

April 23, 1935.

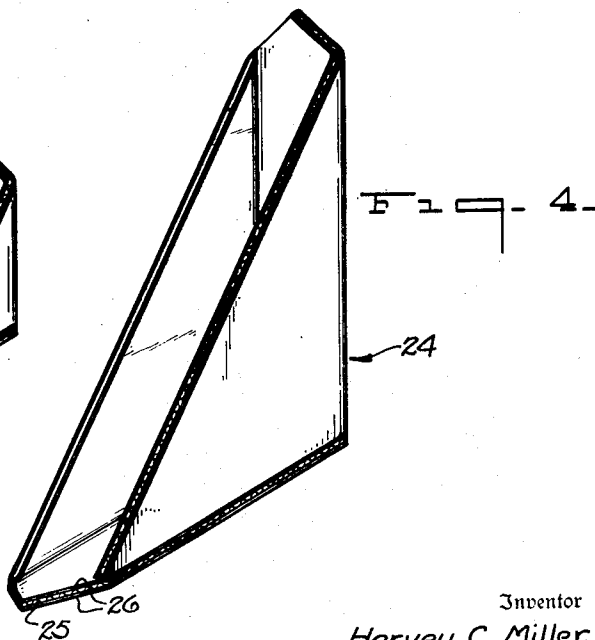
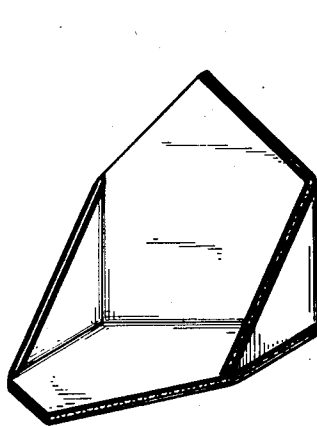
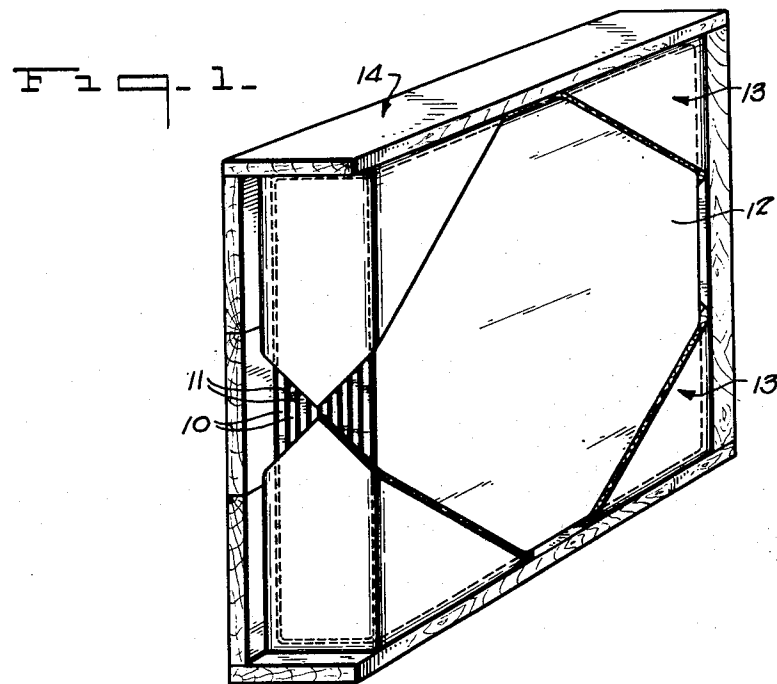
H. C. MILLER

1,998,515

ART OF PACKAGING

Filed Jan. 9, 1932

3 Sheets-Sheet 1



Inventor
Harvey C. Miller.
Frank Fraser;
Attorney

April 23, 1935.

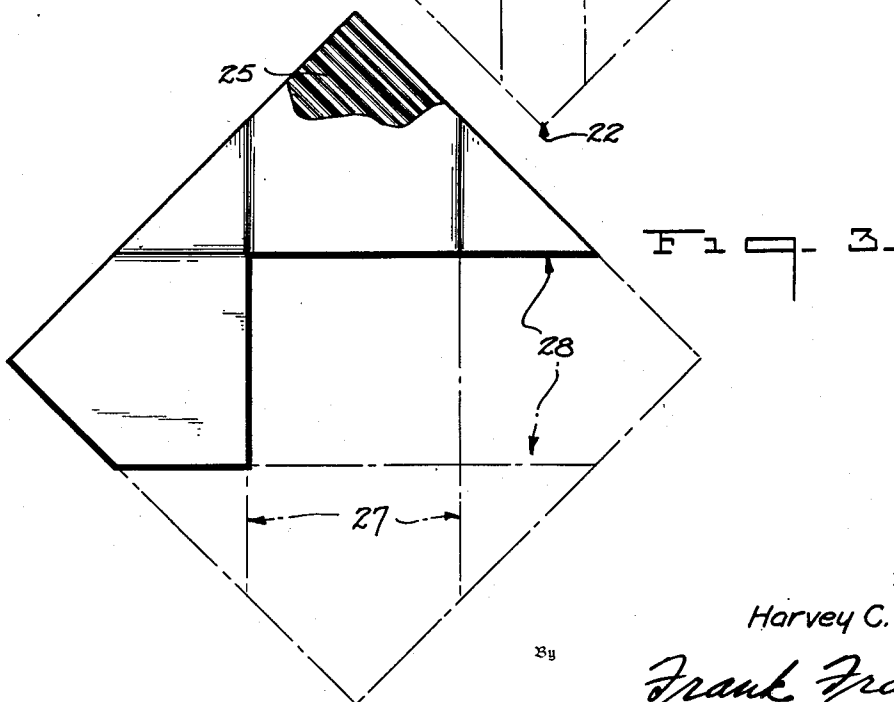
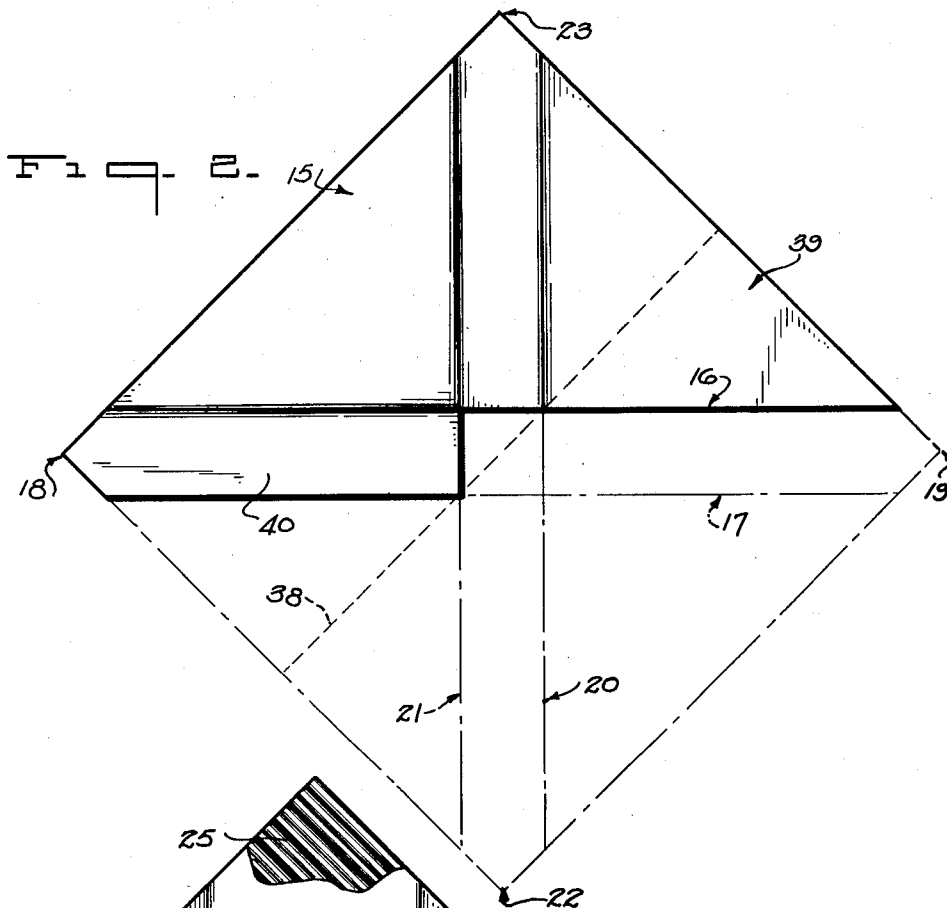
H. C. MILLER

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ART OF PACKAGING

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3 Sheets-Sheet 2



Inventor
Harvey C. Miller.

Frank Fraser,
Attorney

April 23, 1935.

H. C. MILLER

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ART OF PACKAGING

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3 Sheets-Sheet 3

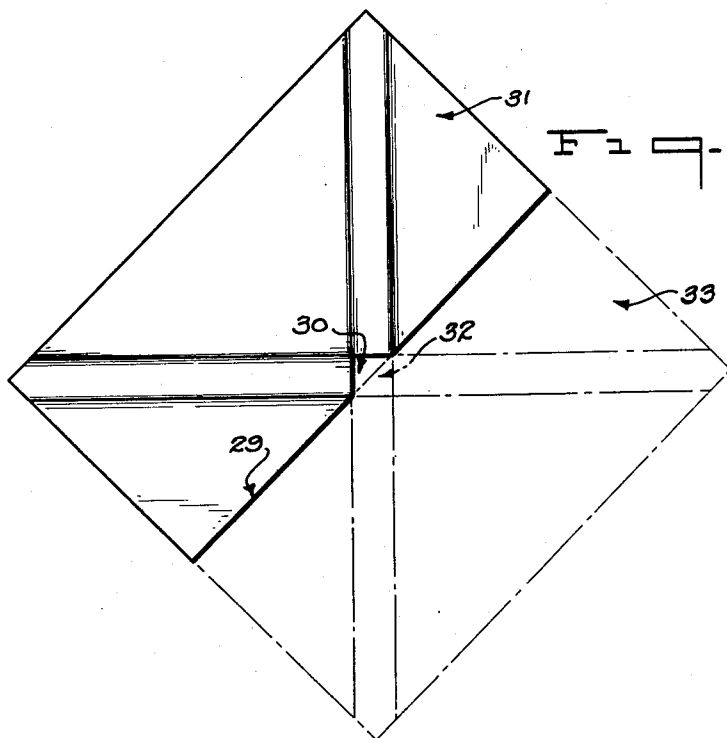


Fig. 6.

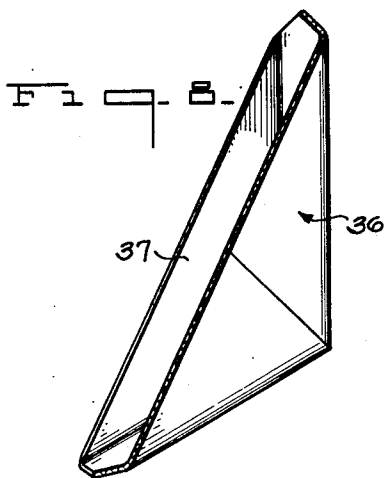


Fig. 8.

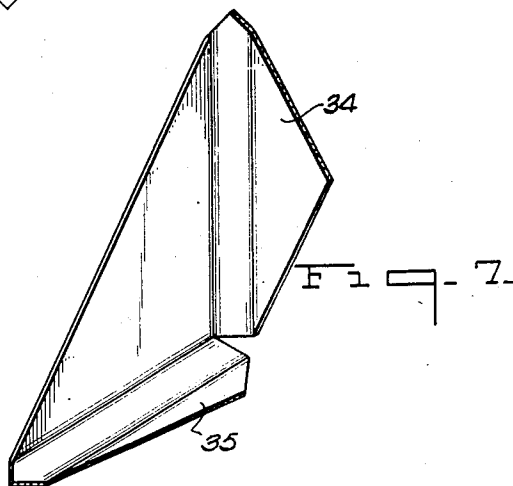


Fig. 7.

Inventor

Harvey C. Miller.

By

Frank Fraser
Attorney

UNITED STATES PATENT OFFICE

1,998,515

ART OF PACKAGING

Harvey C. Miller, Charleston, W. Va., assignor to
Libbey-Owens-Ford Glass Company, Toledo,
Ohio, a corporation of Ohio

Application January 9, 1932, Serial No. 585,712

9 Claims. (Cl. 206—62)

The present invention relates to the art of packaging and more particularly to the packaging of glass sheets.

The boxing or packaging and shipping of sheet glass has always presented a big problem to the manufacturer, both from a handling and a cost standpoint. Obviously, the greatest of care must be exercised in the preventing of chipping of the glass, scratching, and staining or fading thereof, as well as complete breakage.

It is an important object of the present invention to provide a novel way of packaging glass sheets in which the glass sheets can be rapidly and satisfactorily boxed in a relatively short time and with the danger or possibilities of injury to the glass during packaging and in transit being substantially eliminated.

It is customary for sheet glass to be boxed in 50 foot lots, that is, regardless of the thickness or size of the individual sheets, the total footage of glass in the box is 50 square feet. However, sheets of like thickness and area, as well as quality, are placed in a single box. Before boxing, the glass sheets are of course cut accurately to predetermined size.

Because of the large number of various sizes and thicknesses of sheets sold, the boxing problem is tremendous, and the present invention has in mind the simplifying of the boxing or packaging of the glass, and in this connection, preformed protective means of such a character are employed that one size and shape thereof is suitable for use in a large number of different sized boxes, and in fact only five different sizes of blanks can be made into preformed protective means that will satisfy the requirements for the packaging of a couple of thousand different sized sheets of glass.

Broadly speaking, the invention contemplates the employment of "corner caps" which are placed in proper association with the sheets of glass to be packed and the assembly put in a box which is of such a size as to give what I term a "skin tight" package, which is in contrast to the relatively bulky boxes used when the customary hay or straw packing is employed.

The corner caps can be made by scoring, cutting, and folding corrugated paper in such a way that when in folded position, one of such corner caps can be placed over each corner of the stack of glass. It may be well to point out that stock sheets of sheet glass are rectangular and, as above stated, all sheets in a box are of the same size. The number of sheets of glass in the box will depend upon the size of the sheets, and likewise the

width of the box will be dependent not only upon the size of the sheets as to area but also as to thickness. The corner caps are placed one at each corner in a manner to protect a substantial part of the edges of the sheets and also a portion of the faces of the outer exposed glass sheets.

Other objects and advantages of the invention may become apparent during the course of the following description when taken in connection with the accompanying drawings.

In the drawings wherein like numerals are employed to designate like parts throughout the same,

Fig. 1 is a perspective view of a box of glass with portions of the box removed to show the position of the glass sheets and corner caps when in use,

Fig. 2 is a plan view of one of the corner caps after scoring but before folding,

Fig. 3 is a similar view of a different size and shape cap before folding, with portions broken away for purposes of illustration,

Fig. 4 is a perspective view showing the corner cap formed from the blank illustrated in Fig. 2,

Fig. 5 is a perspective view of the corner cap made from the blank in Fig. 3,

Fig. 6 is a plan view of another form of blank from which the corner cap is produced,

Fig. 7 is a perspective view illustrating the blank partially folded into position,

Fig. 8 is a perspective view of the same blank ready for use.

Referring to Fig. 1, the numeral 10 is used to designate sheets of glass, between which are disposed sheets of paper 11. The sheets of paper 11 are used between adjacent sheets of glass to prevent injury to the glass due to slight relative movement therebetween during shipping as will readily be appreciated. Surrounding the stack of glass, composed of the individual sheets 10, is a piece of wrapping paper 12.

The corner caps 13 are used at each corner of the stack of glass, and the wooden box 14 fits snugly around the assembly.

Referring to Fig. 2, the numeral 15 designates the corner cap 13 after it has been scored and cut, but before it has been folded into the shape shown in Figs. 1 and 4. One method of producing the blank 15 consists in taking a square of corrugated paper, as shown, and scoring it along spaced parallel lines 16 and 17 from the opposite corners 18 and 19 in one direction and with similar score lines 20 and 21 extending from the corner 22 to the corner 23.

Although the present invention is not restricted

to any particular make or structure of paper, it is preferred that a so-called double face corrugated paper be used. This paper can be bought on the market, but I do prefer that the corrugated paper be glued together with a non-alkaline glue so that the glass sheets will not be subject to stain or fade by reason of the use of the corrugated paper. The use of a non-alkaline glue is considered important, but the use of such a glue per se is not a part of the present invention.

After the sheet of corrugated paper has been scored as described, it is cut as shown in Fig. 2 so that two blanks are formed. The cut is made along the score line 17, as indicated in heavy lines, to the line 21. The cut is then continued along the line 21 to the line 16 and then continued along line 16. To complete the second section of the sheet, the square at the center of the sheet is removed. The square referred to is defined by the intersecting score lines extending from center to center.

After scoring and cutting of the paper, it is folded along the three score lines 16, 21 and 20 to form the substantially triangularly shaped cap 24 disclosed in Fig. 4. It will be noted in Fig. 4 that the corner cap is made from a corrugated paper consisting of the central corrugated sheet 25 and the outer plain sheets 26, all glued together to form a composite structure.

The corner cap disclosed in Fig. 5 is identical in construction to that disclosed in Fig. 4 except that it possesses different dimensions. This cap is made from the blank in Fig. 3, and in addition to being made from a smaller square of paper, the score lines 27 and 28 are spaced farther apart than the score lines in Fig. 2. The cuts are made in the same manner and the blank formed after scoring and cutting is folded to give the corner cap disclosed in Fig. 5.

An important feature of the present invention resides in the fact that the cutting and scoring of the corrugated paper is done in such a manner that the corrugations in the paper do not run parallel to any edge of the glass when the corner cap is in operative position. This is a decidedly important feature. By scoring and cutting the paper in such a way, the corrugations "bridge" and the caps thus have much greater strength than if the corrugations were parallel with the edges of the glass. If the corrugations are parallel to the edges of the glass, the glass is likely to cut through the paper and weaken it to a point where satisfactory service may not result.

The corner caps can be made in a slightly different way, although the finished cap is identical in shape and is used in the same manner. As is shown in Fig. 6, after the sheet has been scored from corner to corner with the spaced parallel score lines, it is cut transversely along the line 29. By so cutting, the square is divided into two equal parts and to complete, the triangular piece 30 is cut from the section 31 and the triangular piece 32 is cut from the section 33. The paper is then folded along the score lines, and it will be seen that the flap 34 in Fig. 7 is brought around to meet the flap 35 so that, as is shown in Fig. 8, the side 36 corresponds to the side 37 except that it is, in effect, in two pieces.

Referring again to Fig. 2, it will be seen that the difference between the making of corner cap 24 and the corner cap disclosed in Fig. 8 is that instead of cutting along the score lines, the cut is made along the dotted line 38. Thus the portion of the side, designated by the numeral 39 and lying below the dotted line in Fig. 2, is car-

ried by the flap 40 when the sheet is cut as in Fig. 6.

The corrugations in the finished device shown in Fig. 8 do not run parallel to any glass edge as was pointed out in connection with Fig. 3.

The scoring and cutting of the corrugated paper can be done in one operation with a suitable machine, but the present invention is in no way restricted to the use of any particular instrumentalities for shaping the paper. It is believed that the drawings are self-explanatory as to the manner in which the properly scored and cut blanks are folded.

In boxing the glass sheets, after they have been cut to size and the paper 11 placed therebetween, the corner caps are mounted on the corners of the stack of glass and the assembly then placed in the box. As above pointed out, the size of the box is such that the corner caps and glass will fit snugly thereinto. As can be seen in Fig. 1, the corner caps prevent any part of the glass sheets from contacting with the box 14. The use of the paper 12 is desirable because it tends to keep dust and dirt from between glass sheets, and while the use of the corner caps reduces to a minimum relative movement between adjacent sheets, nevertheless the slightest movement between the glass sheets may cause scratching if foreign matter gets between the glass.

It has been customary in the prior art to use hay or straw as a lining material for wooden boxes. Aside from the fact that hay is inflammable, it is decidedly dusty and dirty. Not only during the boxing, but also during transit, there is a chance for the glass to become scratched, and further, when the glass is unpacked, the disposition of the straw presents a problem.

When using straw, it is necessary to make the wooden boxes somewhat larger than when my improved corner caps are used so that the use of the corner caps not only reduces the overall size of the boxes and the difficulty of packing, because it takes skill to satisfactorily box the glass when using straw, but the "skin tight" package type of box makes possible a decided saving in warehouse and freight car space.

I have packed glass sheets wherein ordinary sheets of corrugated paper are used as the lining material for the box, and have found that it is difficult to box the glass without buckling the paper. Further, a large number of different sizes of paper sheets are required to take care of the thousands of different sizes and thicknesses of sheets packed, while with the use of my invention, five sizes of paper stock will make corner caps capable of use with a couple of thousand box sizes. It is but a simple matter to adjust the scoring machine to control the distance between the parallel score lines.

While the use of corrugated paper is suggested as material from which to make the corner caps, it will be understood that other suitable material can be used.

The expression "corner cap" is used in the specification and claims to designate a structure substantially as illustrated in the drawings regardless of the material from which it is formed, and particular method of scoring, cutting, and folding of the blank, as long as the completed article saddles the corner of the glass sheets in the manner described.

I claim:

1. In the art of packaging glass sheets, a box in which a group of glass sheets is adapted to be packed, and a piece of corrugated paper folded

over each corner of the group with portions contacting with the edges of said group of sheets and other portions contacting with the surfaces of the outer sheets of said group, the corrugated paper being so arranged that when in folded position, the corrugations thereof will extend obliquely with respect to all of the edges of the glass sheets.

2. In the art of packaging glass sheets, a box in which a group of glass sheets is adapted to be packed, and a corrugated paper corner cap associated with each corner of said group, the corrugations in said corner caps extending obliquely with respect to all of the edges of the glass sheets.

3. In the art of packaging glass sheets, a box in which a plurality of glass sheets of equal size are adapted to be packed side by side, sheets of paper interposed between adjacent sheets of glass and contacting therewith throughout substantially the entire areas thereof, a piece of wrapping paper completely surrounding the pack of sheets and contacting therewith, and a one-piece substantially triangular shaped corrugated paper corner cap having a single pocket therein, said corner cap fitting over each corner of the pack of sheets and also over the outer paper wrapping, said corner caps contacting with the interior of the box.

4. In the art of packaging glass sheets, a box in which a plurality of glass sheets of equal size are adapted to be packed side by side, and a one-piece corrugated paper corner cap having a single pocket therein fitting over each corner of the pack of sheets, said corner caps including portions disposed opposite the edges of the glass sheets and also having portions extending over a part of the faces of the outer glass sheets, the corrugations of those portions of the corner caps opposite the edges of the sheets extending obliquely with respect to all of said edges and the corrugations of those portions arranged over part of the faces of the outer sheets extending obliquely with respect to said faces.

5. In the art of packaging glass sheets, a box in which a plurality of glass sheets of equal size are adapted to be packed side by side, sheets of paper interposed between adjacent sheets of glass and contacting therewith throughout substantially the entire areas thereof, a piece of wrapping paper completely surrounding the pack of sheets and contacting therewith, and a one-piece substantially triangular shaped corrugated paper corner cap having a single pocket therein, said corner cap fitting over each corner of the pack

of sheets and also over the outer paper wrapping, the corrugations of said corner caps extending obliquely with respect to all of the edges of the glass sheets as well as to the faces thereof.

6. In the art of packing glass sheets, a box in which a plurality of sheets of glass of equal size are adapted to be packed side by side, and a protective corner cap of corrugated paper having a single pocket therein fitting over each corner of the pack of sheets, said sheets being snugly received within the pocket in the corner cap and the corner cap being snugly received within and contacting with the walls of said box.

7. In the art of packing glass sheets, a box in which a plurality of glass sheets of equal size are adapted to be packed side by side, and a protective corner cap of corrugated paper having a single pocket therein fitting loosely over each corner of the pack of sheets, said sheets being snugly received within the pocket in the corner cap and the corner cap being snugly received within said box and held in place thereby.

8. In the art of packing glass sheets, a box in which a plurality of glass sheets of equal size are adapted to be packed side by side, protective sheets of material interposed between adjacent sheets of glass and contacting therewith throughout substantially the entire areas thereof, a wrapper covering the pack of sheets and contacting therewith, and a protective corner cap of corrugated paper having a single pocket therein fitting loosely over each corner of the pack of sheets and also over the outer wrapper, said pack of sheets being snugly received within the pocket in the corner cap and the corner cap being snugly received within said box and held in place thereby.

9. In the art of packing glass sheets, a box in which a plurality of glass sheets of equal size are adapted to be packed side by side, sheets of paper interposed between adjacent sheets of glass and contacting therewith throughout substantially the entire areas thereof, wrapping paper completely surrounding the pack of sheets and contacting therewith, and a protective corner cap of corrugated paper having a single pocket therein fitting loosely over each corner of the pack of sheets and also over the outer paper wrapping, said pack of sheets being snugly received within the pocket in the corner cap and the corner cap being snugly received within said box and held in place thereby.

HARVEY C. MILLER.