United States Patent [19]

Sax

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[54] **CORNER PROTECTOR CONSTRUCTION**

[75] Inventor: **Alan M. Sax,** Schaumburg, Ill.

[73] Assignee: **Redi Container Corporation,** Chicago, Ill.

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[21] Appl. No.: **381,986**

[52] **U.S. Cl.** ..... **229/14 C,** 229/DIG. 1

[51] **Int. Cl.**..... **B65d 1/36,** B65d 3/24, B65d 81/00

[58] **Field of Search**..... 229/14 R, 14 C, DIG. 1; 206/46 FN, 62 R, 451

[56] **References Cited**

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3,137,087	6/1964	Shroyer	229/14 C
3,443,684	5/1969	Taylor	206/451
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Primary Examiner—Leonard D. Christian

Attorney, Agent, or Firm—McDougall, Hersh & Scott

[57] **ABSTRACT**

A corner protector construction used for protecting appliances, furniture, sheet rock panels and the like during shipping and handling. The construction is formed from a blank comprising a corrugated sheet having a plurality of parallel foldlines in one direction and a center foldline perpendicular thereto. The blank is adapted to be folded so that a threewalled configuration is achieved with each wall being positioned at a 90° angle relative to the other two walls to thereby define a corner configuration. The folding automatically locates a plurality of thicknesses of the corrugated sheet with respect to each wall. One of the walls is defined by means of interlocking sections with the interlocking structure providing for automatic locking as the blank is folded into the desired configuration.

5 Claims, 10 Drawing Figures

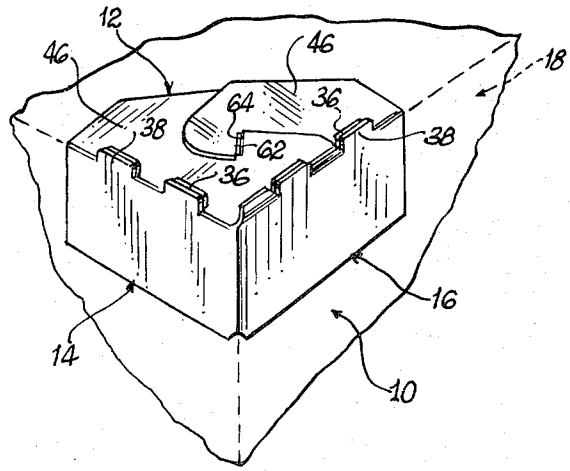


FIG. 1

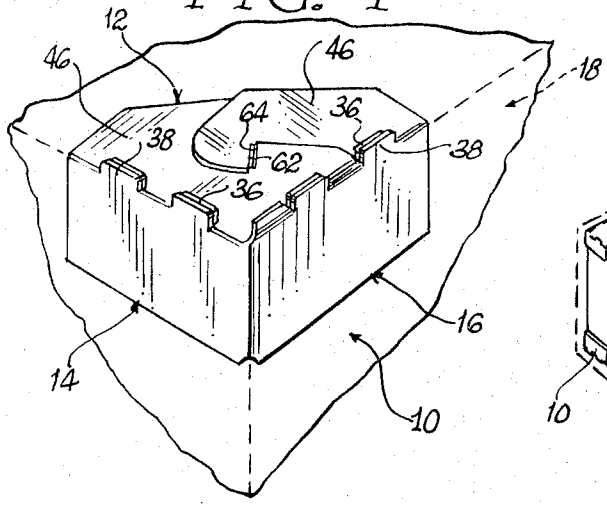


FIG. 2

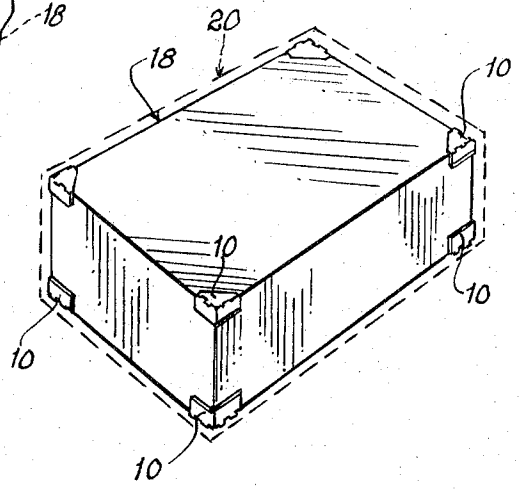


FIG. 3

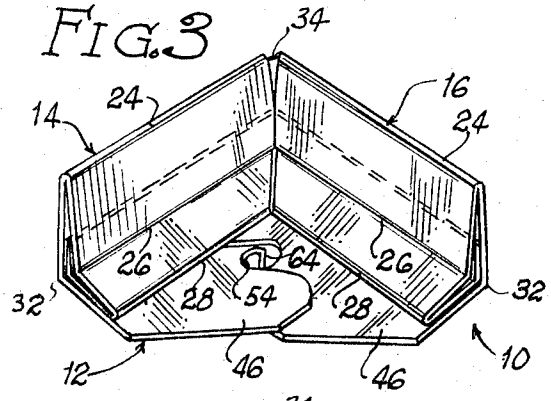


FIG. 4

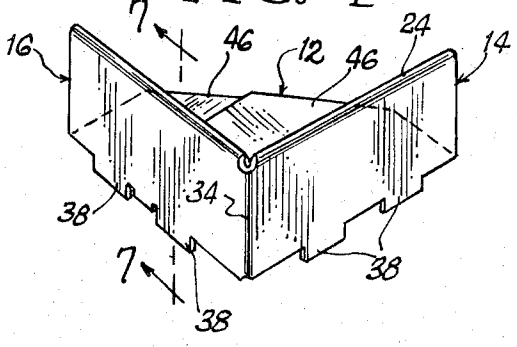


FIG. 5

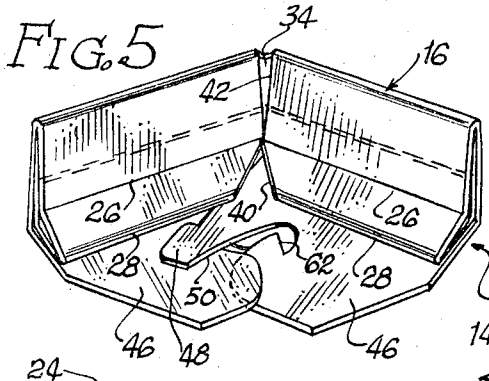


FIG. 6

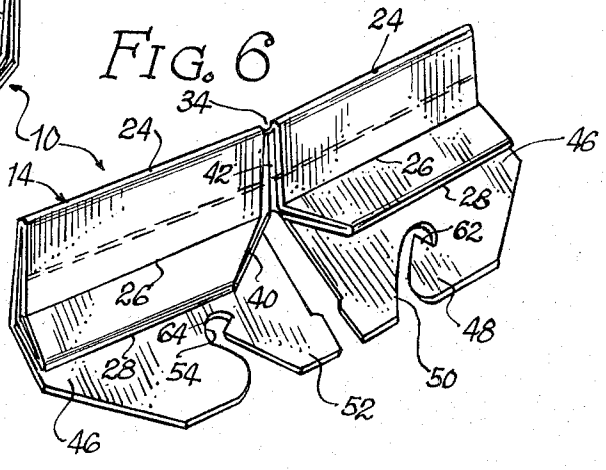


FIG. 7

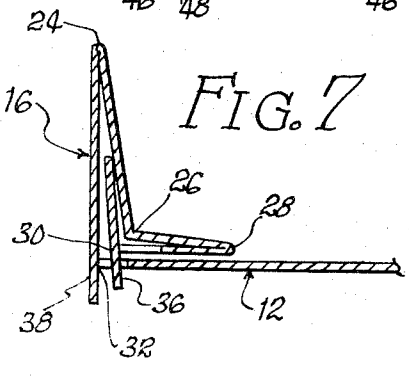


FIG. 8

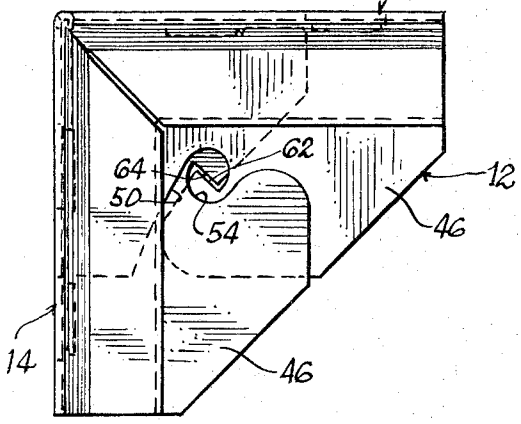


FIG. 9

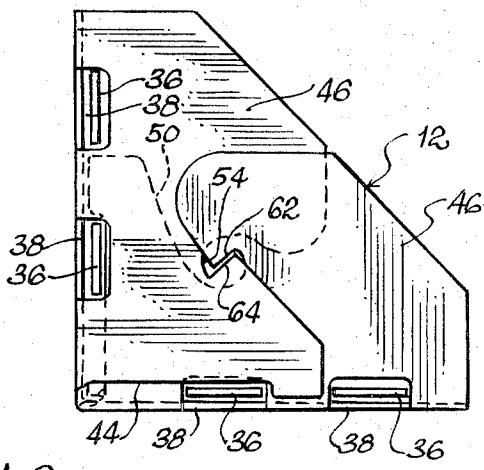
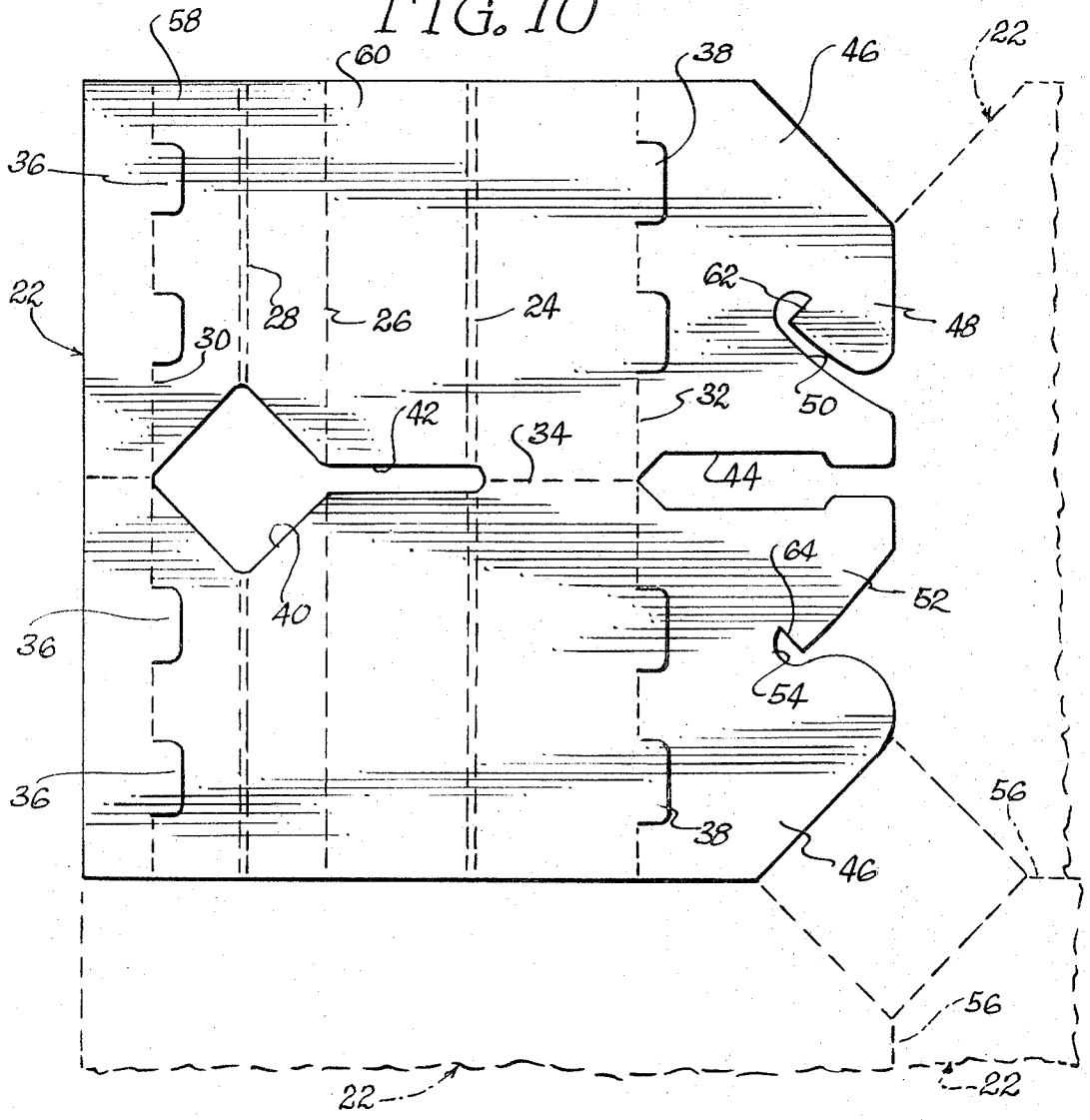


FIG. 10



CORNER PROTECTOR CONSTRUCTION

This invention relates to a construction utilized for protecting the corners of objects to prevent damage to the objects during shipping and handling. Such protectors are typically used in association with appliances and furniture and other objects which can only be successfully marketed when they present an undamaged appearance.

The use of corner protectors is wide spread, particularly with respect to objects which are subject to damage when they are dropped or otherwise mishandled. The corners of such objects are naturally most susceptible to damage and, therefore, the protection afforded by packing cartons and the like has been supplemented by re-enforcing means utilized for protecting corners.

In addition to appliances and furniture, corner protectors are widely used in connection with bundles of sheet rock paneling and the like since the exposed corners of such bundles are quite susceptible to damage and since such damage can significantly diminish the value of the sheets. Taylor U.S. Pat. No. 3,443,684 issued on May 13, 1969 provides a disclosure of a corner protector which is particularly suitable for use in connection with such bundles. This application particularly describes means for efficiently applying steel bands which are utilized for securing the bundles.

There is a constant need to provide corner protectors which are capable of being produced at low cost and which can be efficiently used from the standpoint of initial assembly and from the standpoint of actual protection of the goods.

It is the general object of this invention to provide an improved corner protector which meets these needs to a degree heretofore unattained.

It is a more specific object of this invention to provide a corner protector design which can be efficiently manufactured, efficiently stored and shipped, and very rapidly assembled whereby the use of the corner protectors leads to minimum difficulty.

It is a still further object of this invention to provide a corner protector design which exhibits completely adequate protecting capability while at the same time being characterized by automatic assembly means so that the protectors can be used in an efficient manner by unskilled personnel.

These and other objects of the 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:

FIG. 1 is a fragmentary perspective view illustrating a corner protector in association with a bundle;

FIG. 2 is a perspective view illustrating the bundle with the corner protectors in position;

FIG. 3 is a perspective view of the corner protector viewed from the inside;

FIG. 4 is a perspective view of the corner protector viewed from the opposite side;

FIG. 5 is a perspective view of the corner protector in the partially unlocked condition;

FIG. 6 is a perspective view of the corner protector illustrated in the open position prior to locking;

FIG. 7 is an enlarged fragmentary cross-sectional view of the corner protector taken about the line 7—7 of FIG. 4;

FIG. 8 is a plan view of the corner protector;

FIG. 9 is a plan view of the corner protector looking from the opposite side; and,

FIG. 10 is a plan view of a blank section utilized for forming the corner protector.

This invention generally relates to a corner protector adapted to be formed from a blank of cardboard, preferably a corrugated sheet. The blank is die-cut to provide a suitable shape particularly with respect to automatic locking means which comprise a feature of the protector. A plurality of scorelines are formed in the blank to facilitate the folding operation. One of the scorelines bisects the blank in one direction while the remaining scorelines are positioned perpendicular to the one scoreline. These remaining scorelines then permit folding of blank portions into overlying relationship whereby a multiple thickness arrangement is achieved. When the blank is folded so that a corner configuration is formed, locking tabs automatically come into play whereby the protector is immediately ready for use.

The corner protector **10** illustrated in the accompanying drawings comprises a three-walled structure consisting of a horizontal wall **12** and vertical walls **14** and **16.** The vertical walls are perpendicular with each other, and the wall **12** is perpendicular to the vertical walls so that a corner configuration is achieved as best illustrated in FIGS. **3** and **4.**

The corner protector is adapted to be used in association with a bundle **18** or in association with some other type of object which defines exposed corners likely to be damaged if the object is mishandled. Thus, the corner protectors of the invention are used in a generally conventional manner in that the protectors are located on the bundle or other object **18** with a cover or carton **20** then being located around the bundle.

The specific configuration of the protector can be best understood by considering the blank **22** illustrated in FIG. **10.** As indicated, this blank preferably comprises a section of a cardboard sheet and is preferably corrugated. The blank is substantially rectangular and is provided with a plurality of foldlines, these lines being formed by scoring of the blank.

The foldlines comprise a first line **24** located at approximately the center of the blank. Additional foldlines **26, 28** and **30** are defined on one side of the line **24,** and a fifth foldline **32** is formed on the opposite side of the line **24.** A sixth foldline **34** extends perpendicular to the other five foldlines, and this sixth line substantially bisects the blank.

A diecutting operation is preferably involved in the forming of the blank. This operation includes the provision of ears **36** and **38** formed, respectively, adjacent the foldlines **30** and **32.** These ears extend outwardly after the blank has been folded into the desired configuration. As explained in the aforementioned Taylor patent, these ears function to hold bands which are employed for securing a bundle of sheets or for other purposes. Thus, the blank design of the invention permits the inclusion of these ears while accomplishing the other benefits of the invention.

An enlarged diamond-shaped cut-out **40** having a stemshaped portion **42** is included in the blank. As will be explained, this arrangement enables folding of the blank into the final configuration desired for use. Similarly, an elongated cutout **44** is defined along this same foldline **34** whereby additional freedom of movement is provided during folding operation to enable achieving of the desired configuration.

The blank defines a pair of outer wing portions **46** positioned on opposite sides of the cutout **44.** One wing portion **46** carries a tab **48** and defines an adjacent cutout slot **50.** The other wing portion carries a tab **52** terminating in a small semi-circular cutout **54.**

In accordance with a preferred form of the iinvention, the blank **22** comprises one corner of a large sheet which defines at least three other blanks. These blanks are preferably secured together along lines **56** which may be perforated so that the individual blanks **22** can be readily separated for use. By providing four or more blanks in a single sheet, storage and inventory problems can be greatly minimized. Furthermore, workmen can be given a single sheet which will provide corner protectors for one end of a bundle being prepared for binding and shipping.

In utilizing the blank shown in FIG. **10,** the blank is first folded about the line **28** so that the blank section **58** is located in overlying relation with the blank section **60** on the opposite side of the line **28.** Thereafter, the blank is folded about the lines **26** and **30** so that a triple thickness of material is developed for the walls **12** and **16** adjacent the juncture of these walls. It will be noted that the line **28** is a double-scored line to facilitate bending through 180°. The lines **26** and **30** are single-scored which tends to automatically permit bending of these walls to a limit of 90°. The wing portions **46** are thereafter folded to a 90° position such as shown in FIG. **6.**

When the entire configuration is then folded through 90° about the line **34,** the configuration of FIGS. **3** and **4** is achieved. At this point, the locking tabs come into play since the tab design is such that one of the tabs on the wing portions **46** will automatically be received relative to the other tab. The particular interlocking arrangement of these tabs is shown in FIGS. **3, 5, 8** and **9.** It will be noted that the tabs define abutting edge portions **62** and **64,** with these edge portions serving as latch means which complement each other to resist any accidental opening of the corner protector once it has been folded into position for use.

The particular locking tab design accomplishes automatic locking due to the fact that the wing portions **46** are adapted to slide relative to each other as the construction is folded. As these surfaces slide, the leading edge of one enters the slotted area defined by the other. Once the 90° movement of the wing portions is completed, the interlocking is accomplished. In this connection, the edges of the stem **42** located at the end of the cutout **40** provide abutments to limit the folding about line **44** to 90°.

The corner protector construction of the invention is characterized by a relatively inexpensive design since the entire blank can be formed with high production die-cutting and scoring equipment. The fact that a plurality of the blanks can be held in a single sheet assembly is also of importance from the standpoint of shipping and inventory expense.

The ears **36** and **38** will automatically be positioned as best shown in FIGS. **1** and **4** when the folding operation occurs. Specifically, the ears **38** are formed as extensions of the outer surface of the walls **14** and **16.** The ears **36** automatically enter the openings which are provided when the sections **46** are folded to a 90° position relative to the ears **38.** A double-thickness of the ears is, therefore, provided for enabling a strong binding positioning structure.

The corner protector design is also distinctly advantageous from the standpoint of the amount of protection achieved by the relatively uncomplicated design. Thus, a minimum of a treble thickness of material is provided for all three walls of the construction. Protection is, therefore, afforded from any direction.

It will be understood that various changes and modifications may be made in the above described construction which provide the characteristics of the invention without departing from the spirit thereof particularly as defined in the following claims.

That which is claimed is:

1. A blank for use in forming a construction used for protecting the exposed corners of objects during shipping and handling, said blank comprising a substantially rectangular corrugated sheet, a first foldline extending approximately along one centerline of the sheet, second, third and fourth foldlines extending parallel with the first foldline, said second, third and fourth foldlines all being located on one side of said first foldline, a fifth foldline extending parallel with said first foldline, said fifth foldline being located on the opposite side of said first foldline and a sixth foldline extending approximately along the centerline of the sheet and extending perpendicular to the other foldlines, said blank being foldable about said parallel foldlines to a configuration wherein the outer blank portion between said sixth foldline and an outer edge of the blank is positioned at 90° relative to the blank portion between said first foldline and said sixth foldline, and wherein the blank portion between said second and fourth foldlines is positioned in underlying relationship relative to said outer blank portions at an angle of 90° relative to the remaining blank portions on said one side of the first foldline, said outer portion being divided into two sections on opposite sides of said sixth foldline, and including locking tabs defined by said sections whereby the blank can be folded about said sixth foldline to bring said tabs into locking engagement.

2. A blank in accordance with claim **1** foldable into a three-walled construction comprising a horizontal wall and two vertical walls extending perpendicular to the horizontal wall and perpendicular to each other, all of said walls defining three thicknesses of corrugated sheet adjacent the junctures of the walls.

3. A blank in accordance with claim **2** defining a large internally located diamond shape cutout, said blank being foldable so that opposed edges of the cutout move into abutting relationship to bring said vertical walls into perpendicular relationship with respect to each other.

4. A blank in accordance with claim **2** including ears formed integrally with the blank and adapted to be automatically positioned perpendicular to said horizontal wall to thereby provide locating means for bands utilized for securing the constructions to said objects.

5. A blank in accordance with claim **1** including slots defined by each of said sections of said outer portion, said slots being brought into alignment as the blank is folded into the construction, and including locking tabs at the ends of said slots to achieve the interlocking of said sections.

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