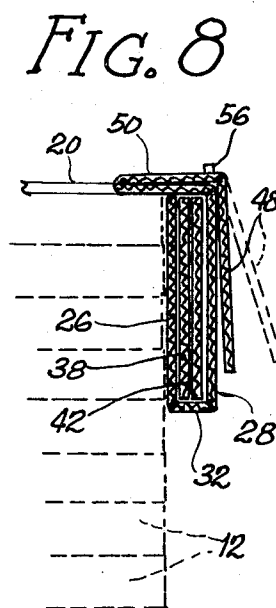
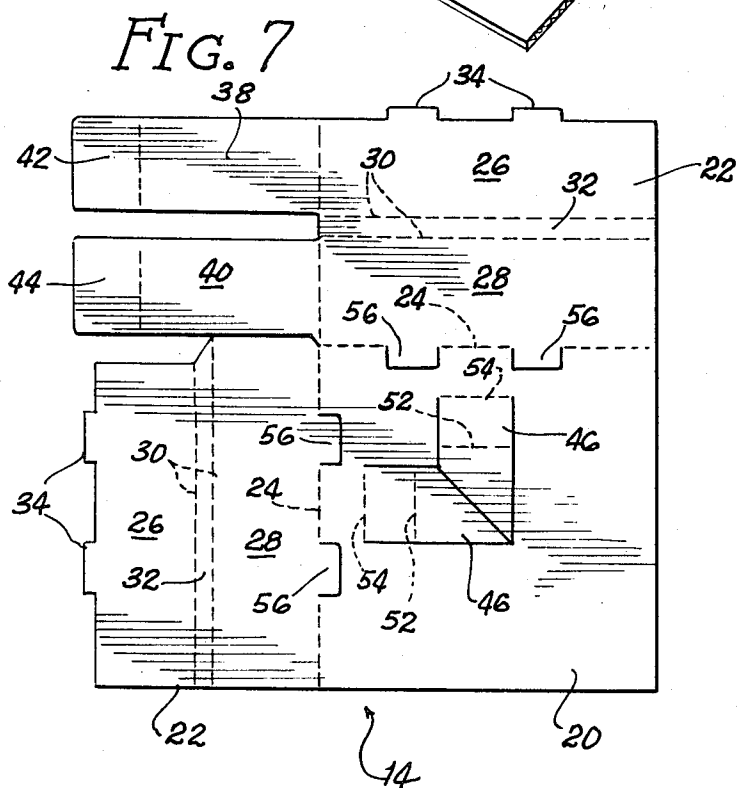
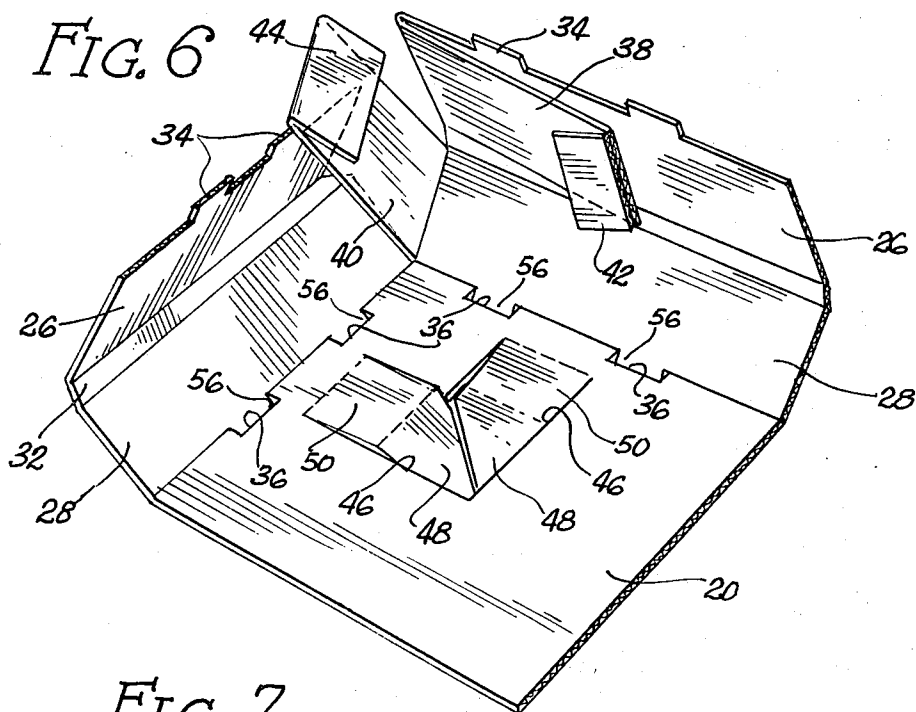
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Sheet 2 of 2



1

3,443,684

CORNER PROTECTORS

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9 Claims

ABSTRACT OF THE DISCLOSURE

Protectors for fitting around the corners of objects to prevent damage during shipping and handling. The protectors are formed from a one-piece blank which includes a main panel and side panels attached along the edges of the main panel. The side panels fold into a plurality of thicknesses and are disposed at right angles to the main panel whereby all areas adjacent the corners of an object will be protected. Projections are formed in the side panels for interlocking relationship with the main panel to securely hold the protector in the proper configuration.

The protectors are particularly suitable where steel bands are employed as means for binding the structure being protected. The protectors include outwardly extending ears which serve as means for aligning the bands and cut out portions of the protectors serve to increase the thickness of the protectors in the areas covered by the bands.

This invention relates to protectors particularly suitable for association with the corners of objects so that the objects will be protected from damage during shipping and handling.

The use of corner protectors is well known. They are particularly useful for companies involved in the handling of objects which are subject to damage when they are dropped or otherwise exposed to impact. In such instances, the corners of objects are the most susceptible to damage, and it has been common practice to employ some sort of reinforcing means for protecting the corners.

Corner protectors are particularly desirable for use in connection with bundles of sheets, for example sheet rock or paneling. When such materials are shipped, they are usually stacked whereby a relatively large number of sheets or panels are included in a single package. Steel bands are employed for binding the sheets or panels into a unit. Protecting means, usually in the form of pieces of corrugated, are interposed between the bands and the surface of the bundles, at least at the corners thereof.

The use of such corner protectors has been found to be extremely inefficient from the standpoint of initial assembly and from the standpoint of actual protection of the goods. The protectors are formed of separate pieces of material, particularly where a plurality of thicknesses of corrugated must be provided to provide significant protection. Where separate pieces are employed, inventory problems are created, and an undue amount of time is required to assemble the pieces and to hold them in place while the bands are being located around the bundles.

Prior arrangements for providing corner protection have also been largely unsuitable from a performance stand-

2

point. There is usually an insufficient amount of material separating the metal bands from the goods so that the bands tend to damage the goods. Furthermore, if the bundle is dropped, there is often not enough protection to reduce damage to the corners.

It is an object of this invention to provide an improved corner protection construction whereby satisfactory protection can be provided for goods subject to damage during shipping and handling.

It is a more specific object of this invention to provide corner protectors which are formed of one-piece blanks whereby a minimum of inventory problems and assembly operations are required for the use of the protectors.

It is a further specific object of this invention to provide corner protectors of the type described which can be easily formed to a proper configuration for use, which provide sufficient thicknesses in critical areas to thereby minimize the chances of damage during handling, for example during the location of metal bands around a bundle, and which provide protection during shipping to thereby minimize damage resulting from improper treatment of the goods.

These and other objects of this invention will appear hereinafter, and for purposes of illustration but not of limitation, specific embodiments of the invention are shown in the accompanying drawings in which:

FIGURE 1 is a perspective view of a bundle having corner protectors of this invention associated therewith;

FIGURE 2 is a perspective view illustrating upper and lower corner protectors in position for use;

FIGURE 3 is a perspective view illustrating the interior of the protectors;

FIGURE 4 is a perspective view illustrating a protector in a partial state of assembly;

FIGURE 5 is an enlarged cross-sectional view taken about the line 5—5 of FIGURE 3;

FIGURE 6 is a perspective view illustrating a protector in a less complete state of assembly;

FIGURE 7 is a plan view illustrating the one-piece blank provided for forming a protector; and

FIGURE 8 is an enlarged cross-sectional view taken about the line 8—8 of FIGURE 2.

The invention is generally directed to a corner protector formed from a one-piece blank. The blank includes a main panel and first and second side panels attached along side edges of the main panel. The side panels are divided into separate foldable sections, and score lines are formed between the main panel and the side panels and bottom sections of the side panel to facilitate folding of the side panels. When folded, the side panels comprise a plurality of thicknesses of material, and the side panels extend in planes perpendicular to the main panel so that portion of the top and side surfaces of a bundle or other object will be covered.

In the preferred form of the invention, projections are formed in the side panels for interlocking relationship with the main panel. Ears are also formed to extend outwardly from the protectors, and these ears serve as means for aligning metal straps used to bind bundles of material having the protectors associated therewith. Additional cut out portions of the blank are adapted to be folded over to increase the thickness of material in the area of the bands.

FIGURE 1 of the accompanying drawings illustrates a bundle 10 comprising a plurality of individual sheets of material 12. In preparing the material for shipment, corner protectors 14 are placed in association with the bundle, and wire bands 16 are provided for binding the assembly together. the corner protectors will serve to prevent damage to the sheets 12 during the binding operation, and the corners will also be protected from damage during shipping.

The corner protectors 14 are adapted to be formed from a one-piece blank as shown in FIGURE 7. The blank includes a main panel 20, and a pair of side panels 22. The side panels and the main panel are separated by means of score lines 24.

Each of the side panels is divided into two sections 26 and 28. These sections are separated by score lines 30. A strip of material 32 is defined intermediate the score lines 30. This strip provided a spaced relationship between the sections 26 and 28 whereby additional thicknesses of material can be inserted between the sections to increase the capabilities of the corner protectors.

Each of the side panel sections 26 includes projections 34 on its outer edges. When the side panel sections 26 and 28 are folded relative to each other, the projections 34 are moved into position adjacent openings 36 defined by the main panel. The projections 34 are received in these openings, and this provides a locking relationship between the side panels and the main panel. As illustrated in FIGURE 3, the respective panels are locked so that the side panels are positioned in planes perpendicular to the main panel. Accordingly, the main panel will overlie one surface of an object while the side panels will overlie adjacent surfaces in the area of a corner of the object.

Wings 38 and 40 are attached to one set of sections 26 and 28, respectively. These wings are adapted to be folded inwardly relative to their respective sections. Flaps 42 and 44 are connected at the ends of the wings 38 and 40, and these flaps are adapted to be folded back onto the wings.

When folding the blank, the wing 38 is moved into overlying relationship with respect to the sections 26 as best illustrated in FIGURE 6. The wing 40 is folded into perpendicular relationship with respect to the section 28 so that it will be in position to be tucked between the sections 26 and 28 of the other side panel (see FIGURE 4). The flaps 42 and 44 fold back into a position such that they are directly between the openings 36.

The main panel 20 also includes cut out portions 46 which are divided into two sections including a triangular section 48 and an inner section 50. The cut out portions 46 are removed from an L-shaped area of the main panel with each leg of the L being in alignment with the space between the openings 36. These cut outs 46 are adapted to fold about the score lines 52 and 54 so that the section 50 will overlie an area of the main panel while the sections 48 will overlie areas of the side panels. It will be noted that the cut outs 46, when folded, extend between the openings 36.

As the one-piece blank is die cut in the area of the openings 36, pairs of ears 56 are automatically formed. As best shown in FIGURE 2, these ears extend outwardly when the side panels are folded relative to the main panel. The cut out portions 46 will, accordingly, be located intermediate these ears.

The ears 56 serve a definite function when the corner protectors are associated with an object such as the bundle of panels shown in FIGURE 1. When the metal bands 16 are located around the bundle, the ears 56 serve as aligning means so that each band will be precisely positioned relative to the corner protectors. As will appear, this aligning function also insures that the areas of the corner protectors having the greatest thickness will be directly beneath the bands so that there will be a minimum danger of damage to the bundle.

FIGURE 8 illustrates the manner in which suitable pro-

tection is provided by the construction even though a single piece blank is employed. The corner protector is provided with a side wall thickness consisting of section 26, wing 38, flap 42, and section 28. At the top, the main panel 20 is protected by means of the section 50 of cut out 46. The other section 48 of this cut out can be folded back to provide an additional thickness at the top, or folded down as shown to provide a still further thickness at the side.

It will be appreciated that the corner protectors of this invention provide many distinct advantages. The protectors can be economically produced from standard corrugated material, and the fact that a one-piece blank is employed provides savings because of the ease of manufacture and because inventory problems are minimized. Even unskilled persons can quickly learn to fold the corner protector in a few seconds so that this aspect of the operation presents no difficulty. Finally, the fact that only a single piece is located at each corner greatly minimizes handling time whereby further savings are achieved. This naturally greatly improves over conventional arrangements wherein two or more pieces are located in place in each corner before the banding operation can begin.

That which is claimed is:

1. In a construction for protecting the corners of objects from damage, the improvement wherein said construction is formed from a one-piece blank, said blank comprising a main panel, first and second side panels attached along side edges of said main panel, said side panels being divided into separate foldable sections, score lines formed between said main panel and said side panels and between sections of said side panels to facilitate folding of the side panels into a plurality of thicknesses whereby the folded side panels are positioned in planes disposed at right angles relative to said main panel, projections formed on said side panels, and means defined by said blank for receiving said projections to thereby lock said side panels in position relative to said main panel, and wherein bands are secured around objects after the corner protectors are in place, said bands extending over said corner protectors, and including ears extending outwardly from said corner protectors, said bands being positioned adjacent said ears whereby said ears serve to align the bands during securing of the bands around said objects.
2. A construction in accordance with claim 1 wherein said ears are formed at the juncture of said main panel and said side panels, and wherein said ears comprise die cut portions of said blank.

3. A construction in accordance with claim 2 wherein said ears are die cut from said main panel, and wherein the openings formed by the die cutting operation serve as recesses for receiving said projections.

4. A construction in accordance with claim 1 including cut out portions formed in said panels, said cut out portions including sections adapted to be bent over for contacting relationship with said panels, and wherein bands are provided for securing said corner protectors to said objects, said sections of said cut out portions providing an extra thickness of material underlying said bands.

5. A construction in accordance with claim 4 wherein said cut out portions comprise an L-shaped area of said main panel, said cut out portions including inner sections adapted to overlie areas of said main panel adjacent said L-shaped area, and outer sections adapted to be folded over into overlying relationship with respect to said side panels.

6. A construction in accordance with claim 5 including ears extending outwardly from said protectors on opposite sides of said cut out portions, said bands being located between said ears.

7. A construction in accordance with claim 1 wherein at least one of said side panels includes wing sections, said wing sections being folded into contact with side panel sections to thereby add to the thickness of the folded side panels.

5

8. A construction in accordance with claim 7 including flaps formed at the outer ends of said wings, said flaps being adapted to be folded back over said outer ends to add an additional thickness to the side panels.

9. A construction in accordance with claim 8 wherein bands are provided for securing said corner protectors to said objects, and including ears extending outwardly from said protectors, a pair of said ears being provided at each juncture of the side panels and main panel with said bands being located in spaces defined between said ears, and wherein said flaps are located immediately beneath the position covered by said bands.

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U.S. Cl. X.R.

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