United States Patent

[11] 3,580,469

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[54] **CORNER PAD**
10 Claims, 16 Drawing Figs.

[52] **U.S. Cl.** **229/14,**
206/46, 217/53, 248/345.1
[51] **Int. Cl.** **B65d 5/62,**
B65d 25/26
[50] **Field of Search** 206/46
FCM, 46 FRAG; 220/9 F, 31 SR; 229/14 C, 3.5;
217/53; 248/345.1; 264/54, 321

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Assistant Examiner—Steven E. Lipman
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ABSTRACT: A corner pad for use in packaging fragile articles. The pad is formed from yieldable material and formed in a blank of solid rectangular configuration. It can be conveniently shipped and stored in this form. Immediately prior to use the blank is "popped" or setup for placement into engagement with the corner of the fragile article.

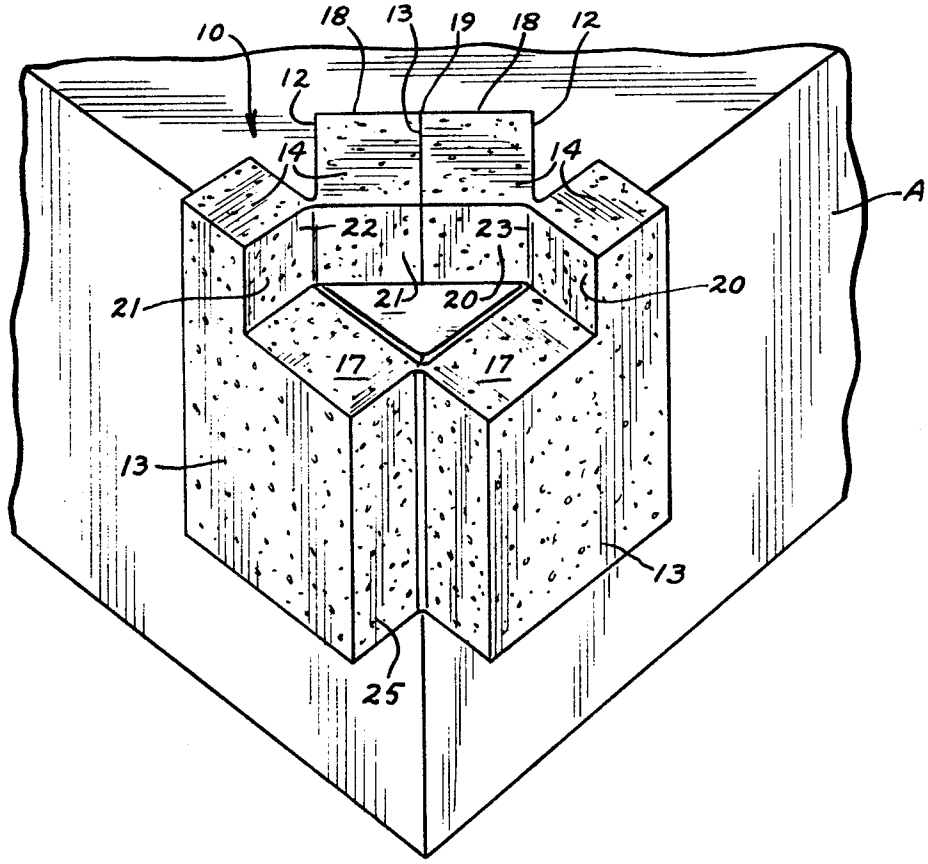


FIG. 1

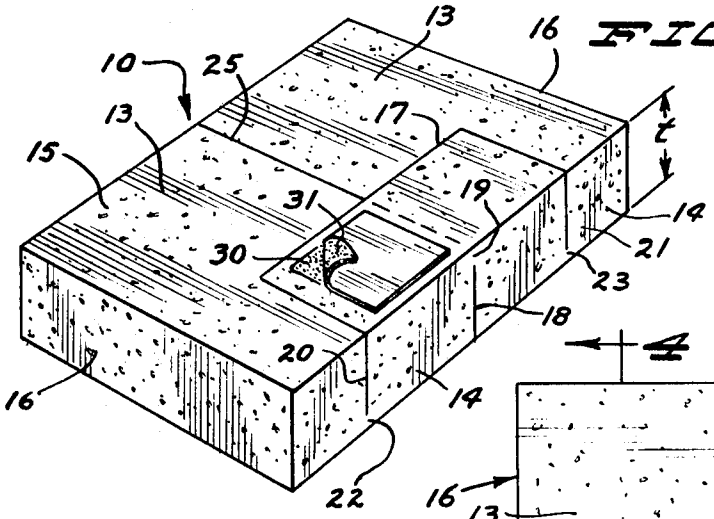


FIG. 2

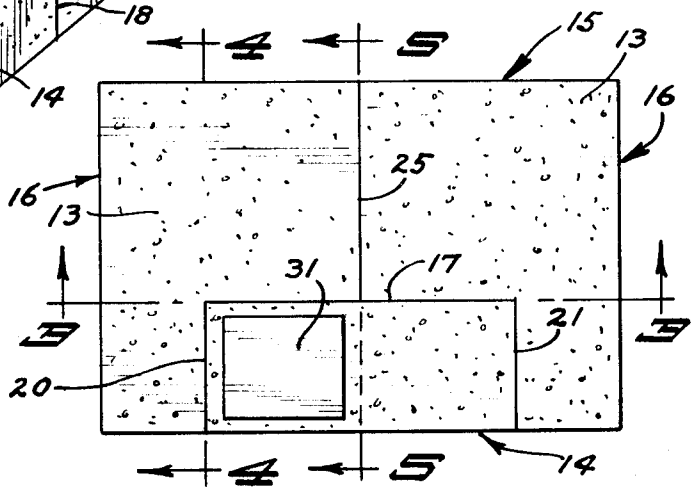


FIG. 3

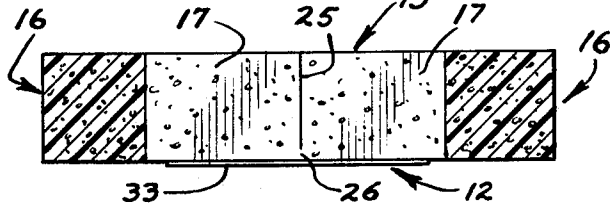
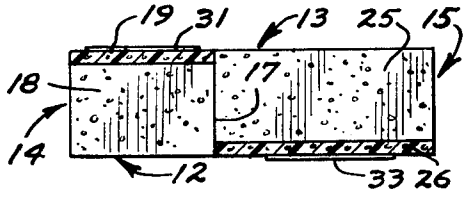


FIG. 5



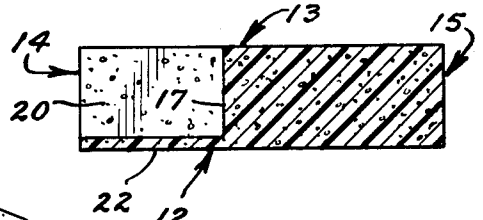
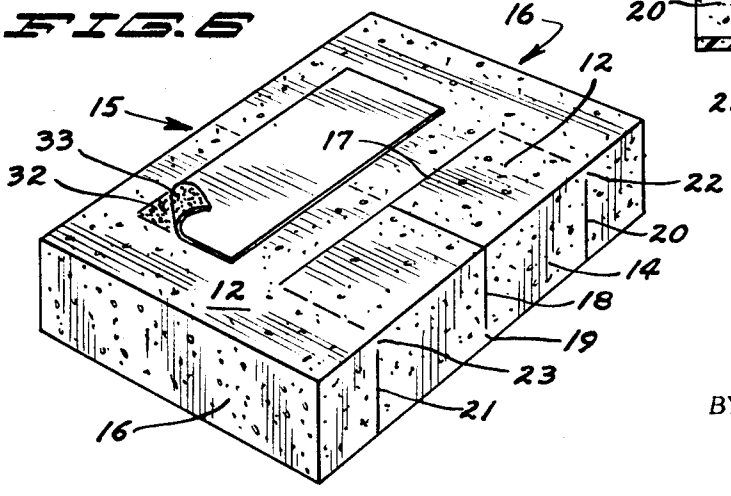


FIG. 4

FIG. 6



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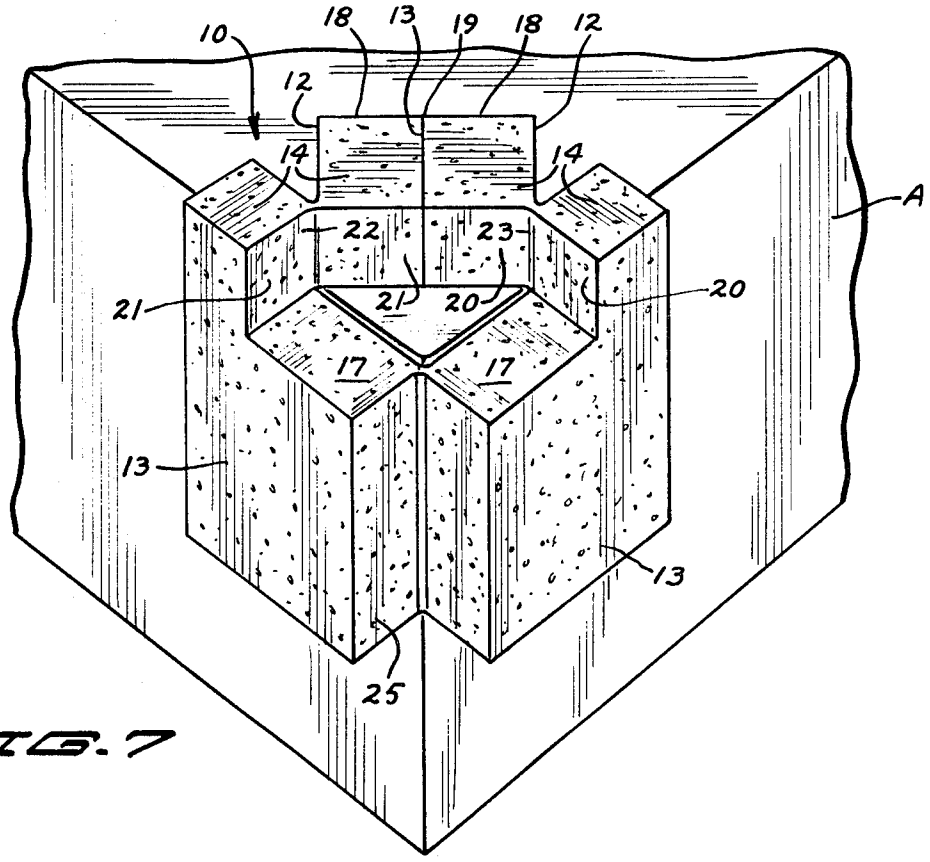

FIG. 7

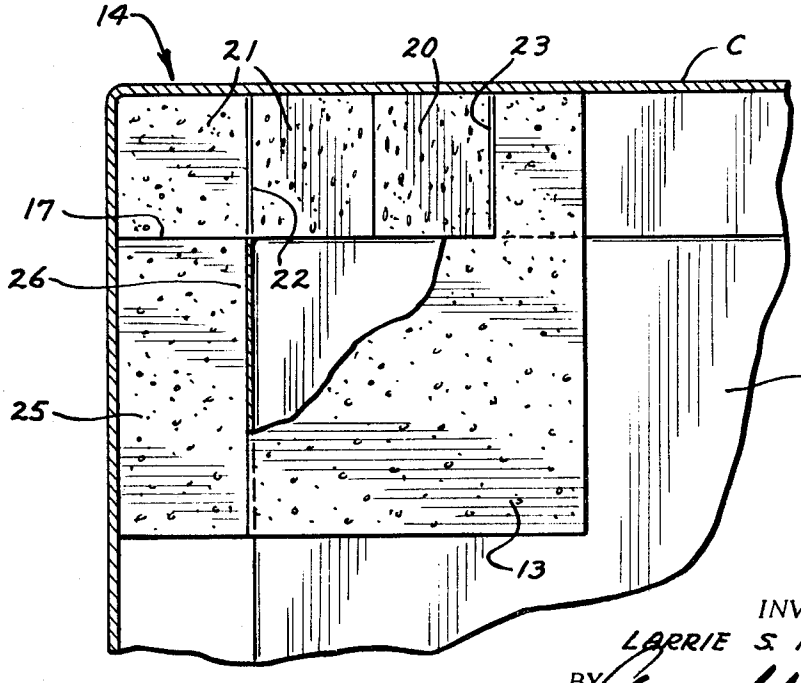

FIG. 8

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FIG. 9

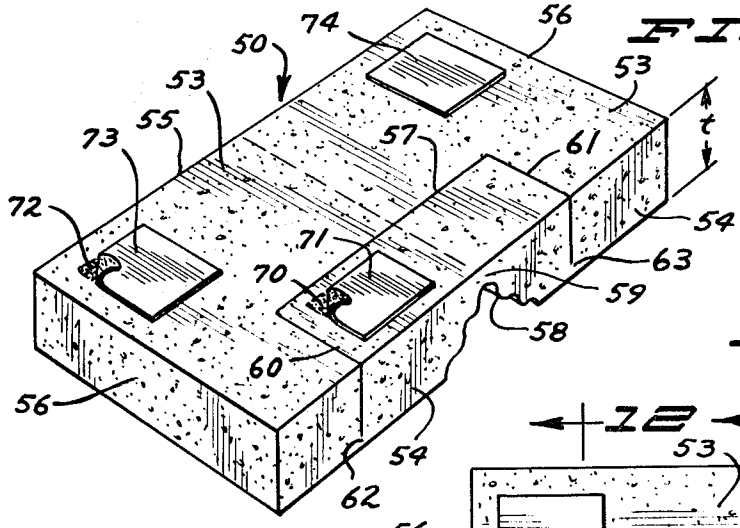


FIG. 10

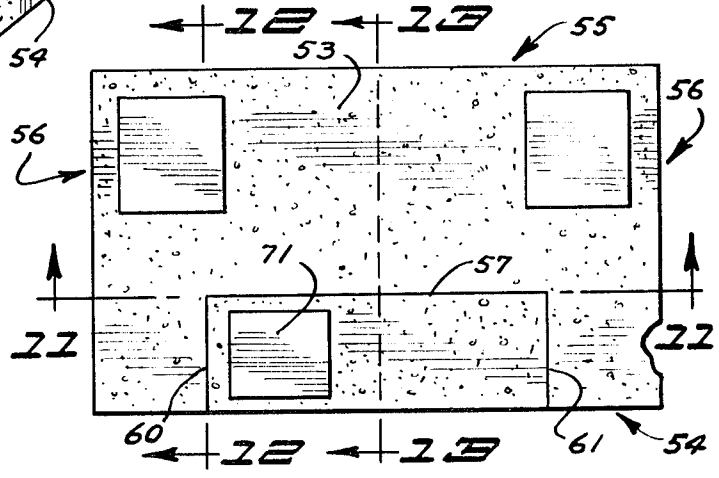
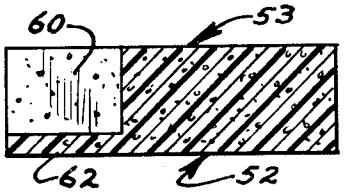


FIG. 12



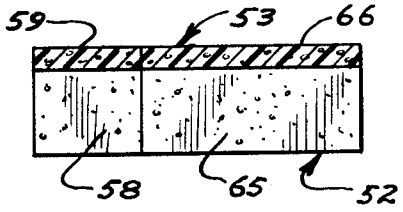


FIG. 13

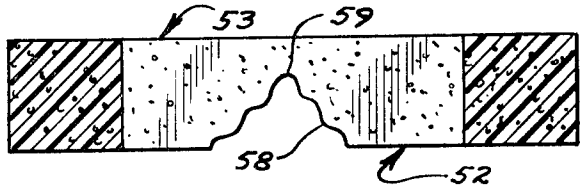


FIG. 11

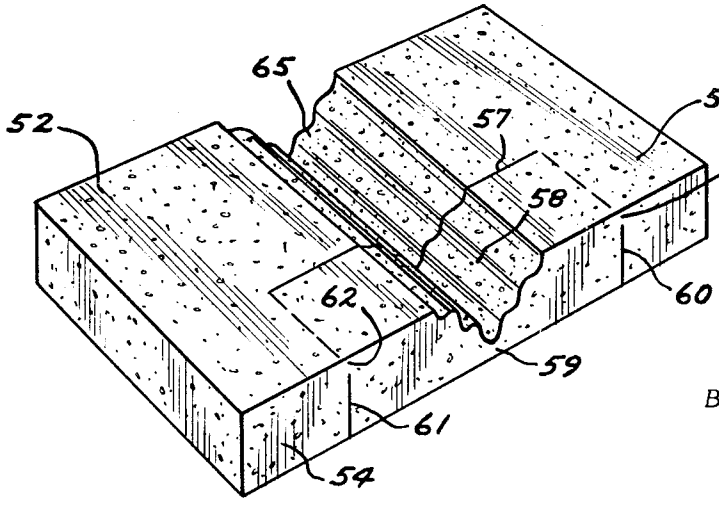


FIG. 14

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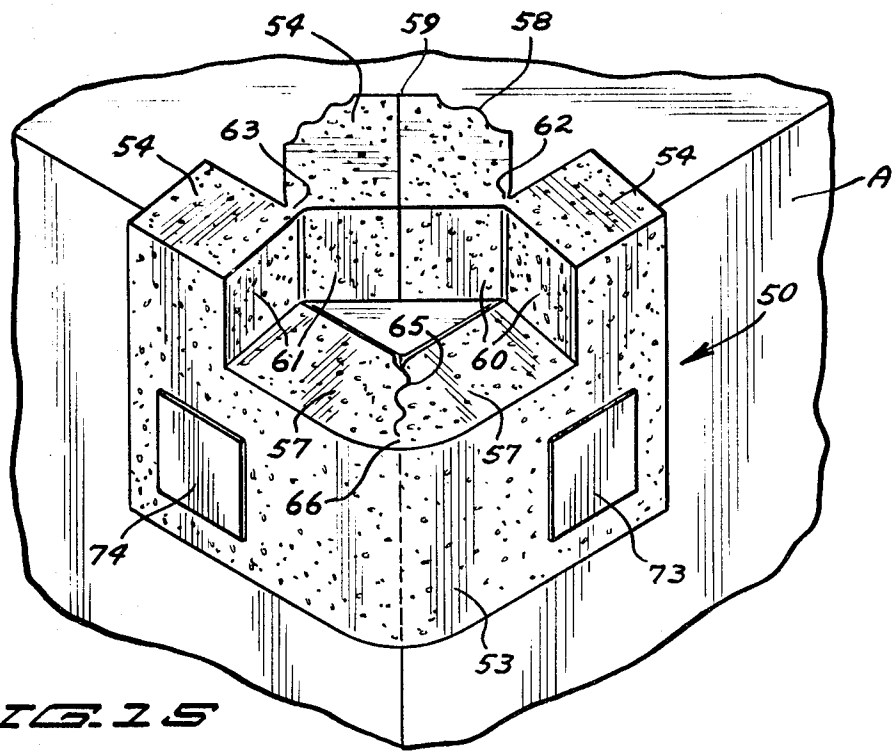

FIG. 15

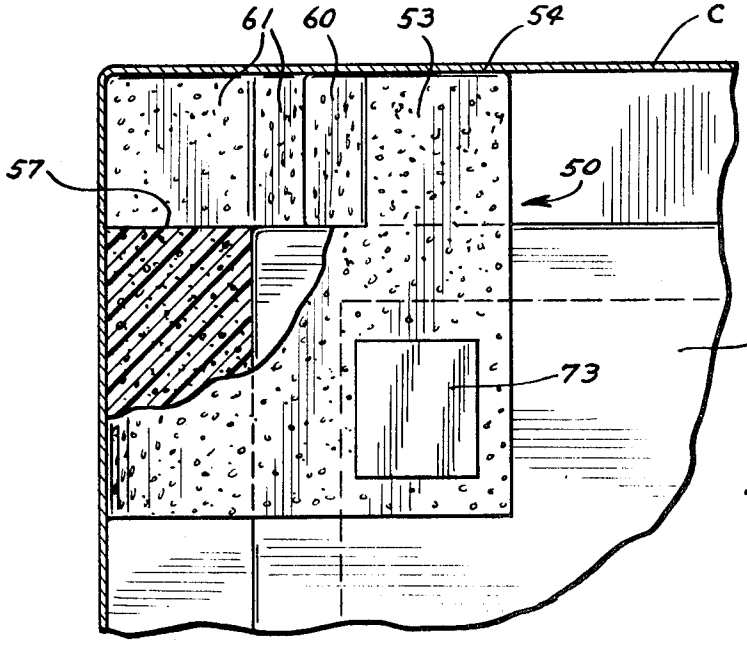

FIG. 16

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CORNER PAD

BACKGROUND OF THE INVENTION

The invention relates to the field of protecting or packaging fragile articles. More particularly, it relates to padding the corners of articles having a substantially regular shape, typically with eight 90 exterior corners, although the invention can be used in packing or packaging more irregularly shaped articles. Examples of articles which are particularly suited for padding with the present invention include furniture (book cases, cabinets, cornered tables, desks, credenzas, dressers), appliances (television sets, radios, stereo sets, washers, dryers, etc.), and scientific instruments and apparatus. Many other objects may also be padded with the present invention, the foregoing being merely examples of some of the more typical uses.

Prior art corner pads have been formed from highly irregularly shaped blanks which results in inefficient use of stock material and requires complicated folding to set up the blank in useable form (See Kirby—U.S. Pat. No. 2,271,265; Bergerson—U.S. Pat. No. 2,514,833; and Deeren et al.—U.S. Pat. No. 3,061,166). They have also been formed directly in useable form (without a blank stage) in irregular three-dimensional shapes (See Brown—U.S. Pat. No. 3,041,775 and Stone—U.S. Pat. No. 3,049,260). The irregularly shaped blanks of the prior art make cutting involved and expensive, result in low efficiency in utilization of stock material, make storage and shipment in blank form highly inefficient and inconvenient, and require substantial setup time to convert the blank into useable form. Formation of the corner pad directly in useable form, as disclosed in the prior art, requires a molding or fabricating step and yields a product that is necessarily irregularly shaped, making storage and shipment (prior to actual use) highly inefficient and inconvenient.

SUMMARY

The present invention, a blank for use in padding the corners of an article, is formed from a rectangular section of yieldable material having two-spaced, parallel rectangular surfaces which define a thickness therebetween. The blank is cut in a series of separations that are critically located and of critical depth to allow "popping" or setup of the blank in a highly efficient manner just prior to use in association with an article.

The present invention results in the following advantages over prior art devices. The blank can be formed from a single rectangularly shaped solid in a simple cutting operation without extensive cutting steps and without the formation of slots, tabs and other irregular shapes. The fact that the blank is of a solid rectangular shape in its overall appearance makes utilization of stock material (from which the rectangular blank is cut) substantially 100 percent efficient. The blank formed according to the present invention remains in its rectangular shape until immediately prior to use which provides for maximum efficiency in storage and shipment. The blank can be stacked for storage and shipment with substantial 100 percent efficiency in space utilization. The blank can be "popped" or setup immediately prior to use in a minimum amount of time (approximately one second) which means that the present invention can be efficiently stored and shipped in blank form (as compared to the patents of the prior art which are formed in final form) without significant sacrifice in setup time and placement.

The primary object of the present invention is the provision of a corner pad which is a rectangular solid in blank form and which can be "popped" or setup into an irregularly shaped, three-dimensional useable form with a minimum of time and effort.

DESCRIPTION OF DRAWINGS

FIG. 1 is a perspective view of the corner pad blank which comprises the first embodiment of the present invention.

FIG. 2 is a top view of the corner pad blank shown in FIG. 1.

FIG. 3 is a vertical sectional view taken on the line 3–3 of FIG. 2.

FIG. 4 is a vertical sectional view taken on the line 4–4 of FIG. 2.

FIG. 5 is a vertical sectional view taken on the line 5–5 of FIG. 2.

FIG. 6 is a perspective view of the bottom of the corner pad blank shown in FIG. 1.

FIG. 7 is a perspective view of the "popped" or setup corner pad, which comprises the first embodiment, shown in engagement with the corner of an article.

FIG. 8 is a side view of the "popped" or setup corner pad of the first embodiment with a portion cut away shown in engagement with an article, and further shown inside an exterior container with one side of the exterior container removed.

FIG. 9 is a perspective view of the corner pad blank which comprises the second embodiment of the present invention.

FIG. 10 is a top view of the corner pad blank shown in FIG. 9.

FIG. 11 is a vertical sectional view taken on the line 11–11 of FIG. 10.

FIG. 12 is a vertical sectional view taken on the line 12–12 of FIG. 10.

FIG. 13 is a vertical sectional view taken on the line 13–13 of FIG. 10.

FIG. 14 is a perspective view of the bottom of the corner pad blank shown in FIG. 9.

FIG. 15 is a perspective view of the "popped" or setup corner pad blank, which comprises the second embodiment, shown in engagement with the corner of an article.

FIG. 16 is a side view of a "popped" or setup corner pad blank (with a portion cut away) of the second embodiment shown in engagement with an article and further showing the exterior container with one side of the container removed.

DESCRIPTION OF PREFERRED EMBODIMENTS

Two embodiments of the present invention are shown. The first embodiment is shown in FIGS. 1—8. The second embodiment is shown in FIGS. 9—16.

A general understanding of the first embodiment may be readily obtained with reference to FIGS. 1 and 7. In FIG. 1 the corner pad **10** is shown in blank form prior to "popping" or setup for use. The setup form of corner pad **10** is shown in FIG. 7 in engagement with the corner of article, A.

With reference to FIG. 1, corner pad **10** is formed from a rectangular section of yieldable material having a first surface **12** (See FIG. 6), a second surface **13** parallel to the first surface, and a thickness, *t*, between first surface **12** and second surface **13**. Critically located cuts or separations, more particularly described below, are made in first surface **12** and second surface **13** so that corner pad **10** may be "popped" or setup for use thereby assuming the configuration shown in FIG. 7. Corner pad **10** may be stored and shipped in the form shown in FIG. 1 and, with a minimum effort, be setup immediately prior to use and placed in engagement with the corner of an article as shown in FIG. 7.

The detailed construction of corner pad **10** including the location and depth of the various separations may be readily understood with reference to FIGS. 1—6.

With reference to FIG. 1, corner pad **10** is formed with a regular edge **14** which defines a plane perpendicular to first surface **12** and second surface **13**. The transverse dimension of corner pad **10**, from regular edge **14** to edge **15** is somewhat less than the longitudinal dimension, from one edge **16** to the opposite edge **16** in a direction parallel to regular edge **14**. This relationship between the transverse dimension and the longitudinal dimension is not, however, critical to nor a feature of the present invention.

With reference to FIGS. 2 and 3, first interior separation **17** extends the entire thickness, *t*, of the yieldable material a longitudinal distance less than the entire longitudinal dimension of corner pad **10** and defines a plane parallel to and spaced inwardly from regular edge **14**. As shown in FIG. 3, first separation **17** intersects both first surface **12** and second surface **13**.

Second separation 18 extends through first surface 12 as best seen in FIG. 6, and further extends a substantial portion of thickness, *t*, toward second surface 13. Second separation 18 defines a plane perpendicular to regular edge 14 and extends from first separation 17 to regular surface 14 midway along the longitudinal dimension of corner pad 10. While the depth of second separation 18 may vary, preferably the depth should lie within the range of 80 to 90 percent of thickness, *t*, thereby defining a hinge portion 19 between second separation 18 and second surface 13, best seen in FIG. 5.

Third separation 20 and fourth separation 21 intersect second surface 13 and include a substantial portion of thickness, *t*, of corner pad 10. Both separations extend from first separation 17 to regular edge 14 in a plane perpendicular to regular edge 14 and second surface 13 and are respectively spaced an equal distance on opposite sides of second separation 18. Hinge portions 22 and 23 are formed between third separation 20 and fourth separation 21, respectively, and first surface 12. Like second separation 18, third separation 20 and fourth separation 21 may extend 80—90 percent of thickness, *t*. In addition, in order to insure the 90° setup configuration of corner pad 10, third separation 20 and fourth separation 21 should lie within the range of 1*t* to 2*t* on opposite sides of second separation 18. While the theoretical distance between third separation 20 and second separation 18, ignoring hinge portion 19, is 2*t*, due to distortion which may be imposed upon corner pad 10, this distance may vary greatly. It should preferably lie within the range of 1*t* to 2*t*, however.

Fifth separation 25 includes a substantial portion of thickness, *t*, of corner pad 10 and extends from first separation 17 in a direction away from regular edge 14 through the entire remaining transverse dimension of corner pad 10 to edge 15. Fifth separation 25 intersects second surface 13 but does not intersect first surface 12 thereby providing hinge portion 26. In this manner fifth separation 25 is adapted to allow folding of corner pad 10 about an axis perpendicular to regular edge 14 midway between third separation 20 and fourth separation 21 at hinge portion 26. The location and nature of fifth separation 25 distinguishes the first embodiment shown in FIGS. 1—8 from the second embodiment shown in FIGS. 9—16, as will be apparent below.

An adhesive area 30, best seen in FIGS. 1 and 2, is disposed on second surface 13 between regular edge 14, first separation 17, second separation 18, and third separation 20. Adhesive area 30 is pressure sensitive and, when protectant cover 31 is peeled off, serves to adhere the portion of first surface 13 in the vicinity of adhesive 30 to the portion of first surface 13 between first separation 17, regular edge 14, second separation 18, and fourth separation 21. Thus, adhesive 30 serves to maintain corner pad 10 in the setup position shown in FIG. 7.

A second adhesive area 32 may be disposed on first surface 12 extending on opposite sides of fifth separation 25 as best seen in FIG. 6. When its protectant layer 33 is peeled off, adhesive 32 serves to adhere corner pad 10 to article, A, in the setup, in place position shown in FIG. 7.

The second embodiment of the present invention, seen in FIGS. 9—16, is similar to the first embodiment but differs in the configuration of the second separation and in the location and configuration of the fifth separation. Like the first embodiment of FIGS. 1—8, the second embodiment has a regular rectangular blank form 50, shown in FIG. 9, and may be set up for placement in engagement with the corner of an article, A, as shown in FIG. 15.

Like corner pad 10 of the first embodiment, corner pad 50 includes a first surface 52, a second surface 53 parallel thereto, and a thickness, *t*, therebetween. Regular edge 54 defines a plane perpendicular to first surface 52 and second surface 53. The transverse dimension of corner pad 50 extends from regular edge 54 to edge 55 and the longitudinal dimension extends from one edge 56 to opposite similar edge 56.

As best seen in FIG. 11, first interior separation 57 extends through the entire thickness, *t*, of corner pad 50, has a longitudinal distance which is less than the longitudinal dimension of corner pad 10, and defines a plane parallel to and spaced inwardly from regular edge 54. Second separation 58, best seen in FIGS. 9 and 11, extends through first surface 54 toward first surface 53 a substantial portion of thickness, *t*, of corner pad 50. Like second separation 18 of the first embodiment, second separation 58 of corner pad 50 extends from first separation 57 to regular surface 54. Unlike second separation 18 of first embodiment 10, however, second separation 58 diverges from hinge portion 59 toward first surface 52, best seen in FIGS. 9, 11, and 14. Second separation 58 is formed midway along the longitudinal dimension of corner pad 10 although this location is not critical. While the depth of second separation 58 may vary, the depth should preferably lie within the range of 80—90 percent of thickness, *t*.

Like corner pad 10 of the first embodiment, the second embodiment includes third separation 60 and fourth separation 61 which intersect second surface 53 and include a substantial portion of thickness, *t*. Third separation 60 and fourth separation 61 extend from first separation 57 to regular edge 54 in a plane perpendicular to regular edge 54 and second surface 53. They are respectively spaced an equal distance on opposite sides of second separation 58. Hinge portions 62 and 63, best seen in FIGS. 9 and 12, are formed between third separation 60 and fourth separation 61, respectively, and first surface 52. As in the case of the other separations, third separation 60 and fourth separation 61 may extend 80—90 percent of thickness, *t*. Like the first embodiment, these separations should lie within the range of 1*t* to 2*t* on opposite sides of second separation 58, to insure a 90° setup configuration of corner pad 50.

The primary distinction between the second embodiment and the first resides in the location and configuration of fifth separation 65. Like fifth separation 25 of first embodiment 10, fifth separation 65 extends from first separation 57 in a direction away from regular edge 54 along the transverse dimension of corner pad 50 to edge 55. Unlike fifth separation 25 of the first embodiment, however, fifth separation 65 intersects first surface 52, best seen in FIGS. 11 and 14, but does not intersect second surface 13, thereby providing hinge portion 59 therebetween. Moreover, fifth separation 65 diverges from hinge portion 59 toward first surface 52 and is undulated. The undulations, best seen in FIGS. 9, 11, and 14, are disposed in an offset or staggered manner so that the undulations on one surface of separation 58 mate or nest with the undulations on the opposite surface of fifth separation 58 when corner pad 50 is set up. This mating of the undulations is best seen in FIG. 15. The diverging nature of fifth separation 65 is adapted to allow folding of corner pad about an axis perpendicular to regular edge 54 midway between third separation 60 and fourth separation 61 extending through the interior of hinge portion 66.

An adhesive area 70, best seen in FIGS. 9 and 10, is disposed on second surface 53 of corner pad 50 between regular edge 54, first separation 57, second separation 58, and third separation 60. Adhesive 70 is provided with a protectant cover 71 and, like adhesive 30 of first embodiment 10, serves to maintain corner pad 50 in the setup form of FIGS. 15 and 16.

Two additional adhesive areas may be provided on first surface 53, as best seen in FIGS. 9 and 10. Thus, adhesive area 72 with its protectant cover 72 may be provided on second surface 53 between first separation 57, edge 55, edge 56, and fifth separation 65. A similar adhesive area with the protectant cover 74 may be provided opposite adhesive area 72. These adhesive areas adhere to exterior container, C, shown in FIG. 16, and insure that corner pad 50 remains in place with respect to container, C, when in use.

Both embodiments are "popped" or set up from the blank form shown in FIGS. 1 and 9 by applying thumb pressure to second surfaces 13 and 53 in the area of hinge portions 19 and 59, respectively. As second separations 18 and 58, respectively diverge, corner pads 10 and 50 may be folded about an axis perpendicular to regular surfaces 14 and 54 along hinge por-

tions **26** and **66**, respectively. The corner pad of the present invention may thus be converted or set up from the blank form shown in FIGS. **1** and **9** to the respective useable form of FIGS. **7** and **15**.

Corner pads **10** and **50** are typically intended for use between the corner of article, A, and an exterior container, C, as shown in FIGS. **9** and **16**. When so placed, they protect article, A, against impact and other forces applied to container, C, during shipment, storage, and other circumstances.

The corner pad of the present invention may be formed from a wide variety of yieldable materials. In addition to being yieldable, the material may desirably be resilient, although resiliency is not an absolutely essential feature. The material may be either closed cell or open cell. While a wide variety of materials may be used, unicellular expanded polyethylene and polyurethene (ester or ether based) serve as examples of two satisfactory materials.

Corner pads **10** and **50** may be cut in a highly efficient manner from stock material with substantial 100 percent utilization. They may be stored in the blank form of FIGS. **1** and **9** thereby insuring maximum efficiency in storage. Immediately prior to use, the corner pads can be set up with a minimum effort to provide substantial and meaningful padding at the corners of a fragile article.

Variations may be made in the form and configuration of the present invention without departing from its scope. For example, the relative transverse and longitudinal dimensions may vary and the thickness of the yieldable material may also obviously vary. The parallel and perpendicular relationship between the various separations may also be varied in the event that it is desired to provide a corner pad for an acute or obtuse corner. The depth of cut of each separation may also vary considerably with various materials and varying thicknesses.

Having thus described the invention the following is claimed.

I claim:

1. A blank for use in padding a corner of an article comprising:

a section of yieldable material having a first surface, a second surface parallel to said first surface, a thickness, *t*, between said first and second surfaces, a regular edge defining a plane perpendicular to said first and second surfaces, a transverse dimension perpendicular to said regular edge, and a longitudinal dimension parallel to said regular edge;

a first interior separation through the entire thickness of said yieldable material and extending a distance less than said longitudinal dimension in a direction parallel to and spaced from said regular edge;

a second separation in said first surface of said yieldable material including a substantial portion of said thickness and extending from said first interior separation to said regular edge;

a third and fourth separation in said second surface including a substantial portion of said thickness of said yieldable material and extending from said first separation to said regular edge and spaced, respectively, an equal distance on opposite sides of said second separation; and

a fifth separation including a substantial portion of said thickness of said yieldable material and extending from said first separation in a direction away from said regular edge, and adapted to allow folding of said section about an axis perpendicular to said regular edge midway between said third and fourth separations.

2. The blank of claim **1** wherein said fifth separation includes said second surface.

3. The blank of claim **2** wherein said third and fourth separations are spaced, respectively, a distance in the range of 1*t* to 2*t* on opposite sides of said second separation.

4. The blank of claim **3** and adhesive disposed on said second surface between said regular edge, said first separation, said second separation and said third separation.

5. The blank of claim **4** and adhesive disposed on said first surface on opposite sides of said fifth separation.

6. The blank of claim **1** wherein said fifth separation includes said first surface and diverges from said axis to said first surface.

7. The blank of claim **6** wherein said fifth separation defines diverging undulations disposed to mesh upon folding of said section about said axis.

8. The blank of claim **6** wherein said third and fourth separations are spaced, respectively, a distance in the range of 1*t* to 2*t* on opposite sides of said second separation.

9. The blank of claim **8** and adhesive disposed on said second surface between said regular edge, said first separation, said second separation, and said third separation.

10. The blank of claim **9** and adhesive disposed on said second surface on opposite sides of said fifth separation.