

Dec. 22, 1942.

G. C. NYDEGGER

2,306,078

CARTON AND METHOD OF MAKING SAME

Filed Oct. 22, 1940

2 Sheets-Sheet 1

Fig.-1

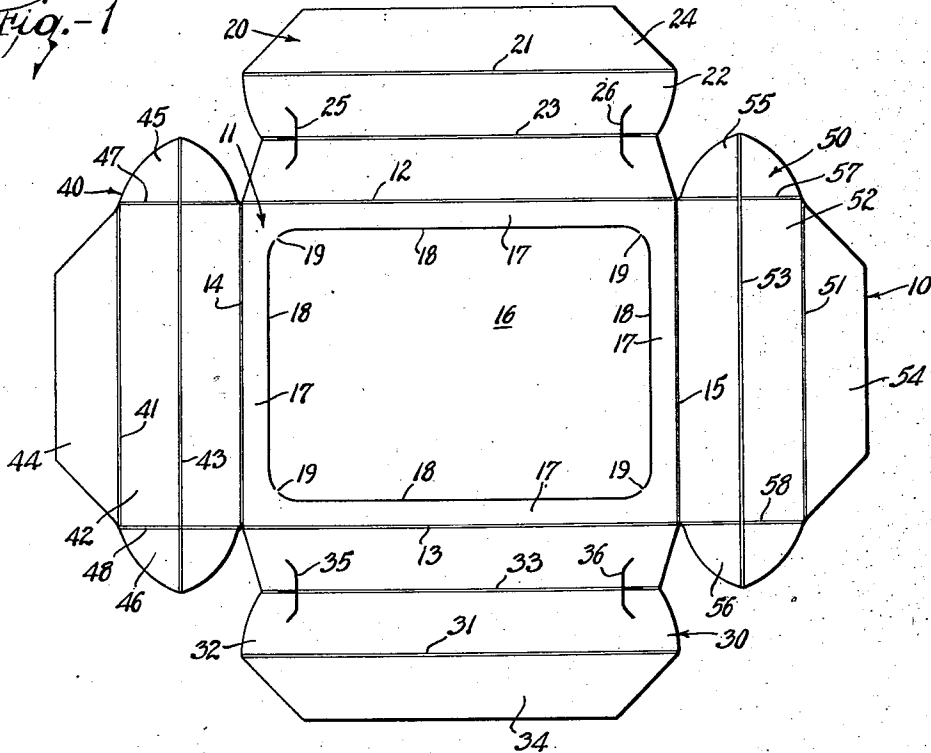
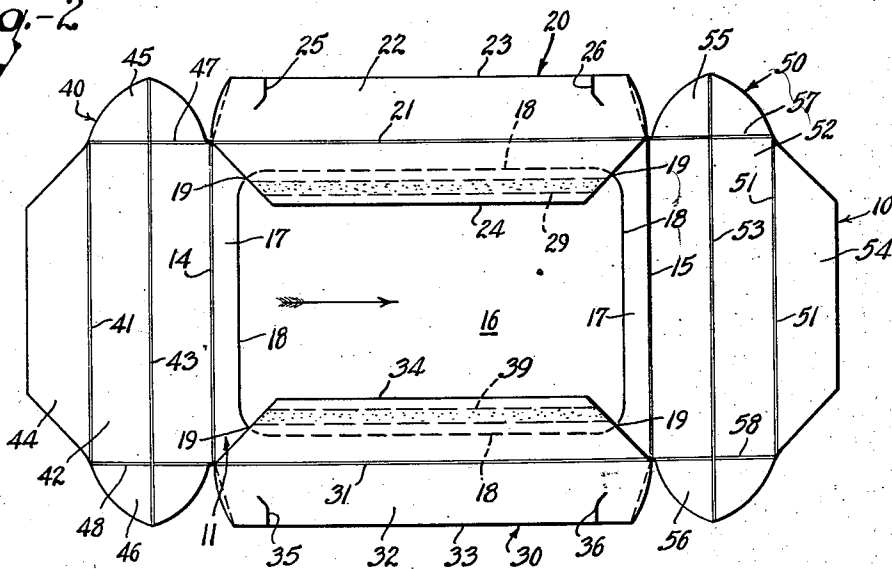


Fig.-2



INVENTOR
GEORGE C. NYDEGGER
BY *Ely & Frye*
ATTORNEYS

Dec. 22, 1942.

G. C. NYDEGGER

2,306,078

CARTON AND METHOD OF MAKING SAME

Filed Oct. 22, 1940

2 Sheets-Sheet 2

Fig.-3

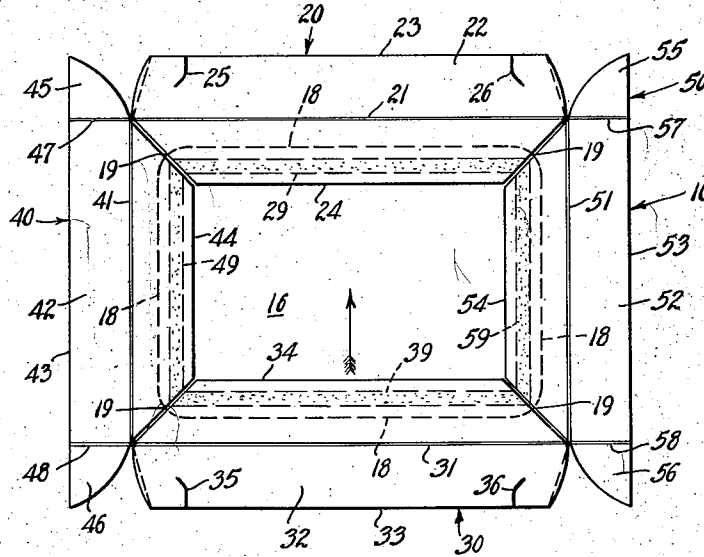
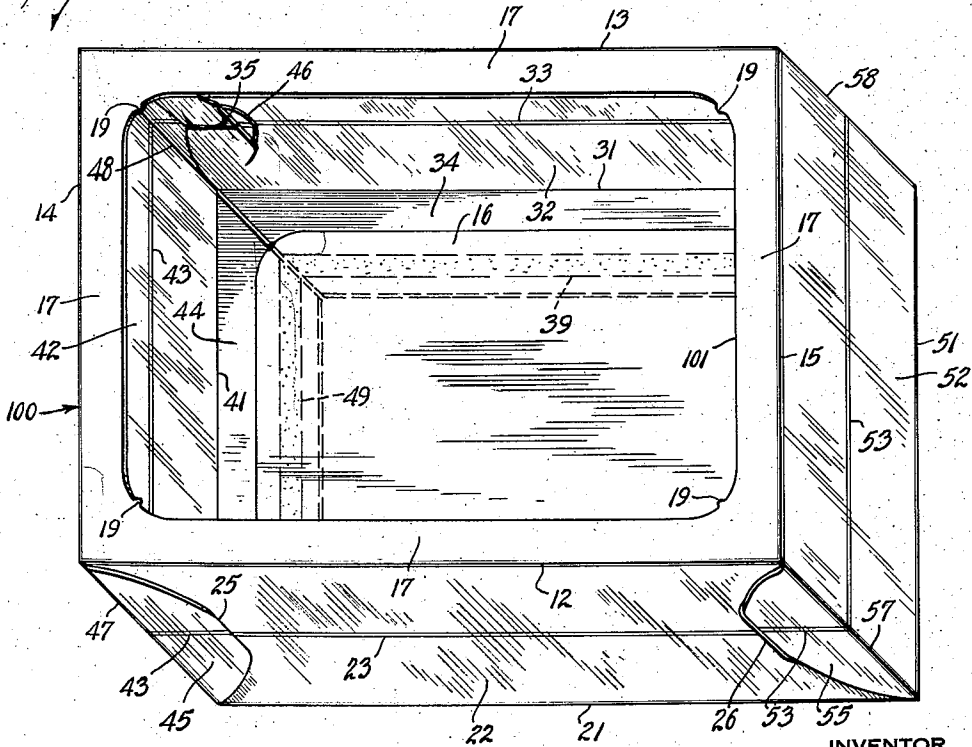


Fig.-4



INVENTOR
GEORGE C. NYDEGGER
BY *Ely & Frye*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,306,078

CARTON AND METHOD OF MAKING SAME

George C. Nydegger, Los Angeles, Calif.

Application October 22, 1940, Serial No. 362,190

13 Claims. (Cl. 206—44)

This invention relates to an improvement in cartons and to the method of making the improved carton. More particularly, this invention relates to an open-topped, substantially six-sided carton especially adaptable to be over-
wrapped with transparent wrapping material to form a window carton and to the method of making such a six-sided carton from a five-paneled blank.

Heretofore, window cartons have generally been comprised of either a conventional six-sided carton from which a portion of one of the sides has been struck out and discarded to form a window opening or a five-sided "boat" or tray. A window of "Cellophane" or similar transparent sheeting has been overwrapped around the carton or tray or a "window" of such transparent sheeting has been pasted over the opening in the carton or over the top of the tray. The advantages of the six-sided carton were that it was relatively strong and could be overwrapped in standard wrapping machinery. The disadvantages were that the cardboard struck out of the "window," was wasted, and the carton was difficult to load and set up. The advantages of the tray were that it was easily set up and loaded. The disadvantages were that its sides were non-rigid and tended to bulge or curve outwardly when loaded. Thus, it was difficult to form a "finished" package when overwrapped. Other disadvantages of the tray or "boat" were that when filled and stacked, the trays tended to nest within each other, damaging the contents and straining the overwrap which surrounded the package. Another disadvantage of the tray was that it could not be conveniently overwrapped in automatic wrapping machines.

It is an object of this invention to provide a substantially six-sided carton from a five-paneled blank which will have overcome the disadvantages of the cartons and trays employed heretofore in the art. Specifically, it is an object of this invention to provide a carton which may be conveniently manufactured on standard carton making machinery and which will permit a substantially six-sided carton to be formed from a five-paneled blank by utilizing the struck-out portion of the top window panel as the bottom wall of the carton.

It is another object and advantage of this carton that it may be shipped flat but may be easily and quickly set up for loading. Another object of this invention is to provide a carton which may be easily loaded when set and when set up will be provided with rigid side and end

walls and a neat and strong locking tab construction.

It is a still further object and advantage of this invention that the rigid end and side walls and neat and strong corners will permit the filled carton to be overwrapped in standard automatic wrapping machinery and that when filled and wrapped, the neat and "finished" packages may be stacked without nesting and without the consequent damage to the contents and strain on the overwrap.

Other and further objects and advantages of this invention will be apparent from the following specification, claims, and drawings, in which: Fig. 1 represents a blank from which the carton is to be made.

Fig. 2 is a plan view of the bottom of the carton after the first pass through a pasting and folding machine showing the side walls folded and pasted.

Fig. 3 is a plan view of the bottom of the completed flat carton.

Fig. 4 is an oblique representation of the flat carton shown in Fig. 3 set up for loading.

In the drawings, in which like reference characters refer to like parts (and in which cuts are indicated by heavy solid lines and scored, fold lines are indicated by light double lines), Fig. 1 shows a blank 10 of cardboard or similar suitable carton material cut and scored for fabrication into my improved carton on standard carton pasting and folding machinery.

The blank 10 may be cut and scored from a web or sheet or cardboard by means of a suitable die. The blank 10 is comprised of a rectangular center panel 11, bounded by the two side panels 20 and 30 along the common parallel top side fold lines 12 and 13 and by the two end panels 40 and 50 along the common parallel top end fold lines 14 and 15 which extend at right angles to the fold lines 12 and 13. The center panel 11 is comprised of a centrally disposed bottom wall 16, which is approximately similar to but smaller than the center panel 11, and a top marginal wall 17. The bottom wall 16 and top marginal wall 17 are separated from each other by the broken cut 18 which is approximately similar to but smaller than the rectangle formed by the fold lines 12, 13, 14 and 15. The breaks 19 in the cut 18 serve to maintain the bottom wall 16 and top marginal wall 17 together during fabrication and prior to setting up the fabricated carton.

The side panel 20 is provided with a bottom side fold line 21 parallel to the top side fold line

12 to define the side wall 22, the fold line 21 being spaced from the fold line 12 a distance equal to the desired depth of the carton. The side wall 22 is provided with a medial fold line 23 parallel to the fold lines 21 and 12. Joined to the side wall 22 along the common bottom fold line 21 is a side bottom pasting tab 24. The ends of the bottom pasting tab 21 are preferably mitered inwardly and the width of the pasting tab 24 is greater than the width of the top marginal wall 17 adjacent the fold line 12 so that when the side wall 22 is folded along the medial fold line 23, the outer margin of the bottom pasting tab 24 will be engaged only by the margin of the bottom wall 16 adjacent the bottom fold line 21.

The other side panel 30 is identical with the side panel 20, being provided with a corresponding bottom side fold line 31, side wall 32, medial fold line 33, and bottom pasting tab 34.

The end panel 40 is similar to the side panels 20 and 30, being provided with a bottom end fold line 41 parallel to the top end fold line 14 and spaced therefrom a distance equal to the desired depth of the carton to define the end wall 42 which is provided with the medial fold line 43. Joined to the end wall 42 along the common fold line 41 is an end bottom pasting tab 44. The ends of the bottom pasting tab 44 are, like the bottom pasting tab 24, mitered inwardly and the width of the pasting tab 44 is greater than the width of the top marginal wall 17 adjacent the fold line 14, so that when the end wall 42 is folded along the medial fold line 43, the outer margin of the bottom pasting tab 44 will be engaged only by the margin of the bottom wall adjacent the bottom fold line 41.

The other end panel 50 is identical with the end panel 40, being provided with a corresponding bottom end fold line 51, end wall 52, medial fold line 53, and bottom pasting tab 54.

The preferred locking tab construction for the carton comprises, as shown in Fig. 1, a pair of locking tabs 45 and 46 joined to the end wall 42 along the corner fold lines 47 and 48, which, since the preferred embodiment of this invention is a carton having a rectangular vertical section, are substantially extensions of the top side fold lines 12 and 13. In the preferred tab construction shown, the edges of the locking tabs are arcuate and converge at apices located on the extended medial fold line 43. It should be noted, however, that the distance from the apex of each locking tab to the corresponding corner fold line is not greater than the distance from the medial fold line to the top side fold line in the adjacent side wall. The end panel 50 is provided with identical locking tabs 55 and 56 joined to the end wall 52 along the corner fold lines 57 and 58, respectively. The apices of each of the tabs 45, 46, 55, and 56 are adapted to be received in locking slots 25, 35, 26 and 36, respectively, the locking slots 25 and 26 being cut transversely of the medial fold line 23 in the side wall 22 and the locking slots 35 and 36 being cut transversely of the medial fold line 33.

To fabricate the blank 10 as shown in Fig. 1 into a flat folded carton ready for setting up, the blank may be passed through a straight pasting and folding machine in a longitudinal direction, as indicated by the directional arrow in Fig. 2, where bands of adhesive 29 and 39 are applied to the outer margins of the pasting tabs 24 and 34, respectively, and then the side walls 22 and 32 are folded on the medial fold lines 23 and 33 so that the pasting tabs 24 and 34 engage and are

adhered to the margins of the bottom wall 16 adjacent the corresponding bottom fold lines 21 and 31. This operation converts the panel 20 into a flat open-ended tube comprised of the inner margin of the pasting tab 24, the side wall 22 folded along the medial fold line 23, and the portion of the top marginal wall 17 adjacent the top side fold line 12. Likewise, the panel 30 is converted into a flat open-ended tube comprised of the inner margin of the pasting tab 34, the side wall 32, and the portion of the top marginal wall 17 adjacent the top side fold line 13.

Following the foregoing pasting operation, the blank 10 may then be repassed through a straight pasting and folding machine in a lateral direction, as indicated by the directional arrow in Fig. 3, to complete the fabrication of a flat folded carton from the blank. In this second pasting operation, bands of adhesive 49 and 59 are applied to the outer margin of the pasting tabs 44 and 54, respectively, and then the end wall 42, with its locking tabs 45 and 46, and the end wall 52, with its locking tabs 55 and 56, are folded along their medial fold lines 43 and 53, respectively, adhering the pasting tabs 44 and 54 to the bottom wall 16 adjacent the bottom fold lines 41 and 51, respectively. This second operation tubes the end panels 40 and 50 in the same manner as the side panels 20 and 30 are tubed. Because the ends of the several pasting tabs are preferably mitered, the pasting tabs are not overlapped when they are adhered to the bottom wall 16.

The foregoing steps for completing the fabrication of the flat folded carton from the blank 10 described the two operations required if the carton is fabricated in a straight pasting and folding machine. However, if the fabricator is equipped with a right angle gluer, that is, a machine equipped to paste and fold the carton along one pair of parallel sides and then turn the blank through an angle to paste and fold the carton along a second pair of parallel sides, the flat folded carton may be completed in one pass through the machine.

To erect the flat-folded carton 10 into a substantially six-sided carton 100 set up for loading, the medial fold lines are pressed so that the flat tubed panels 20, 30, 40 and 50 tend to open. This action tears the breaks 19 so that the bottom wall 16 and top marginal wall 17 separate along the cut 18. Thus, the top wall 17 of the carton is provided with a large "window" 101, and the struck-out portion which is normally discarded becomes the bottom wall 16 of the carton 100. The marginal portions of the bottom wall of the carton 100 which the wall 17 does not comprise is constituted of the unpasted inner marginal portions of the pasting tabs 24, 34, 44, and 54 adjacent the bottom fold lines 21, 31, 41, and 51, respectively. To lock the carton in its erected position, the locking tabs 45, 46, 55, and 56 are folded on the corner fold lines 47, 48, 57, and 58 and are then tucked into the locking slots 25, 35, 26, and 36, respectively.

With the carton 100 thus set up and locked, it is then ready for loading through the "window" 101. The carton is substantially six-sided, having two side walls, two end walls, and a top wall 17 and bottom wall 16, the latter having been formed from the center panel 11 of the original blank 10. The top marginal wall 17, while affording an ample opening through the window 101, serves to reinforce the side walls

22, 32, 42, and 52, holding them rigid and preventing them from bulging. The corner locking tabs 45, 46, 55, and 56 also provide a strong and rigid corner construction which additionally reinforces the side walls.

After the carton 100 is loaded, it may be conveniently overwrapped with "Cellophane" or similar sheet materials. Because of its strong and rigid side and end walls, the carton 100 may be overwrapped in standard wrapping machines. Also, because of its neat corner construction, which does not present the bulges usual in boats or trays employed heretofore, the overwrapped carton will constitute a neat and "finished" package, especially if the transparent overwrap is printed around the "window" so that the locking tabs are concealed by printed areas.

Cartons made according to this invention are especially convenient for handling. The cartons may be shipped and stored in the flat collapsed form illustrated in Fig. 3. The cartons are quickly and readily set up by hand for loading, since the locking tabs may be inserted into the locking slots substantially simultaneously and with substantially the same manipulation with which the medial fold lines are pressed inwardly to open the tubed side and end walls and separate the top and bottom walls in the center panel. The corner locking tab construction is especially secure, particularly after the carton is loaded. Because apices of the locking tabs extend beyond the locking slots when the tabs are folded along the corner fold lines, the side walls of the carton must be bent inwardly to form a reentrant angle along their medial lines to permit the locking tabs to be inserted in the locking slots. Thus, to unlock the locking tabs after the carton is loaded, the side walls must be pressed inwardly against the contents which tend to press the side walls outwardly. After the cartons are loaded, they may be safely stacked. The rigid side and end walls will safely sustain the weight of several loaded cartons. The marginal top wall will prevent the side and end walls from spreading apart. Thus, there will be no tendency for the stacked cartons to "nest" and, consequently, damage the contents or strain the overwrap beyond its rupturing point.

The foregoing is a specification and explanation of the preferred form of this invention. This invention, however, is not limited to the particular embodiment disclosed, but may be modified, either in whole or in part, to meet the needs and demands of specific packaging problems. This invention, therefore, is to be limited only by the following claims.

What is claimed is:

1. In a flat collapsed carton of the class described, a rectangular center panel comprising an outer marginal top wall portion, a centrally disposed bottom wall portion, said bottom wall portion and outer marginal top wall portions being defined by a cut comprising the inner edge of the outer marginal top wall, and breaks in said cut joining said top wall and bottom wall portions of said center panel, and four side panels, each one of said side panels being joined to one side of said rectangular center panel along a scored top fold line, each said side panels comprising a side wall portion adjacent said marginal top wall portion of said center panel and a bottom pasting tab joined to said side wall portion along a scored bottom fold line parallel to said top fold line, said bottom pasting tab being wider than the width of the adjacent margin of the top

marginal wall and having mitered ends, locking tabs joined along corner fold lines to the ends of each side wall portion in a pair of oppositely disposed side panels, said remaining pair of oppositely disposed side panels having locking slits cut adjacent the ends of the side wall portions thereof, all of said side panels being folded on medial fold lines in said side wall portions, each medial fold line being located equidistant between the top fold line and bottom fold line of a side wall portion, and adhesive adhering the outer margins of said bottom pasting tabs to one surface of said bottom wall portion, said bottom wall and said marginal top wall of said center panel being separable when the carton is erected and said locking tabs being receivable in said locking slits to lock the carton in an erected condition.

2. In a flat folded carton of the class described, a rectangular center panel comprising an outer marginal top wall portion, a centrally disposed bottom wall portion, said bottom wall portion and outer marginal top wall portions being defined by a cut comprising the inner edge of the outer marginal top wall, and breaks in said cut joining said top wall and bottom wall portions of said center panel, and four side panels, each one of said side panels being joined to one side of said rectangular center panel along a scored top fold line, each said side panels comprising a side wall portion adjacent said marginal top wall portion of said center panel and a bottom pasting tab joined to said side wall portion along a scored bottom fold line parallel to said top fold line, said bottom pasting tab being wider than the width of the adjacent margin of the top marginal wall and having mitered ends, locking means comprising a locking tab joined along a corner fold line of the side wall portion of one side panel and a slit in the side wall portion of an adjacent side panel, all of said side panels being folded on medial fold lines in said side wall portions, each medial fold line being located equidistant between the top fold line and bottom fold line of a side wall portion, and adhesive securing the outer margins of said bottom pasting tabs to one surface of said bottom wall portion, said bottom wall and said top wall being separable when the carton is erected and said locking means locking the carton in its erected condition.

3. In a flat collapsed carton of the class described, a rectangular center panel comprising an outer marginal top wall portion, a centrally disposed bottom wall portion, said bottom wall portion and outer marginal top wall portions being defined by a cut comprising the inner edge of the outer marginal top wall, and breaks in said cut joining said top wall and bottom wall portions of said center panel, and four side panels, each one of said side panels being joined to one side of said rectangular center panel along a scored top fold line, each said side panels comprising a side wall portion adjacent said marginal top wall portion of said center panel and a bottom pasting tab joined to said side wall portion along a scored bottom fold line parallel to said top fold line, locking means carried by said side panels, all of said side panels being folded on medial fold lines, each of said medial fold lines being located between the top fold line and bottom fold line of a side wall portion, and adhesive securing said outer margins of said bottom pasting tabs to one surface of said bottom wall portion, said bottom wall portion and said marginal top wall portion being separable when the car-

ton is erected and said locking means maintaining the carton erected.

4. In a flat collapsed carton of the class described, a rectangular center panel comprising an outer marginal top wall portion, a centrally disposed bottom wall portion, said bottom wall portion and outer marginal top wall portions being defined by a cut comprising the inner edge of the outer marginal top wall, and breaks in said cut joining said top wall and bottom wall portions of said center panel, and four side panels, each one of said side panels being joined to one side of said rectangular center panel along a scored top fold line, each said side panels comprising a side wall portion adjacent said marginal top wall portion of said center panel and a bottom tab joined to said side wall portion along a scored bottom fold line parallel to said top fold line, locking means carried by said side panels, all of said side panels being folded on medial fold lines, and means securing said bottom tabs to one surface of said bottom wall portion.

5. In a flat collapsed carton of the class described, a rectangular center panel comprising an outer marginal top wall portion, a centrally disposed bottom wall portion, said bottom wall portion and outer marginal top wall portions being defined by a cut comprising the inner edge of the outer marginal top wall, and breaks in said cut joining said top wall and bottom wall portions of said center panel, and a pair of oppositely disposed side panels integral with said center panel, each of said side panels comprising a bottom tab and a side wall portion integral with said center panel along one side and with said bottom tab along another side, said side panels being folded along medial fold lines in said side wall portions so that the outer margins of said bottom tabs engage one surface of said bottom wall portion, and means securing said bottom tabs to said bottom wall portion, said side wall portions unfolding along said medial fold lines and said bottom wall portion separating from said top wall portion when said carton is erected.

6. In a flat collapsed carton of the class described, a polygonal center panel having an even number of sides comprising an outer marginal top wall portion, a centrally disposed bottom wall portion, said bottom wall portion and outer marginal top wall portions being defined by a cut comprising the inner edge of the outer marginal top wall, and breaks in said cut joining said top wall and bottom wall portions of said center panel, and a pair of oppositely disposed side panels integral with said center panel, each of said side panels comprising a bottom tab and a side wall portion integral with said center panel along one side and with said bottom tab along another side, said side panels being folded along medial fold lines in said side wall portions so that the outer margins of said bottom tabs engage one surface of said bottom wall portion, and means securing said bottom tabs to said bottom wall portion.

7. In a flat folded carton of the class described, a polygonal center panel comprising an outer marginal top wall portion and a centrally disposed bottom wall portion, said bottom wall and top wall portions being defined by an incomplete cut comprising the inner edge of the marginal top wall portion, and a side panel integral with said center panel along a common fold line, said side panel comprising a wall portion adjacent said common fold line and a bottom tab, said side wall portion being folded along a medial fold line

parallel to said common fold line and said bottom tab being secured to said bottom wall portion to form a flat tube comprised of said marginal top wall portion adjacent said common fold line, and said folded side wall portion.

8. In a process for fabricating a flat folded carton of the class described, the step of simultaneously die cutting from a sheet of carton material a rectangular center panel and four side panels integral with said center panel, defining a centrally disposed bottom wall portion and an outer marginal top wall portion in said center panel with a broken cut comprising the inner edge of said marginal top wall and slitting locking slots in a pair of side panels oppositely disposed with respect to said center panel and scoring top fold lines along the junctions of said side panels with said center panel, bottom fold lines in said side panels parallel to said top fold lines, medial fold lines between said top and bottom fold lines and parallel thereto and corner fold lines on the remaining pair of unslotted side panels to define locking tabs, said corner fold lines extending at right angles to the top, bottom and medial fold lines in said panels to form a carton blank, the step of folding a pair of oppositely disposed side panels along their respective medial fold lines and securing the outer margins of said folded side panels to one surface of said bottom wall portion by feeding said blank through a pasting and folding machine, and the step of folding the remaining pair of oppositely disposed side panels along their respective medial fold lines and securing the outer margins of said folded side panels to said surface of said bottom wall portion by feeding said blank through a pasting and folding machine in a direction transverse to the direction of feed of said blank in the first pasting and folding operation.

9. In a process for fabricating a flat folded carton of the class described, the step of simultaneously die cutting from a sheet of carton material a rectangular center panel and four side panels integral with said center panel, defining a centrally disposed bottom wall portion and an outer marginal top wall portion in said center panel with a broken cut comprising the inner edge of said marginal top wall and scoring top fold lines along the junctions of said side panels with said center panel, bottom fold lines in said side panels parallel to said top fold lines, medial fold lines between said top and bottom fold lines and parallel thereto, and the step of folding said side panels along said medial fold lines so that the outer margins of said side panels engage one surface of said bottom wall portion and securing said outer marginal portions to said surface of said bottom wall portion.

10. In a process for fabricating a flat folded carton of the class described, the step of simultaneously die cutting from a sheet of carton material a polygonal center panel having an even number of sides and a pair of integral side panels oppositely disposed with respect to said center panel, defining a centrally disposed bottom wall portion and an outer marginal top wall portion in said center panel by a broken cut comprising the inner edge of said marginal top wall portion, and scoring a top fold line along the junction of said panels with said center panel and medial fold lines in said side panels parallel to said top fold lines, and the step of folding said side panels on said medial fold lines to engage the outer margins of said panels with one surface of said bottom

wall portion and securing said outer margins of said side panels to said bottom wall portions.

11. In a process for fabricating a flat folded carton of the class described, the step of cutting a carton blank comprising a polygonal center panel and a side panel integral with said center panel, defining a centrally disposed separable wall portion by an incomplete cut through said center panel, scoring a medial fold line in said side panel parallel to the side of said center panel integral with said side panel, and forming said panel into a flat tube by folding said side panel along said medial fold line and securing an outer margin of said side panel to said centrally disposed separable wall portion of said center panel.

12. In a flat collapsed carton of the class described, a polygonal center panel comprising an outer marginal top wall portion, a centrally disposed bottom wall portion, said bottom wall portion being defined by a cut comprising the inner edge of the outer marginal top wall, and a pair of oppositely disposed side panels integral with said center panel, each of said side panels comprising a bottom tab and a side wall portion integral with said center panel along one side and

with said bottom tab along another side, said side panels being folded along medial fold lines. In said side wall portions so that the outer margins of said bottom tabs engage one surface of said bottom wall portion, and means securing said bottom tabs to said bottom wall portion, said side wall portions unfolding along said medial fold lines and said bottom wall portion separating from said top wall portion when said carton is erected.

13. In a process for fabricating a flat folded carton of the class described, the step of cutting a carton blank comprising a polygonal center panel and a plurality of side panels integral with said center panel, defining a centrally disposed separable wall portion by a cut through said center panel, scoring a medial fold line in at least one of the side panels parallel to the side of said center panel integral with the scored side panel, and forming said scored side panel into a flat tube by folding said panel along said medial fold line and securing an outer margin of said side panel to said centrally disposed separable wall portion of said center panel.

GEORGE C. NYDEGGER.