Nov. 30, 1965 M. E. DOLL 3,220,683

CORNER PADS AND BLANKS THEREFOR

Filed Aug. 17, 1964 4 Sheets-Sheet 1

Fig-1

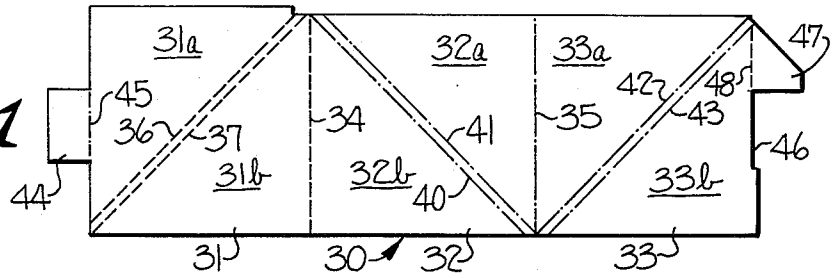


Fig-2

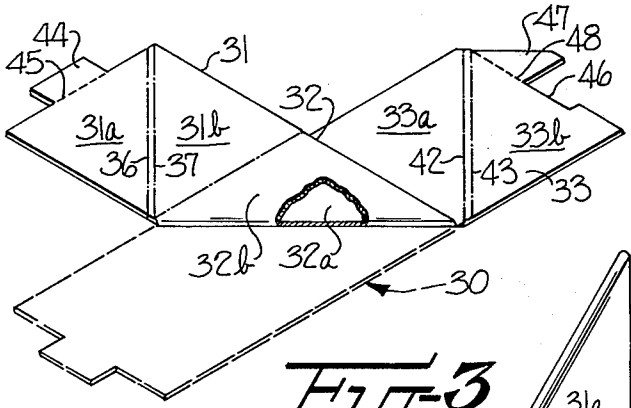


Fig-3

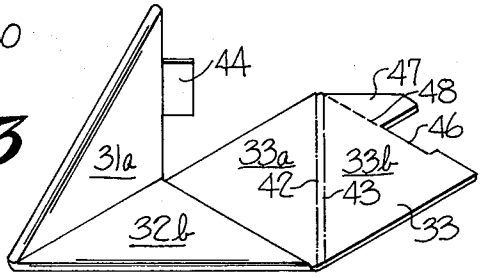


Fig-4

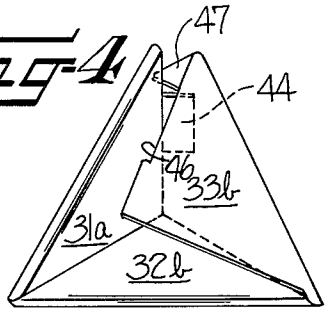


Fig-5

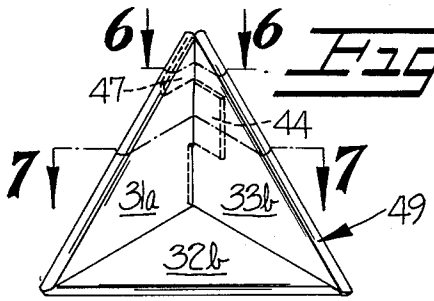


Fig-6

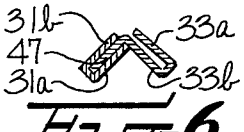
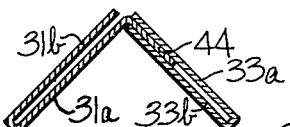


Fig-7



INVENTOR:
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BY Parrott, Bell, Seltzer, Park & Heard

ATTORNEYS

Nov. 30, 1965 M. E. DOLL 3,220,683

CORNER PADS AND BLANKS THEREFOR

Filed Aug. 17, 1964 4 Sheets-Sheet 2

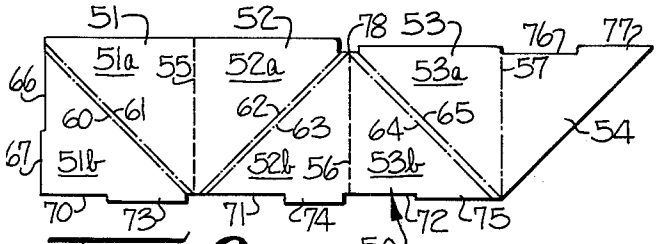


Fig-8

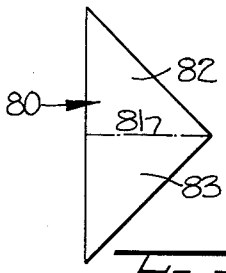


Fig-9

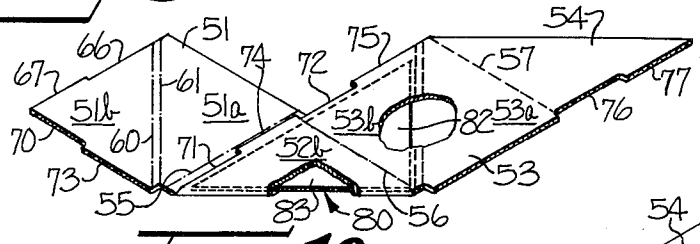


Fig-10

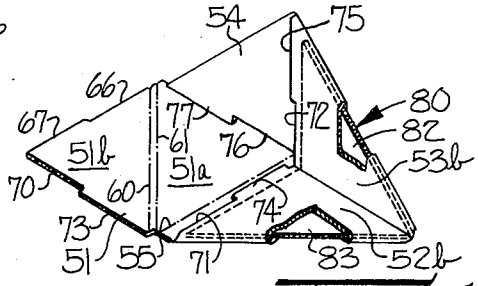


Fig-11

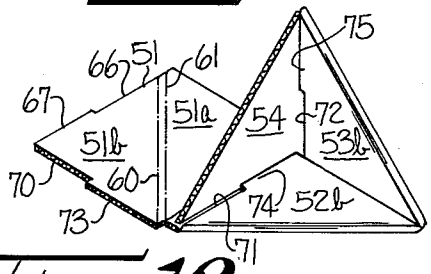


Fig-12

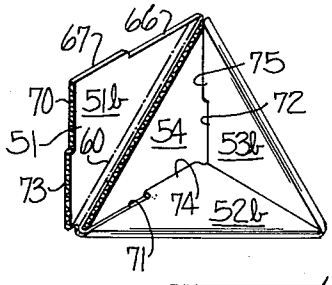


Fig-13

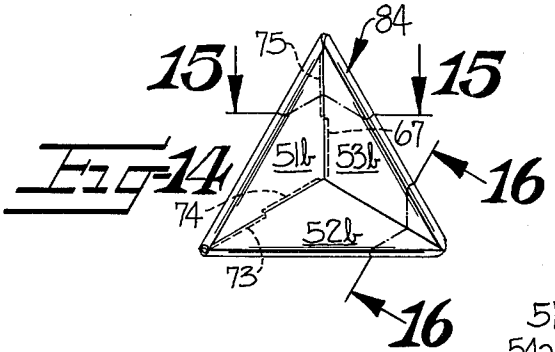


Fig-14

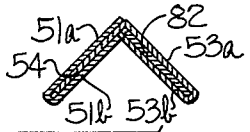


Fig-15

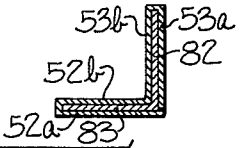


Fig-16

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Nov. 30, 1965 M. E. DOLL 3,220,683

CORNER PADS AND BLANKS THEREFOR

Filed Aug. 17, 1964 4 Sheets-Sheet 3

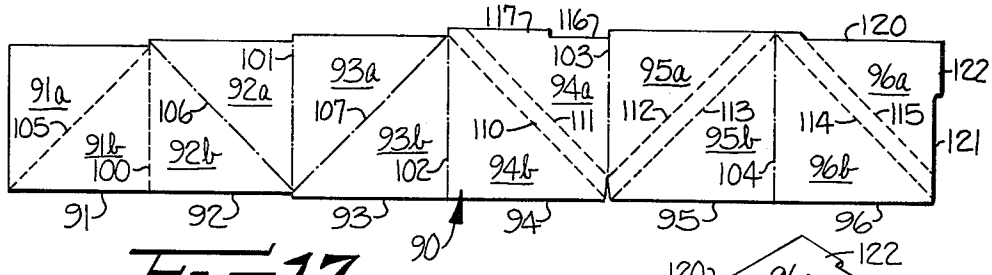


Fig-17

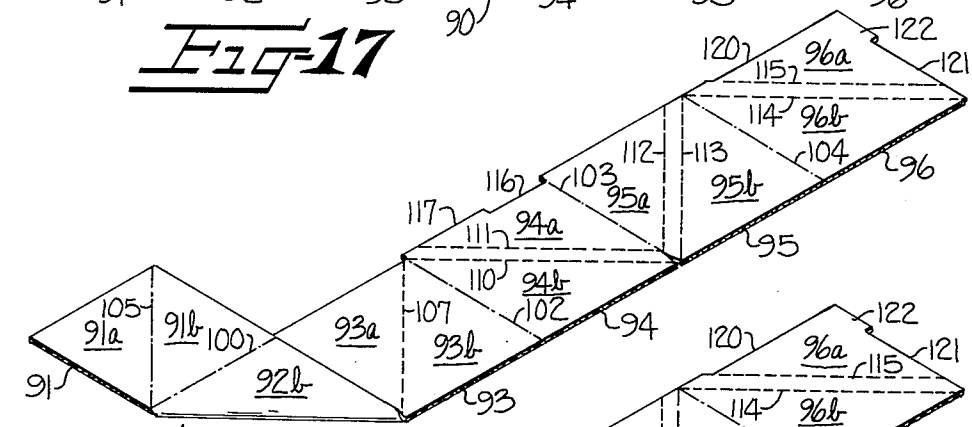


Fig-18

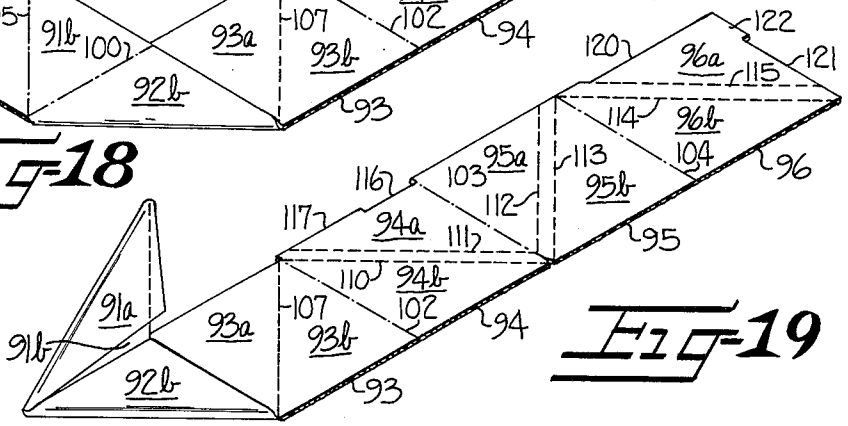


Fig-19

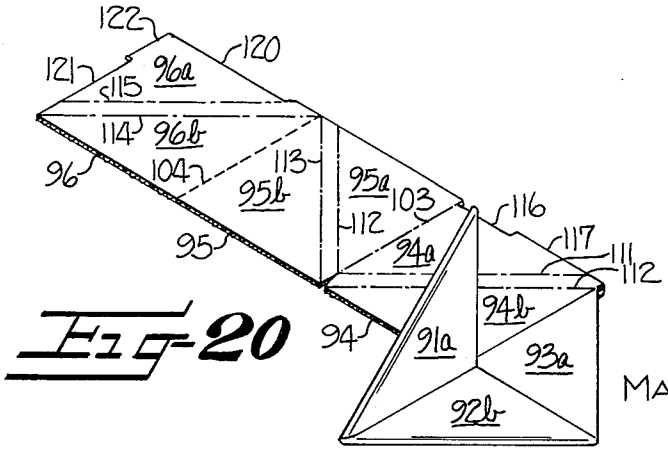


Fig-20

INVENTOR:
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Nov. 30, 1965 M. E. DOLL 3,220,683

CORNER PADS AND BLANKS THEREFOR

Filed Aug. 17, 1964 4 Sheets-Sheet 4

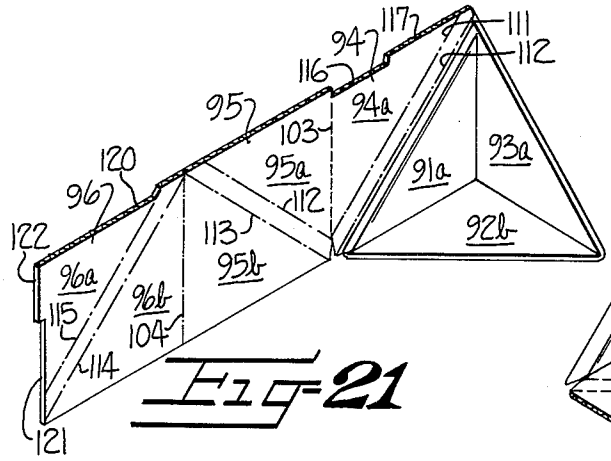


Fig-21

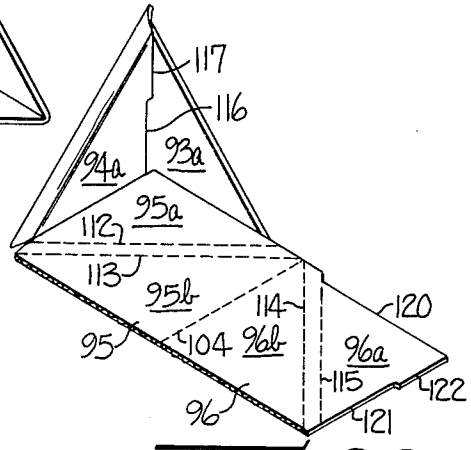


Fig-22

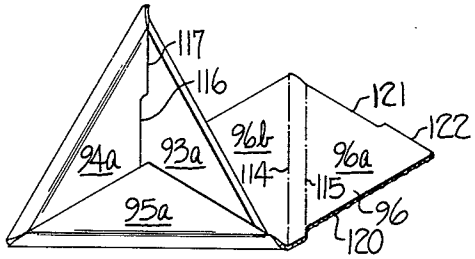


Fig-23

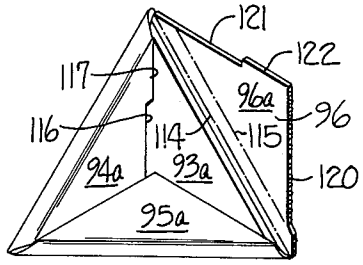


Fig-24

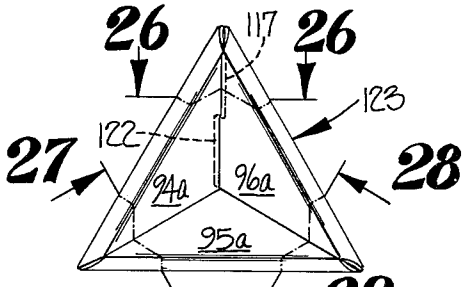


Fig-25

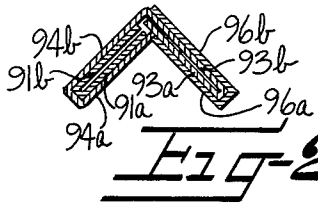


Fig-26

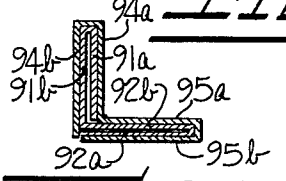


Fig-27

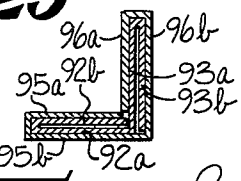


Fig-28

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ATTORNEYS

United States Patent Office 3,220,683 Patented Nov. 30, 1965

3,220,683
CORNER PADS AND BLANKS THEREFOR

Martin E. Doll, Patterson, N.C.

Filed Aug. 17. 1964, Ser. No. 390,025
14 Claims. (Cl. 248—345.1)

This application is a continuation in part of applicant's copending application Serial No. 289,955, filed June 24, 1963 and entitled Corner Pad and Blank.

The present invention relates to corner pad constructions for protecting the corners of furniture or the like during shipping or other handling and more particularly to improve trihedral corner pads and blanks therefor.

As stated in the above-mentioned copending application, it is the usual practice in the shipment or other handling of furniture and the like to utilize corner pads of suitably folded paperboard material around each of the corners of the furniture to protect the same from damage. The most common conventional corner pads are formed by folding paperboard blanks into trihedral angle arrangements.

Such conventional corner pads provide some measure of shock absorption and protection to the corners of the furniture or the like on which the same are disposed. However, these conventional corner pads require an excessive amount of paperboard material for a given amount of shock absorption, and a considerable amount of waste of the paperboard material results in the fabrication thereof. Further, such conventional corner pads are usually formed from generally rectangular blanks of paperboard material which are cut and scored to permit the same to be folded into the corner pad. To form a trihedral corner pad, such rectangular blanks must be cut in a particular manner which includes a slit extending from one side edge of the rectangular blank thereinto for a predetermined distance. The formation of this slit is difficult and time consuming and increases the cost of manufacturing the corner pad blanks.

Also, these conventional trihedral corner pads have the very undesirable characteristic of frequently becoming unfolded during handling thereof. There have been many attempts to solve this problem but these attempts have not proved successful solutions since these attempts have universally required a greater amount of paperboard material which increases the cost of the corner pad and renders the same undesirable for economic reasons.

It is therefore an object of the present invention to provide novel trihedral corner pads and blanks therefor wherein the deficiencies of prior conventional corner pads are obviated, wherein the corner pads have the walls thereof locked together to prevent unfolding thereof during handling, and wherein the blanks are more easily formed and with a minimal amount of waste.

A most specific object of the present invention is to provide novel corner pad blanks which are formed of panels serially arranged in strip form and suitably scored for folding into a corner pad and wherein the aforementioned problems in forming conventional corner pad blanks are obviated.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which:

FIGURE 1 is a plan view of one embodiment of a corner pad blank embodying the features of the present invention;

FIGURES 2, 3 and 4 are isometric views of the blank shown in FIGURE 1 illustrating the manner of folding the same into a corner pad;

FIGURE 5 is an isometric view of a corner pad formed by the folding of the blank shown in FIGURE 1;

FIGURE 6 is a sectional view taken substantially along line 6—6 in FIGURE 5;

FIGURE 7 is a sectional view taken substantially along line 7—7 in FIGURE 5;

FIGURE 8 is a plan view of a modified form of corner pad blank embodying the features of the present invention;

FIGURE 9 is a plan view of a triangular insert to be used with the blank shown in FIGURE 8 in forming a modified form of corner pad;

FIGURES 10, 11, 12 and 13 are isometric views illustrating the manner of folding the blank and insert shown in FIGURES 8 and 9 to form a corner pad;

FIGURE 14 is an isometric view of a corner pad formed from the blank and insert shown in FIGURES 8 and 9;

FIGURE 15 is a sectional view taken substantially along line 15—15 in FIGURE 14;

FIGURE 16 is a sectional view taken substantially along line 16—16 in FIGURE 14;

FIGURE 17 is a plan view of another modified form of corner pad blank embodying the features of the present invention;

FIGURES 18, 19, 20, 21, 22, 23 and 24 are isometric views illustrating the manner of folding the blank shown in FIGURE 17 into a corner pad;

FIGURE 25 is an isometric view of a corner pad formed by folding the blank shown in FIGURE 17;

FIGURE 26 is a sectional view taken substantially along line 26—26 in FIGURE 25;

FIGURE 27 is a sectional view taken substantially along line 27—27 in FIGURE 25; and

FIGURE 28 is a sectional view taken substantially along line 28—28 in FIGURE 25.

Referring now to the drawings and more particularly to FIGURE 1, there is shown a blank **30** which embodies the features of the present invention. Blank **30** comprises three rectangular panels **31**, **32** and **33** which are serially arranged in strip form and are hingedly connected along fold lines **34** and **35** which define the adjacent side edges thereof. Panels **31**, **32** and **33** have respective pairs of diagonal fold lines **36**, **37**; **40**, **41**; and **42**, **43** therein which collectively form a substantially continuous zig-zag line lengthwise of blank **30** and divide these panels into substantially right triangular halves **31***a*, **31***b*; **32***a*, **32***b*; and **33***a*, **33***b*.

A first tab **44** is hingedly connected to the medial portion of the side edge of panel **31** remote from panel **32** along a fold line **45**. A cutout **46** is formed in the medial portion of the side edge of third panel **33** remote from panel **32** and is adapted to cooperatively mate with tab **44** when blank **30** is folded into a corner pad. A generally triangular second tab **47** is hingedly connected to the remote side edge of panel **33** above the cutout **46** along a fold line **48**. It is noted that the hypotenuse side edge of triangular tab **47** is at the same angle as diagonal fold lines **40**, **41** in panel **32**. Also, it is noted that panels **32** and **33** are of slightly lesser width than panel **31** to facilitate the folding of blank **30** into a corner pad.

Referring now to FIGURES 2–4, blank **30** is folded to form a corner pad, by folding panel **32** along diagonal fold lines **40**, **41** to position the halves **32***a* and **32***b* thereof in facing juxtaposed relation. Panel **31** is folded along diagonal fold lines **36**, **37** to position the respective halves **31***a* and **31***b* thereof in facing juxtaposed relation and is then folded along fold line **34** into perpendicular relation to panel **32**.

Panel **33** is folded along diagonal fold lines **42**, **43** to superpose the respective halves **33***a* and **33***b* thereof and is then folded upwardly along the fold line **35** into perpendicular relation to folded panels **31** and **32**. Simultaneously, tabs **44** and **46** are inserted between the halves

of panels 33 and 31, respectively, and tab 44 is positioned in cutout 46. It is noted that the tabs 44 and 46 are folded along fold lines 45 and 48 into a right angular relationship to panels 31 and 33, respectively. The panels are thereby formed into a trihedral corner pad 49 (FIGURE 5) which has multi-ply first, second and third walls defined by the respective halves of panels 31, 32 and 33.

Referring now to FIGURES 8–16, and more particularly to FIGURE 8, there is shown a modified form of a corner pad blank embodying the features of the present invention, which blank is generally indicated at 50. Blank 50 includes rectangular panels 51, 52 and 53 and a generally triangular fourth panel 54 serially arranged in strip form and hingedly connected along fold lines 55, 56 and 57 defining the adjacent side edges thereof. Rectangular panels 51, 52 and 53 have respective pairs of diagonal fold lines 60, 61; 62, 63; and 64, 65 therein which collectively form a substantially continuous zig-zag line lengthwise of blank 50 and divided panels 51, 52 and 53 into respective halves 51*a*, 51*b*; 52*a*, 52*b*; and 53*a*, 53*b*. It is noted that the hypotenuse side edge of triangular panel 54 extends angularly outwardly from the corner of panel 53 at which diagonal fold lines 64 and 65 end and thus forms an extension of the zig-zag line.

The side edge of panel 51 remote from panel 52 has a cutout 66 therein and the remaining portion of this side edge defines a protuberance 67. The lower side edges of panels 51, 52 and 53 have respective cutouts 70, 71 and 72 therein and the remaining portions of these side edges define protuberances 73, 74 and 75, respectively. The upper side edge of triangular panel 54 has a cutout 76 therein and the remaining portion of this side edge defines a protuberance 77. Also, the upper respective righthand and lefthand corners of panels 52 and 53 have a cutout 78 therein to facilitate folding of blank 50.

Referring to FIGURE 9, there is shown an isosceles triangular insert 80 which has a fold line 81 bisecting the same and dividing insert 80 into right triangular halves 82 and 83. Halves 82 and 83 are of slightly less dimensions than the halves of panels 52 and 53 for reasons to become apparent hereinafter.

Referring now to FIGURES 10–13, blank 50 and insert 80 are combined and folded to form a corner pad by first placing half 83 of insert 80 in superposed relation to the half 52*a* of panel 52 with the hypotenuse side edge of half 83 parallel to diagonal fold lines 62, 63. Panel 52 is then folded along diagonal fold lines 62 and 63 to position half 52*b* thereof in superposed relation to half 83 of insert 80 and to sandwich the half 83 between the halves 52*a* and 52*b* thereof.

Simultaneously therewith, half 53*b* of panel 53 is positioned in superposed relation to half 82 to insert 80, and panel 53 is then folded along diagonal fold lines 64, 65 to sandwich half 82 of insert 80 between the halves 53*a* and 53*b* thereof (FIGURE 11). Panels 52 and 53 and insert 80 are then folded along respective fold lines 56 and 81 to position panels 52 and 53 and the halves 82 and 83 enclosed therein at right angles to each other.

Triangular panel 54 is then folded along fold line 57 to position the same at right angles to panels 52 and 53 and to position protuberance 77 on the upper side edge thereof in cutout 71 in the lower side edge of panel 52. Correspondingly, protuberance 74 on panel 52 is positioned in cutout 76.

Panel 51 is folded along fold line 55 to position the same at right angles to panels 52 and 53 to place half 51*a* thereof beneath triangular panel 54. Panel 51 is folded along diagonal fold lines 60 and 61 to sandwich the triangular panel 54 between the halves thereof and to complete the formation of blank 50 and insert 80 into a corner pad which is generally indicated at 84 which has three triangular walls of triple-ply construction each. Protuberances 67 and 73 on half 51*b* of panel 51 are respectively positioned in cutouts 71 and 72 in panels

52 and 53 and these mating protuberances and cutouts cooperate to lock the panels in folded condition.

Referring now to FIGURES 17–28, another modified form of a corner pad blank of the present invention is shown and is generally indicated at 90 (FIGURE 17). Blank 90 includes six rectangular panels 91, 92, 93, 94, 95 and 96, respectively, which are serially arranged in strip form and are hingedly connected along fold lines 100, 101, 102, 103 and 104 defining the respective adjacent side edges thereof. Panels 91, 92 and 93 have diagonal fold lines 105, 106 and 107 therein which collectively form a substantially continuous zig-zag line lengthwise of blank 90 and divide these panels into respective right triangular halves 91*a*, 91*b*; 92*a*, 92*b*; and 93*a*, 93*b*. The remaining panels 94, 95 and 96 have respective pairs of diagonal fold lines 110, 111; 112, 113; and 114, 115 collectively forming a continuation of the zig-zag line lengthwise of blank 90 and dividing these panels into respective substantially right triangular halves 94*a*, 90*b*; 95*a*, 95*b*; and 96*a*, 96*b*. To permit folding of the blank 90 into a corner pad, the first three panels 91, 92 and 93 are smaller, particularly in width, than the latter three panels 94, 95 and 96.

The upper side edge of panel 94 has a cutout 116 therein and the remainder of this upper edge defines a protuberance 117. The upper edge of panel 96 has a cutout 120 therein to facilitate folding thereof into cooperating relation with the other panels and the side edge of panel 96 remote from panel 95 has a cutout 121 therein adapted to cooperatively mate with protuberance 117. The remaining portion of this side edge defines a protuberance 122 adapted to cooperatively mate with cutout 116.

Referring now to FIGURES 18–24, the folding of the blank 90 into a corner pad is illustrated and includes the steps of folding panel 92 along the diagonal fold line 106 to superpose halves 92*a* and 92*b* thereof. Panel 91 is then folded upwardly along fold line 100 to position the same in perpendicular relation to panel 92 and is further folded along diagonal fold line 105 to position the halves 91*a*, 91*b* thereof in facing juxtaposed relation. Thereafter, panel 93 is folded along diagonal fold line 107 to superpose halves 93*a*, 93*b* thereof and is also folded along fold line 101 to position the same at right angles to panels 91 and 92. The first three panels 91, 92 and 93 are thereby formed into a first or initial trihedral angle arrangement.

Blank 90 is then folded along fold line 102 to position half 94*b* of panel 94 in juxtaposed facing relation to half 91*b* of panel 91. Panel 94 is further folded along diagonal fold lines 110 and 111 to position half 94*a* thereof into facing juxtaposed relation to half 91*a* of panel 91 and to sandwich the halves 91*a*, 91*b* of panel 91 between the halves 94*a*, 94*b* of panel 94.

At the same time, panels 94 and 95 are folded along fold line 103 to position the half 95*a* of panel 95 into facing juxtaposed relation to half 92*b* of panel 92. Panel 95 is then folded along diagonal fold lines 112 and 113 to enclose or sandwich the halves 92*a*, 92*b* of panel 92 between the halves 95*a*, 95*b* thereof. Then, panel 96 is folded along fold line 105 to position half 96*b* thereof into facing juxtaposed relation to half 93*b* of panel 93 and is further folded along diagonal fold lines 114 and 115 to enclose or sandwich the halves of panel 93 between the halves 96*a* and 96*b* thereof, and to position protuberance 122 in cutout 116 in panel 94 and protuberance 117 on panel 94 in cutout 121 in panel 96. A second trihedral angle arrangement is thusly formed by the panels 94, 95 and 96 around or enclosing the first trihedral angle arrangement formed by panels 91, 92 and 93 and a completed corner pad 123 (FIGURE 25) results which has three triangular walls of four plies each. It is noted that the mating protuberances and cutouts cooperate to lock the panels together in folded condition against accidental or undesirable unfolding thereof.

It will therefore be apparent that novel corner pads and blanks for forming the same have been provided wherein

the blanks are more easily and economically formed with a minimum of waste of paperboard material and wherein the corner pads have optimum shock absorbancy and protective capacity with a minimum of paperboard material.

In the drawings and specification there have been set forth preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. An elongate paperboard blank foldable into a trihedral corner pad having triangular walls, said blank comprising at least three rectangular panels serially arranged and respectively hingedly connected along fold lines defining the adjacent side edges thereof, said panels having diagonal fold lines therein collectively forming a substantially continuous zig-zag line lengthwise of said blank, said diagonal fold lines dividing the panels into substantially right triangular halves which define the walls of the corner pad when said blank is folded thereinto, and the side edges of at least two of said panels having cutouts and protuberances therein adapted to cooperatively mate with each other when the blank is folded into a trihedral corner pad to lock the blank in folded condition.

2. An elongate paperboard blank foldable into a trihedral corner pad having multi-ply triangular walls, said blank comprising first, second and third rectangular panels serially arranged and hingedly connected along fold lines defining the adjacent side edges thereof, said panels having diagonal fold lines therein collectively forming a substantially continuous zig-zag line lengthwise of said blank and dividing the panels into substantially right triangular halves which are adapted to be folded into facing juxtaposed relation to define multi-ply walls of the corner pad, and tab means carried by and extending outwardly from at least one side edge of one of said panels and being adapted to be disposed between the right triangular halves of another panel when the blank is folded into a corner pad to lock the blank in folded condition.

3. A blank according to claim 2 wherein said tab means comprises a first tab carried by a medial portion of the side edge of said first panel remote from said second panel and adapted to be disposed between the triangular halves of said third panel when the blank is folded into a corner pad, and a second tab carried by one end portion of the side edge of said third panel remote from said second panel and adapted to be disposed between the triangular halves of said first panel when the blank is folded into a corner pad.

4. An elongate paperboard blank foldable into a trihedral corner pad having multi-ply triangular walls, said blank comprising first, second and third rectangular panels serially arranged and hingedly connected along fold lines defining the adjacent side edges thereof, said panels having diagonal fold lines therein collectively forming a substantially continuous zig-zag line lengthwise of said blank commencing at the lower lefthand corner of said first panel and ending at the upper righthand corner of said third panel and dividing the panels into substantially right triangular halves which are adapted to be folded into facing juxtaposed relation to define the multi-ply walls of the corner pad, a first tab carried by the medial portion of the side edge of said first panel remote from said second panel and extending outwardly therefrom, the side edge of said third panel remote from said second panel having a cutout in the medial portion thereof adapted to receive said first tab therein when the blank is folded into a corner pad, and a substantially triangular second tab carried by said remote side edge of third third panel adjacent the upper righthand corner thereof and extending outwardly therefrom, said first and second tabs being adapted to be disposed between the triangular halves of said third and first panels respectively when said blank is folded into a corner pad with said first and second tabs and said cutout cooperating to lock said blank in folded condition.

5. An elongate paperboard blank foldable into a trihedral corner pad having multi-ply triangular walls, said blank comprising rectangular first, second and third panels and a right triangular fourth panel serially arranged and hingedly connected along fold lines defining the adjacent side edges thereof, said first, second and third panels having diagonal fold lines therein collectively forming a substantially continuous zig-zag line lengthwise of the blank and dividing these panels into substantially right triangular halves, and said right triangular fourth panel having the hypotenuse side edge thereof extending upwardly and outwardly from the righthand corner of said third panel at which said diagonal fold line therein ends.

6. A blank according to claim 5 wherein the side edges of at least two of said rectangular panels have cutouts and protuberances therein adapted to cooperatively mate with each other when the blank is folded into a corner pad to lock the blank in folded condition.

7. An elongate paperboard blank foldable into a trihedral corner pad having multi-ply triangular walls, said blank comprising rectangular first, second and third panels and a right triangular fourth panel serially arranged and hingedly connected along fold lines defining the adjacent side edges thereof, said first, second and third panels having diagonal fold lines therein collectively forming a substantially continuous zig-zag line lengthwise of the blank and dividing these panels into substantially right triangular halves, said right triangular fourth panel having the hypotenuse side edge thereof extending upwardly and outwardly from the righthand corner of said third panel at which said diagonal fold line ends, and the left side edge of said first panel, the bottom side edges of said first, second and third panels, and the top side edge of said fourth panel all having cutouts therein with the remaining portions of these side edges defining protuberances, these cutouts and protuberances being adapted to cooperatively mate when the blank is folded into a corner pad to lock the blank in folded condition.

8. An elongate paperboard blank foldable into a trihedral corner pad having triangular walls of four plies each, said blank comprising six rectangular panels serially arranged in strip form and hingedly connected along fold lines defining the adjacent side edges thereof, said panels having diagonal fold lines therein collectively forming a substantially continuous zig-zag line lengthwise of the blank and dividing the panels into substantially right triangular halves, and said panels being adapted to be folded along said diagonal fold lines and the fold lines along which the same are hingedly connected together to arrange the same into a trihedral angle to form a corner pad.

9. A blank according to claim 8 wherein the first three panels in the serial arrangement are smaller than the last three panels therein and are adapted to form interior plies in the walls of a corner pad formed when the blank is folded.

10. An elongate paperboard blank foldable into a trihedral corner pad having triangular walls of four plies each, said blank comprising six rectangular panels serially arranged in strip form and hingedly connected along fold lines defining the adjacent side edges thereof, said panels having diagonal fold lines therein collectively forming a substantially continuous zig-zag line lengthwise of the blank and dividing the panels into substantially right triangular halves, the first three panels in the serial arrangement being of lesser width than the last three panels and adapted to define interior plies in the walls of a corner pad, and the side edges of two of said panels having cutouts and protuberances adapted to cooperatively mate with each other when the blank is folded into a corner pad to lock the blank in folded condition.

11. A corner pad for protecting the corners of furniture or the like during shipment or other handling, said corner pad comprising first, second and third walls arranged to define a trihedral angle, said first, second, and third walls each including a pair of plies of substantially right triangular configuration and interconnected along a fold line corresponding to the hypotenuses thereof, and protruding tab means on the inner ply of at least one of said walls disposed between the plies of another of said walls to lock the walls of the corner pad together.

12. A corner pad according to claim 11 wherein said tab means comprises a first tab carried by the side edge of the inner ply of one of said walls and disposed between the plies of another wall, and a second tab carried by the side edge of said other wall offset from said first tab and disposed between the plies of said one wall.

13. A corner pad for protecting the corners of furniture or the like during shipment or other handling, said corner pad comprising first, second and third walls arranged to define a trihedral angle, said first, second, and third walls each including a pair of plies of substantially right triangular configuration and interconnected along a fold line corresponding to the hypotenuses thereof, a first tab carried by the medial portion of the side edge of the inner ply of said first wall and disposed between the plies of said second wall, the side edge of the inner ply of said second wall having a cutout in the medial portion therein in which said first tab is disposed, and a

second tab carried by the side edge of the inner ply of said second wall in offset relation to said cutout therein and disposed between the plies of said first wall, said first and second tabs and said cutout cooperating to lock the walls on the corner pad together.

14. A corner pad for protecting the corners of furniture or the like during shipment or other handling, said corner pad comprising first, second and third walls interconnected and arranged to define a trihedral angle, said walls each including first and second outer and inner plies of substantially right triangular configuration and interconnected along a fold line corresponding to the hypotenuses thereof and third and fourth interior plies of substantially right triangular configuration and interconnected along a fold line corresponding to the hypotenuses thereof and being disposed between said inner and outer face plies, and the adjacent side edges of the inner face plies of two of said walls having cooperatively mating cutouts and protuberances locking said plies of said walls together.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,220,683 November 30, 1965

Martin E. Doll

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 19, for "divided" read -- divide --; column 4, line 19, for "90b" read -- 94b --; column 5, line 71, for "third", first occurrence, read -- said --.

Signed and sealed this 27th day of September 1966.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents