July 3, 1951 W. A. RINGLER 2,559,374

CARRIER WITH INTERLOCKING PARTITION ELEMENT

Filed May 7, 1949 3 Sheets-Sheet 1

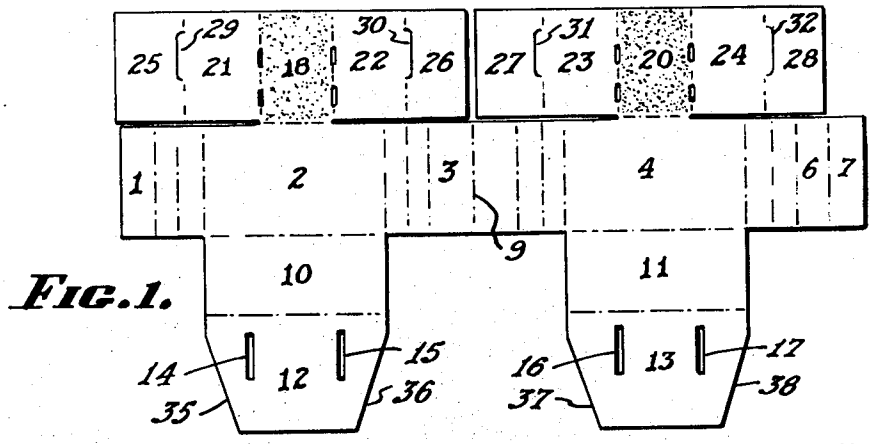


FIG. 1.

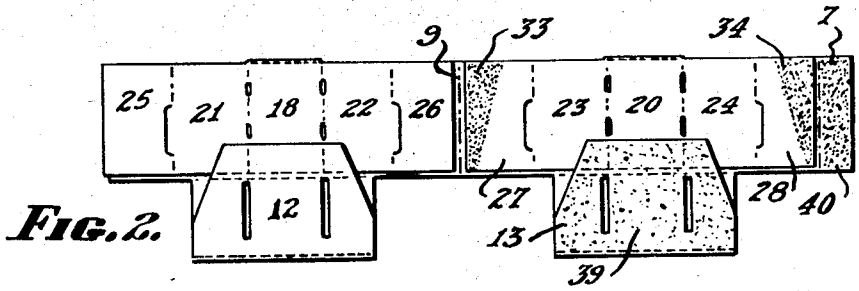


FIG. 2.

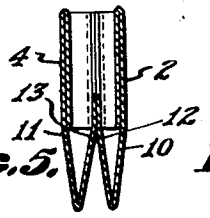


FIG. 5.

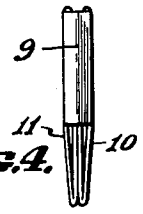


FIG. 4.

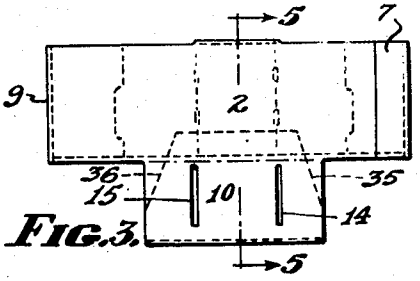


FIG. 3.

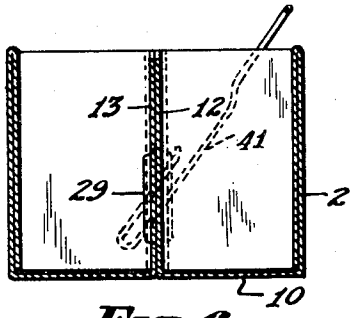


FIG. 6.

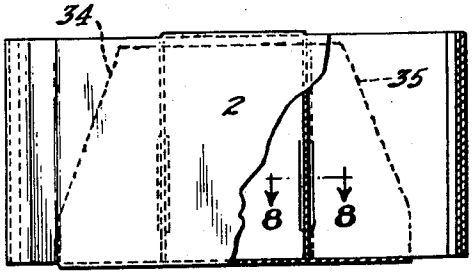


FIG. 7.

INVENTOR.
WILLIAM A. RINGLER,
BY Allen & Allen
ATTORNEYS.

July 3, 1951 W. A. RINGLER 2,559,374

CARRIER WITH INTERLOCKING PARTITION ELEMENT

Filed May 7, 1949 3 Sheets-Sheet 2

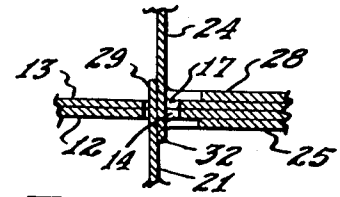


FIG. 8.

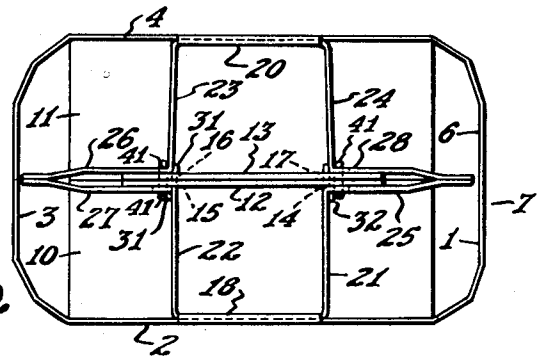


FIG. 9.

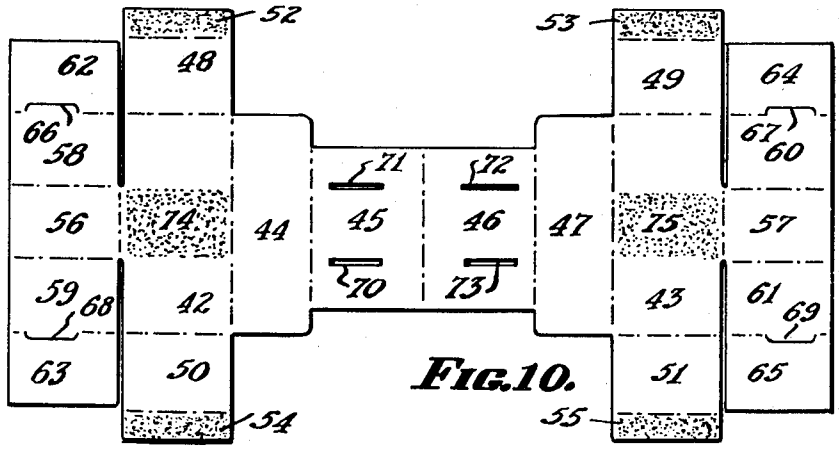


FIG. 10.

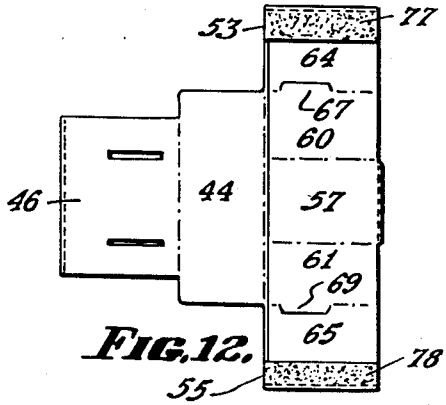


FIG. 12.

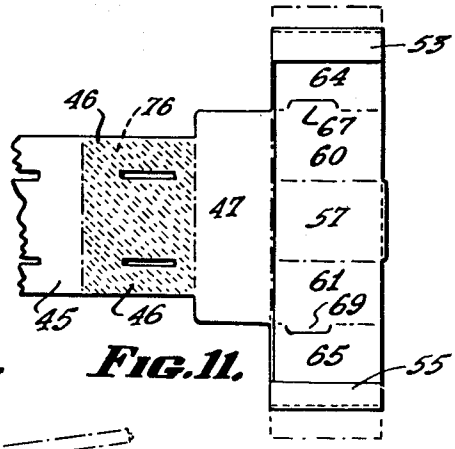


FIG. 11.

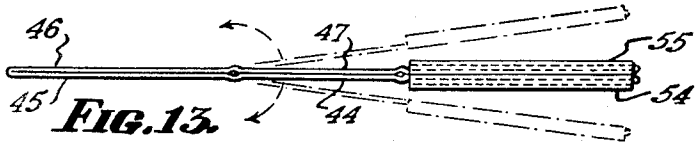


FIG. 13.

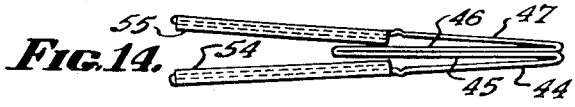


FIG. 14.

INVENTOR.
WILLIAM A. RINGLER
BY Allen & Allen
ATTORNEYS.

July 3, 1951 W. A. RINGLER 2,559,374

CARRIER WITH INTERLOCKING PARTITION ELEMENT

Filed May 7, 1949 3 Sheets-Sheet 3



FIG. 16.

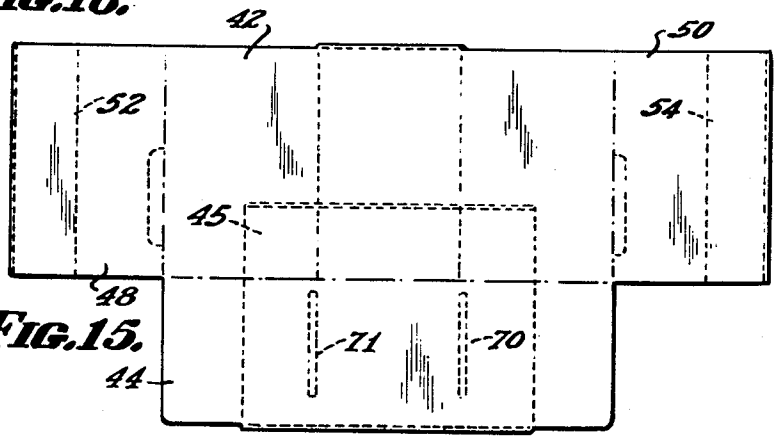


FIG. 15.

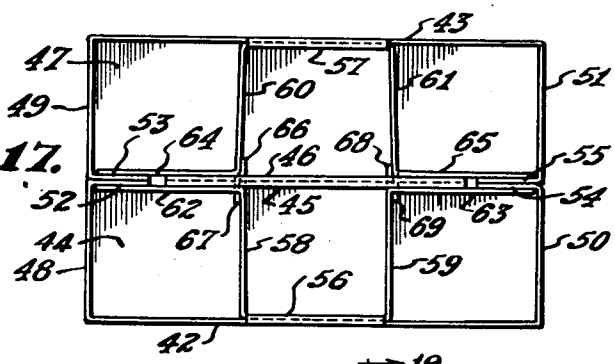


FIG. 17.

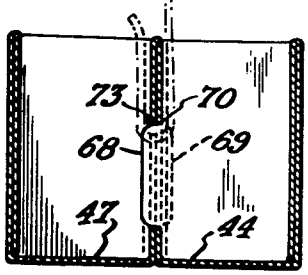


FIG. 19.

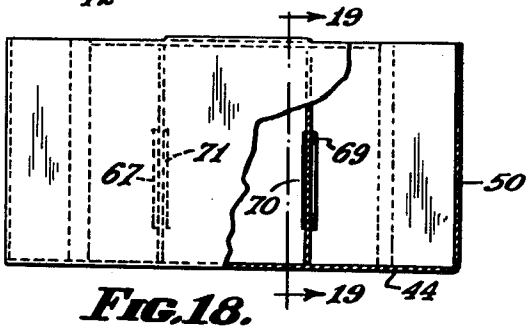


FIG. 18.

INVENTOR.
WILLIAM A. RINGLER,
BY Allen & Allen
ATTORNEYS.

Patented July 3, 1951

2,559,374

UNITED STATES PATENT OFFICE

2,559,374

CARRIER WITH INTERLOCKING PARTITION ELEMENTS

William A. Ringler, Wayne, Pa., assignor to The Gardner Board and Carton Co., a corporation of Ohio

Application May 7, 1949, Serial No. 92,038

4 Claims. (Cl. 229—28)

1

My invention relates to carriers for bottles or like articles, especially those designed to hold a convenient merchandising group of bottles to be carried home by the consumer.

It is an object of my invention to provide new modes of forming carriers, and carriers which as folded and glued by the box manufacturer are in knocked-down or collapsed condition but may be readily set up by the user, requiring no folding operations on his part, nor any operations such as the interlocking of parts.

It is an object of my invention to provide carriers which are fully partitioned transversely and longitudinally so that all bottles or articles are maintained in individual cells.

It is an object of my invention to provide carriers which are exceptionally sturdy and are capable of making many merchandising trips.

It is an object of my invention to provide carriers especially suitable for automatic loading, when the carriers are located in crates designed for the purpose. In this connection, and for the proper operation of the automatic loading machines, it is necessary that the carriers, when initially erected, be rigidly and accurately retained in the erected position. As a consequence, it is an important object of my invention to provide a construction of partitioned carrier embodying positive locking means for maintaining the erected condition of the structure. The locking feature is of additional importance in that my carriers perfectly retain their erected form even when the bottles are removed, and when subjected to considerable stress and abuse.

It is a further object of my invention to provide a carrier in which, in use, the lateral partition elements form a firm connection between the side walls and the central or longitudinal partition whereby the structure is greatly strengthened. This effect is attained in spite of the fact that the carriers are initially formed and shipped as knocked-down or collapsed structures.

It is an object of my invention to provide fully partitioned carriers devoid of flaps or weak parts liable to be caught and torn in use.

These and other objects of my invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications I accomplish by that construction and arrangement of parts of which I shall now describe certain exemplary embodiments. Reference is made to the accompanying drawings wherein:

Figure 1 is a plan view of a blank for one form of my carrier. Figure 2 is a smaller plan view showing the blank after the first stage of folding.

2

Figure 3 is a similar view showing the blank in completely folded and glued, but collapsed condition.

Figure 4 is an end view of the collapsed structure.

Figure 5 is a transverse sectional view of the collapsed structure taken along the line 5—5 of Figure 3.

Figure 6 is a similar transverse sectional view of the erected carrier.

Figure 7 is a side elevation of the erected carrier with parts broken away.

Figure 8 is a partial sectional view taken along the line 8—8 of Figure 7.

Figure 9 is a top plan view of the erected carrier.

Figure 10 is a plan view of a blank for a modified form of carrier.

Figure 11 is a partial plan view illustrating an initial folding step.

Figure 12 is a plan view of the carrier after all folding steps excepting the folding of the end wall glue flaps.

Figure 13 is an end elevational view showing a step in the folding of the blank.

Figure 14 shows a continuation of the step of Figure 13.

Figure 15 is a plan view of the completely folded and glued carrier in knocked down or collapsed condition.

Figure 16 is a top plan view of the collapsed carrier.

Figure 17 is a top plan view of the erected carrier.

Figure 18 is a side elevation of the erected carrier with parts broken away.

Figure 19 is a transverse sectional view of the erected carrier taken along the line 19—19 of Figure 18.

Referring first to Figure 1, in this form of my carrier I provide of suitable boxboard and by conventional cutting and scoring operations, a blank which will now be described. It will be understood that the blank may be printed as desired. In the figure solid lines represent lines of cut, while dot-dash lines represent lines of score.

In the blank of Figure 1 I provide in articulation in the order named a partial end wall element 1, a side wall 2, an end wall element 3, a side wall 4, a partial end wall element 6 and a glue flap 7. The dimensions of these parts are such as to permit the structure thus far described, when folded along a score line 9 intermediate the end wall 3, and the glue flap 7 adhesively attached to the end wall element 1, to surround an assembly of bottles or other articles to be car-

ried. Usually this assembly is a group of six bottles arranged in two rows of three each. The side wall elements 2 and 4 may be made slightly shorter than the assembly of bottles, and the various end wall elements may be provided with additional score lines as shown to permit their assuming a rounded configuration at the corners of the erected carrier, to conform with the end bottles in the assembly.

To the bottom edges of the side wall elements 2 and 4 I articulate bottom forming elements 10 and 11 to which in turn are articulated central partition forming flaps 12 and 13. In the particular styles of carriers illustrated herein, I prefer to employ wire handle elements as hereinafter described, and in this event the central longitudinal partition-forming flaps or panels 12 and 13 have no greater depth than the depth of the side walls 2 and 4 themselves. The partition forming panels are slotted as at 14, 15, 16, and 17. The positions and configurations of these slots will hereinafter be more fully described.

To the top edges of the side wall elements 2 and 4 I articulate lateral partition forming structures. These comprise central members 18 and 20 articulated as set forth to the top edges of the side walls, lateral partition members 21, 22, 23, and 24 articulated to the side edges of the central portions 18 and 20, and attachment flaps 25, 26, 27 and 28 articulated to the side edges of the lateral partitions.

The score lines which demark the attachment flaps 25, 26, 27 and 28 from the respective lateral partition elements 21, 22, 23 and 24 are interrupted by U-shaped cuts 29, 30, 31 and 32, as shown. The score lines by means of which the lateral partition elements are articulated to the central portions 18 and 20 of the partition structures may be weakened by short slits to facilitate the bending of the board. The slots 14, 15, 16 and 17 are spaced apart in the longitudinal partition elements 12 and 13 so that the distance between the slots in the respective pairs is substantially equivalent to the width of the central portions 18 and 20 of the partition structures. This will insure that in the erected carriers tongues formed by the U-shaped cuts 29, 30, 31 and 32 as described above will enter the slots 14, 15, 16 and 17 in a locking arrangement to maintain the erected condition of the carrier as will hereinafter be more fully described.

The carrier blank shown in Figure 1 is easily and simply folded and glued on standard folding and gluing machines in the carton art, especially machines of a type having folding sections in which folding fingers travel on chains with the blanks as they pass through these sections. Thus folds can be made fore and aft of the direction of movement of the blanks through the folding sections.

I prefer, although this may be omitted if desired, first to apply areas of glue or other suitable adhesive to the central sections 18 and 20 of the partition structures. These structures are then bodily folded over onto the side and end wall elements. The central partition elements 12 and 13 are folded inwardly along the score lines by which they are articulated to the bottom sections 10 and 11. All of this folding may be accomplished in a single section of a machine such as has been described above. The condition of the folded blank is illustrated in Figure 2.

Next trapezoidal areas of adhesive are applied

to the lateral partition attachment flaps 27 and 28 as indicated in the stippled areas 33 and 34 in Figure 2. It will be noted in the figures that the sides of the longitudinal partition elements 12 and 13 are tapered or truncated as at 35, 36, 37 and 38. The areas of adhesive 33 and 34 are so shaped as to lie in the erected structure off these truncated edges as will be made clearer below. The area of adhesive on the longitudinal partition forming element 13 is indicated in Figure 2 at 39. An area of adhesive 40 is applied to the glue flap 7.

Next the blank is folded along the median score lines 9 in the end wall element 3. This positions the longitudinal partition forming panels 12 and 13 in super position, superposes the side walls 2 and 4 and the end wall elements 1 and 6, and brings the glue flap into position to be folded over and adhesively secured to the outer marginal portion of the end wall 1. The final, collapsed, folded condition of the carrier is illustrated in Figure 3 in plan and in Figure 4 in elevation. It will be noted that the central longitudinal partition formed of the panels 12 and 13 is in downwardly displaced condition with respect to the side walls, and that the lateral partition elements 21, 22, 23 and 24 are in laterally displaced condition, and lie against and parallel the side and end wall elements which are coplanar.

When the carrier is erected the parts are brought into the relationship illustrated in Figures 6, 7, 8 and 9. Erection is accomplished by pressing inwardly on the end wall elements. This causes the attachment flaps 25, 26, 27 and 28, which have been adhered together as set forth above, to move inwardly toward each other. At the same time the central longitudinal partition formed of panels 12 and 13 will be caused to rise in the structure as the bottom forming panels 10 and 11 are brought upwardly. This action can be assisted by pressing the carrier downwardly on a flat surface. Side edge portions of the longitudinal partition ride between the joined attachment flaps 25, 26, 27 and 28 of the lateral partition structures as will be clear from Figure 9, and they form continuations of the central longitudinal partition. As the board of the partition structures bends along the score lines between the lateral partition elements and their attachment flaps, tongues formed by the U-shaped cuts 29, 30, 31 and 32 remain coplanar with the lateral partitions 21, 22, 23 and 24. At first the longitudinal partition formed from the panels 12 and 13 forces its way between these tongues and between the attachment flaps 25, 26, 27 and 28, but as soon as the longitudinal partition has been brought to its final position, and as soon as the continuation of it formed by the attachment flaps 25, 26, 27 and 28 are brought to their correct inward positions, these tongues enter the slots 14, 15, 16 and 17 as will be clear from Figures 6 and 8. A positive lock results and the carrier is maintained rigidly in the erected condition. It resists distortion in all directions.

The slots 14, 15, 16 and 17 are made wide enough laterally to accept the hooked and clamping ends of a handle 41 shown being inserted in Figure 6. The clamping portions of this handle engage, as shown in Figure 9, the attachment flap portions 25, 26, 27 and 28 of the lateral partition elements adjacent their juncture to the lateral partition elements 21, 22, 23 and 24, and they clamp them rigidly to the longitudinal panels 12 and 13. Thus the handle prevents the separa-

tion of the lateral attachment flaps from the longitudinal partition against any strains exerted by the bottles outwardly, especially when the carrier is only partially filled.

A modified structure is shown in Figures 10 to 18 inclusive. In Figure 10 a blank is shown comprising side wall elements **42** and **43**. These are interconnected at their bottom edges by a structure comprising a bottom panel **44**, a central partition element **45**, another central partition element **46** and a bottom panel **47** articulated together and to the side walls in the order set forth.

End wall elements **48**, **49**, **50** and **51** are articulated to the ends of the side walls **42** and **43**, and these end wall elements bear glue flaps **52**, **53**, **54** and **55**. Lateral partition structures substantially similar to those above are articulated to the outer edges of the side walls **42** and **43**. These comprise central portions **56** and **57**, lateral partition panels **58**, **59**, **60** and **61**, and lateral partition attachment flaps **62**, **63**, **64**, and **65**. U-shaped cuts **66**, **67**, **68** and **69** are formed as before in the lines of articulation between the lateral partition elements **58**, **59**, **60** and **61** and their respective attachment flaps. Slots **70**, **71**, **72** and **73** are formed in the longitudinal partition panels **45** and **46**, as before.

There are various ways in which the carrier of Figure 10 can be folded and glued. Adhesive may be applied to the end wall glue flaps **52**, **53**, **54** and **55** as shown in stippled areas in Figure 10, and areas of adhesive **74** and **75** may be applied to central portions of the side wall elements **42** and **43**. Then the lateral partition structures are folded over onto the side walls, resulting in the attachment of the central portions **56** and **57** thereto. Next the glue flaps **52**, **53**, **54** and **55** may be folded over and adhesively secured. Thus the glue flap **52** will be secured to the lateral partition attachment flap **62**. The glue flap **53** will be attached to the outer marginal portion of the lateral partition attachment flap **64**; the glue flap **55** will be attached to flap **65** and the glue flap **54** will be attached to flap **63**.

It is preferable though not necessary, to attach the longitudinal partition-forming panels **45** and **46** together. This may be accomplished by turning the partially folded blank over and applying an area of adhesive **76**, as shown in Figure 11, to the opposite side of the panel **46**. Then the blank is folded along the line of articulation between the central longitudinal panel elements **45** and **46** resulting in the structure shown in Figure 12.

This structure will then be reversed, by bending outwardly the combinations of side and end wall elements, central partition elements and bottom-forming panels. This action is illustrated in Fig. 13, and comprises bending the blank along the lines of articulation between the bottom forming panels **44** and **47** and the central partition-forming panels **45** and **46**. The elements are swung through 180° with relation to each other, and their condition near the end of this swinging operation is illustrated in Figure 14. Other areas of adhesive **77** and **78** are formed on the outer sides of a pair of the end wall glue flaps as shown in Figure 12. In the final folding operation, therefore the glue flaps **52** and **54** become adhered to the glue flaps **53** and **55** as will be clear from Figure 16.

Modifications may be made in my invention without departing from the spirit of it. Having thus described my invention in certain exemplary embodiments, what I claim as new and desire to secure by Letters Patent is:

1. A collapsible paperboard bottle carrier having side and end walls in articulation, bottom-forming elements articulated to the lower edges of the said side walls, and extensions on said bottom-forming elements affixed together so as to form a partial central longitudinal partition, lateral partition elements articulated to intermediate portions of the said side walls and having attachment flaps, said attachment flaps being secured together adjacent their outer edges so as to form continuations of said central longitudinal partition, inner edge portions of said attachment flaps being free of juncture to each other whereby to accept between them edge portions of said partial central longitudinal partitions, said partial central longitudinal partition having slots formed therein at about the positions of the inner edges of the lateral partition panels in the erected carrier, the lines of articulation between said lateral partition panels and said attachment flaps being provided with U-shaped lines of cut providing tongues extending beyond the lateral edges of said lateral partition panels, whereby to provide a carrier which is self-locking in the erected condition, the locking being accomplished by the entry of said tongues into the said slots in the partial longitudinal partition element.

2. The structure claimed in claim 1 wherein said attachment flaps are adhered directly together at their outer marginal portion and are free of attachment to the said end walls.

3. The structure claimed in claim 1 wherein said attachment flaps are adhered directly together at their outer marginal portion and are free of attachment to the said end walls, in which said side walls have lesser length than the total length of the said erected carrier, and wherein said end walls have greater length than the distance between the side walls in the said erected carrier whereby said end walls are caused to follow a rounded configuration at corner portions of the erected carrier.

4. The structure claimed in claim 1 wherein said end walls are formed from partial end wall elements articulated to end edges of the said side walls, said partial end wall elements having glue flaps, inturned and adhesively secured together, and in which the attachment flaps on the said lateral partition panels are adhesively secured to the outer sides of the so-joined glue flaps.

WILLIAM A. RINGLER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,163,290	Powell	June 20, 1939
2,371,317	Ringler	Mar. 13, 1945
2,418,350	Holy	Apr. 1, 1947
2,431,932	Hall	Dec. 2, 1947
2,443,256	Lebold	June 15, 1948