

Nov. 26, 1935.

G. J. BACHMEYER

2,021,980

COLLAPSIBLE CARTON

Filed June 28, 1935

2 Sheets-Sheet 1

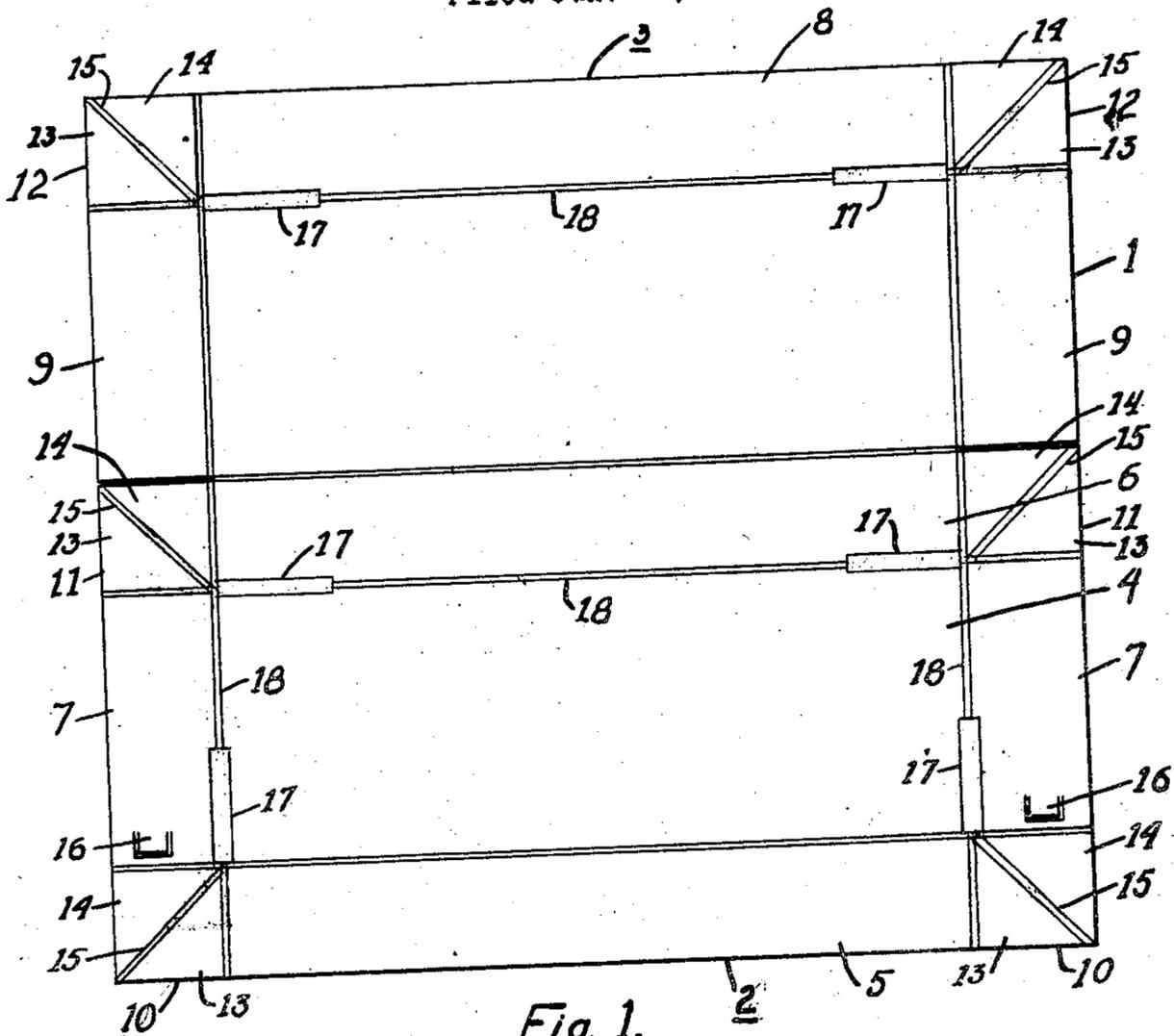


Fig. 1.

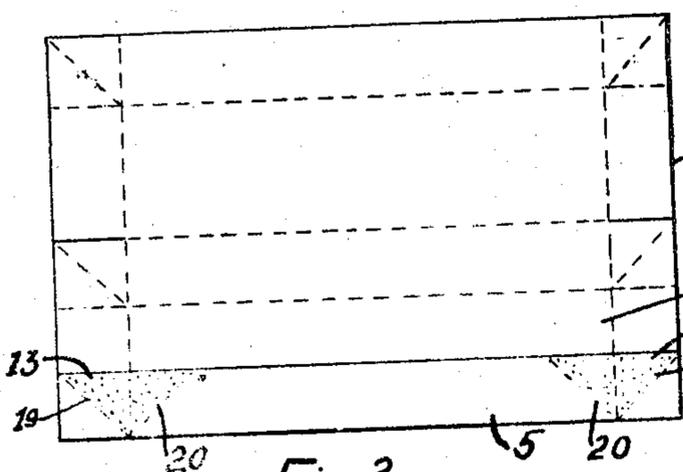


Fig. 2.

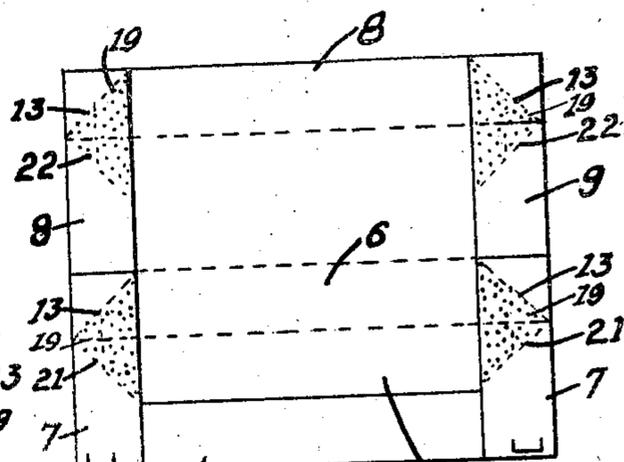


Fig. 3.

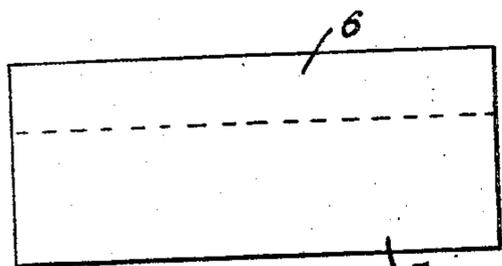


Fig. 4.

INVENTOR:

George J. Bachmeyer,

BY

Barnwell R. King

HIS ATTORNEY.

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2 Sheets-Sheet 2

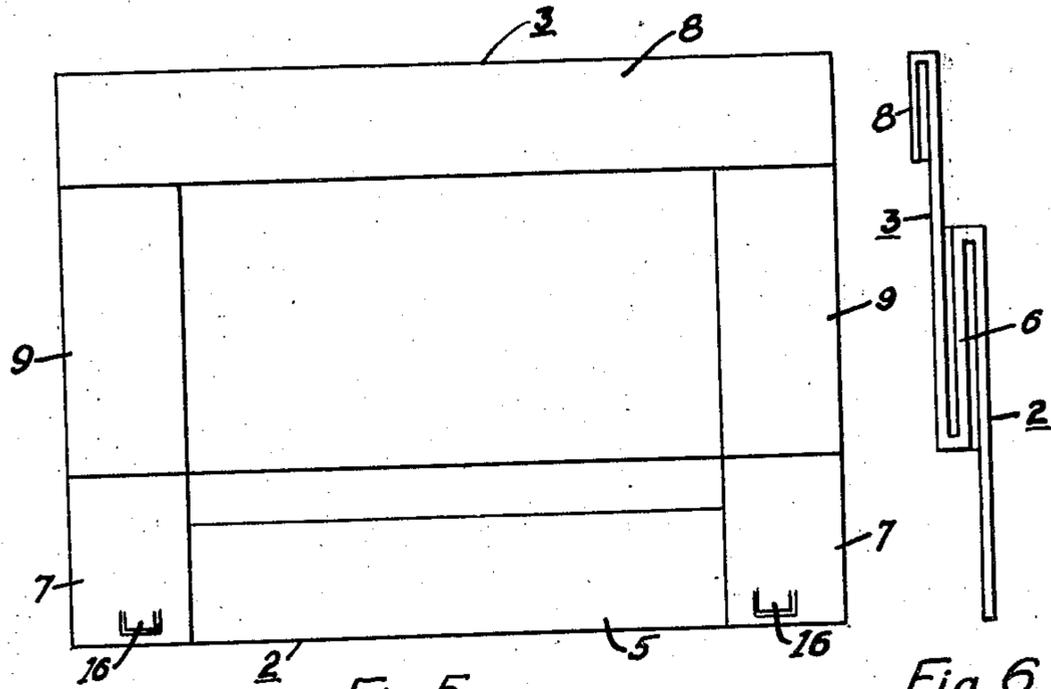


Fig. 5.

Fig. 6.

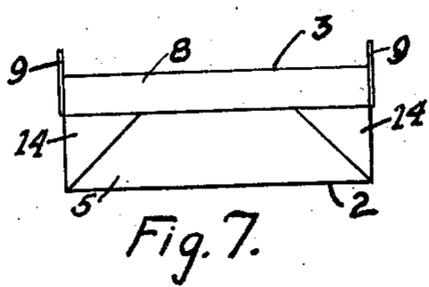


Fig. 7.

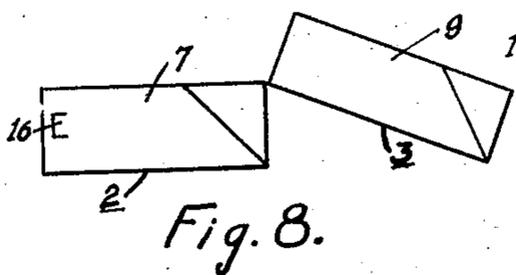


Fig. 8.

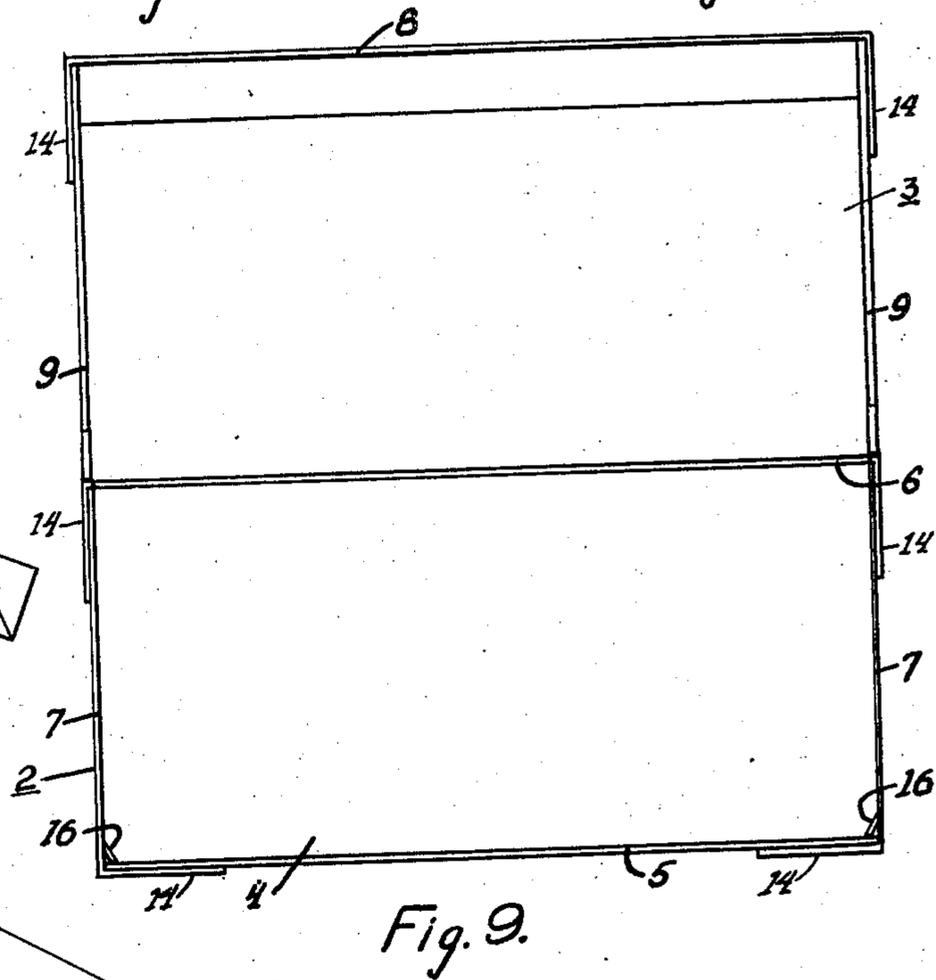


Fig. 9.

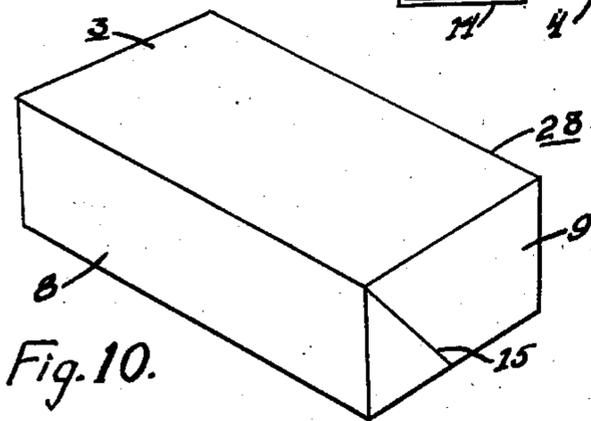


Fig. 10.

INVENTOR:
George J. Bachmeyer,
BY
Barnwell R. King
HIS ATTORNEY.

UNITED STATES PATENT OFFICE

2,021,980

COLLAPSIBLE CARTON

George J. Bachmeyer, Kalamazoo, Mich., assignor
to Smith Hoover and Bert Modderman, Kalamazoo, Mich.

Application June 28, 1935, Serial No. 28,921

12 Claims. (Cl. 229—31)

This invention relates to cartons and more particularly to collapsible cartons of the type formed of a single piece of paper board.

The main objects of my invention are:—

5 First, to provide a collapsible carton which is strong and rigid even when formed of comparatively light stock.

Second, to provide means for taking care of the stock when folded, without cutting the blank.

10 Third, to provide an improved method of folding a collapsible carton, the folding operations when completed leaving the carton in collapsed condition, ready for erection.

15 Fourth, to provide a carton which is simple and economical in its parts, easy to manufacture, and very efficient and effective for the purpose intended.

I attain these objects by the device illustrated in the accompanying drawings, in which—

20 Fig. 1 is a plan view of the blank of the carton in the flat.

Fig. 2 shows the front wall of the box folded over the bottom panel, the initial folding operation.

25 Fig. 3 shows the end walls of the box and cover folded over the bottom panel and cover respectively.

Fig. 4 shows the carton after the folding operations have been completed.

30 Fig. 5 shows the collapsed carton with the cover turned back, the initial erecting operation.

Fig. 6 is a view in end elevation of Fig. 5.

Fig. 7 is a view in front elevation of the carton after erection, the cover being open.

35 Fig. 8 is a view in end elevation of the erected carton.

Fig. 9 is a top plan view of the carton with the cover in open position; and

40 Fig. 10 is a perspective view of the carton with the cover in closed position.

Referring to Fig. 1, the rectangular blank 1, preferably formed of box board, is cut and scored, as shown, to provide a box 2 and a cover 3 therefor when folded and erected. The box has a bottom panel 4, and a front wall 5, a rear wall 6, and end walls 7, 7 extending therefrom. The cover 3 extends from the rear wall 6 of the box, and has a front wall 8 and end walls 9, 9 extending therefrom and adapted to overlap the corresponding walls of the box.

55 The rectangular corner panels 10, 10 and 11, 11 between the walls of the box, and the rectangular corner panels 12, 12 between the walls of the cover are divided into inner triangular folds 13 and outer triangular folds 14 by diagonal

onal fold lines 15. The end walls 7 of the box are cut to provide keepers 16 near the front edges of the box.

The blank 1 is embossed at 17 in the areas of the fold lines 18 to provide pockets to receive 5 the stock of the corner folds when the blank is folded to form the carton in collapsed condition.

The embossing is preferably made at the same time as the cutting and scoring, the depth of each pocket being approximately twice the thickness 10 of the blank. By embossing the blank as described above, I can fold relatively thick box board in the manner described below.

The front wall 5 of the box is first folded over the bottom panel 4, as shown by Fig. 2. With 15 the front wall in this position, adhesive 19, 19 is applied to the inner folds 13 at the ends of the front wall, and to the corresponding triangular areas 20 of the front wall overlapped by the inner folds when the end walls 7 and 9 of the box 20 and cover are folded over the bottom panel and cover respectively, as shown by Fig. 3.

With the end walls in this position, Fig. 3, adhesive is applied to the inner folds 13 at the end 25 walls of the box and cover, and to the corresponding areas 21 and 22 overlapped by the inner folds when the front wall 8 of the cover is folded over the cover, and the rear wall 6 of the box is folded over the bottom panel 4, as shown 30 by Fig. 4.

The pockets provided by the embossed areas 17 make room for the two layers of stock formed by the first folding of the corner panels and adjacent walls of the carton. This is a very important feature of my invention, inasmuch as it 35 enables me to fold a carton from a single integral blank in the manner described, without otherwise deforming or cutting the blank. The embossing is in the direction of the crease and does not mar the attractive appearance of the carton. Further, 40 when the parts of a blank are folded to provide the collapsed carton, as shown by Figs. 4, 5, and 6, the overlapping parts are substantially flat, the embossed pockets thus eliminating objectional buckling which would otherwise be present. 45

The carton formed in the foregoing manner is set up by turning the cover 3 back, as shown by Fig. 5, to expose the collapsed box 2. The thumbs are inserted under the end walls 7 of the box to pull the end walls outwardly and upwardly to 50 an upright position, this act raising the front and rear walls 5 and 6 of the box, as shown by Figs. 7, 8, and 9. The keepers 16 in the end walls are then bent or turned inwardly to engage the front wall 5 and hold the box in set-up position. 55

Finally the end walls 9 of the cover are pulled to an upright position, this act automatically raising the front wall of the cover. The cover is closed over the box while holding the end walls of the cover clear of the end walls of the box, Fig. 10.

The erected carton 28 is very strong and rigid, owing to my novel construction, even when the blank is formed of comparatively light board. The inner folds 13 are united throughout their overlapping areas to the corresponding areas of the walls of the carton, both when the carton is erected, and when the parts are collapsed. The outer triangular folds 14 are free to turn relative to the inner folds 13 in erecting and collapsing the walls of the carton.

It will thus be apparent to those skilled in the art that I provide a carton which is simple and economical in its parts, and very efficient and effective for the purpose intended, considering the weight of the stock which may be used. Cutting of the blank is reduced to a minimum and is almost entirely eliminated in my construction.

With my construction and method, the width of the bottom panel of the box may be less than the combined widths of the side walls, without interfering with the folding operations in the carton-making machine.

Cartons made in accordance with my invention are useful as laundry boxes, suit boxes, hat boxes, cake boxes, and in some cases for ice cream and other liquid material because of the impervious structure of my carton; the keepers 16 being omitted where the box is filled by a mass acting to hold the walls of the box open.

I claim:

1. A collapsible carton comprising an integral rectangular blank cut, scored and folded to provide a box and a cover, the box having a bottom panel, and front, rear and end walls extending upwardly therefrom, the front wall being connected to the end walls by triangular inner and outer folds overlapping the front wall, and the end walls being connected to the rear wall by triangular inner and outer folds overlapping the end walls, the blank being embossed to provide pockets to receive the stock of the folds when the box is collapsed, adhesive means uniting each inner fold to its wall of the box, the outer folds being free to turn relative to their inner folds, and keeper means turned inwardly from the end walls and engaging the front wall to hold the latter in upright position, the cover extending from said rear wall and having front and end walls overlapping the corresponding walls of the box, the walls of the cover being connected by means similar to the connection between the rear and end walls of the box, the cover being embossed to provide pockets to receive the stock of the folds when the cover is collapsed.

2. A collapsible carton comprising an integral rectangular blank cut, scored and folded to provide a box, the box having a bottom panel, and front, rear and end walls extending upwardly therefrom, the front wall being connected to the end walls by triangular inner and outer folds overlapping the front wall, and the end walls being connected to the rear wall by triangular inner and outer folds overlapping the end walls, the blank being embossed to provide pockets to receive the stock of the folds when the box is collapsed, adhesive means uniting each inner fold to its wall of the box, the outer folds being free to turn relative to their inner folds, and keeper means turned inwardly from the end walls and

engaging the front wall to hold the latter in upright position.

3. A collapsible carton comprising an integral rectangular blank cut, scored and folded to provide a box and a cover, the box having a bottom panel, and side and end walls extending upwardly therefrom, the side walls being connected to the end walls by triangular inner and outer folds overlapping outer sides of the box, and adhesive means uniting the inner folds to the walls of the box, the outer folds being free to turn relative to their inner folds, and intumed keeper means turned inwardly from the end walls and engaging a side wall to hold the latter in upright position, the cover extending from a side wall and having side and end walls overlapping the corresponding walls of the box, the walls of the cover being connected by means similar to the connection between the rear and end walls of the box, the blank having embossed pockets in the areas of the fold lines adapted to receive the stock of the corner folds when the carton is collapsed.

4. A collapsible carton comprising an integral rectangular blank cut, scored and folded to provide a box and a cover, the box having a bottom panel, and side and end walls extending upwardly therefrom, the side walls being connected to the end walls by triangular inner and outer folds overlapping outer sides of the box, and means uniting the inner folds to the walls of the box, and the outer folds being free to turn relative to their inner folds, the cover extending from a side wall and having side and end walls overlapping the corresponding walls of the box, the walls of the cover being connected by means similar to the connection between the rear and end walls of the box, the blank having embossed pockets in the areas of the fold lines adapted to receive the stock of the corner folds when the carton is collapsed.

5. A collapsible carton comprising an integral rectangular blank cut, scored and folded to provide a box, the box having a bottom panel, and side and end walls extending upwardly therefrom, the side walls being connected to the end walls by triangular inner and outer folds overlapping outer sides of the box, and means uniting the inner folds to the walls of the box, the outer folds being free to turn relative to their inner folds, the blank having embossed pockets in the areas of the fold lines adapted to receive the stock of the corner folds when the carton is collapsed.

6. The method of making a collapsible carton which comprises cutting and scoring a rectangular blank to provide a box and a cover, the box having a bottom panel and front, rear and end walls extending therefrom, the cover extending from the rear wall of the box and having front and end walls adapted to overlap the corresponding walls of the box, the rectangular corner panels between the walls of box and the walls of the cover being divided into inner and outer triangular folds, the end walls of the box having keepers near the front edges thereof, embossing the blank in the areas of the fold lines to provide pockets to receive the stock of the corner folds when the blank is folded to form the carton in collapsed condition, folding the front wall of the box over the bottom panel, applying an adhesive to the inner folds at the ends of the front wall, folding the end walls of the box and cover over the bottom panel and cover respectively, applying an adhesive to the inner folds at the ends of the end walls of the box and cover respectively, fold-

ing the front wall of the cover over the cover, and folding the rear wall of the box over the bottom panel, the carton being set up by turning the cover back to expose the box, pulling the end walls of the box to an upright position, this act raising the front and rear walls of the box, bending the keepers in the end walls to engage the front wall and hold the box in set-up position, pulling the end walls of the cover to upright position, this act raising the front wall of the cover, and closing the cover over the box while holding the end walls of the cover clear of the end walls of the box.

7. The method of making a collapsible carton which comprises cutting and scoring a rectangular blank to provide a box, the box having a bottom panel and front, rear and end walls extending therefrom, the rectangular corner panels between the walls of box being divided into inner and outer triangular folds, the end walls of the box having keepers near the front edges thereof, embossing the blank in the areas of the fold lines to provide pockets to receive the stock of the corner folds when the blank is folded to form the carton in collapsed condition, folding the front wall of the box over the bottom panel, applying an adhesive to the inner folds at the ends of the front wall, folding the end walls of the box over the bottom panel, applying an adhesive to the inner folds at the ends of the end walls of the box and folding the rear wall of the box over the bottom panel, the carton being set up by pulling the end walls of the box to an upright position, this act raising the front and rear walls of the box, bending the keepers in the end walls to engage the front wall and hold the box in set-up position.

8. The method of making a collapsible carton which comprises cutting and scoring a rectangular blank to provide a box, the box having a bottom panel and front, rear and end walls extending therefrom, the rectangular corner panels between the walls of box being divided into inner and outer triangular folds, and embossing the blank in the areas of the fold lines to provide pockets to receive the stock of the corner folds when the blank is folded to form the carton in collapsed condition, folding the front wall of the box over the bottom panel, applying an adhesive to the inner folds at the ends of the front wall, folding the end walls of the box over the bottom panel, applying an adhesive to the inner folds at the ends of the end walls of the box, and folding the rear wall of the box over the bottom panel, the carton being set up by pulling the end walls of the box to an upright position, this act raising the front and rear walls of the box.

9. The method of making a collapsible carton which comprises cutting and scoring a rectangular blank to provide a box and a cover, the box having a bottom panel and front, rear and end walls extending therefrom, the cover extending from the rear wall of the box and having front and end walls adapted to overlap the corre-

sponding walls of the box, the rectangular corner panels between the walls of box and cover being divided into inner and outer triangular folds, embossing the blank in the areas of the fold lines to provide room for the corner folds which are integral with the blank, folding the front wall of the box over the bottom panel, folding the end walls of the box and cover over the bottom panel and cover respectively, securing the inner triangular folds to the front wall of the box, folding the front wall of the cover over the cover, securing the inner triangular folds to the front wall of the cover, folding the rear wall of the box over the bottom panel, and securing the inner triangular folds to the end walls of the box, the carton being set up by turning the cover back to expose the box, pulling the end walls of the box to an upright position, this act raising the front and rear walls of the box, securing the front wall in place to hold the box in set-up position, pulling the end walls of the cover to upright position, this act raising the front wall of the cover, and closing the cover over the box while holding the end walls of the cover clear of the end walls of the box.

10. The method of making a collapsible carton which comprises cutting and scoring a rectangular blank to provide a box having a bottom panel and side and end walls extending therefrom, the rectangular corner panels between the walls of box being divided into inner and outer triangular folds, and conforming the blank in the areas of the fold lines to receive the stock of the corner panels when the carton is collapsed, folding one side wall of the box over the bottom panel, applying adhesive to the inner folds at the ends of the last named wall, folding the end walls of the box over the bottom panel, applying adhesive to the inner folds at the ends of the end walls of the box, and folding the other side wall of the box over the bottom panel, the carton being set up by pulling the end walls of the box to an upright position, this act raising the side walls of the box.

11. A collapsible carton comprising an integral rectangular blank of fiber-board having a bottom panel and side and end walls extending therefrom, the walls at the corners of the carton being connected by triangular folds, the inner folds being secured to the adjacent walls, and the outer folds being free to turn relative to their inner folds to set-up and collapse the walls relative to the bottom panel, the blank being embossed to provide room for the folds and walls when the carton is collapsed.

12. A collapsible carton comprising a corner construction wherein the corner panel of the blank is diagonally folded with the inner fold secured to the adjacent wall, the blank being embossed in the fold line of the other wall and the bottom of the carton to make room for the fold between the corner panel and the first-named wall when the parts are collapsed.

GEORGE J. BACHMEYER.