April 12, 1938. C. H. LOWE 2,113,622

CELLULAR CARTON

Filed Feb. 10, 1936 2 Sheets-Sheet 1

Fig. 1.

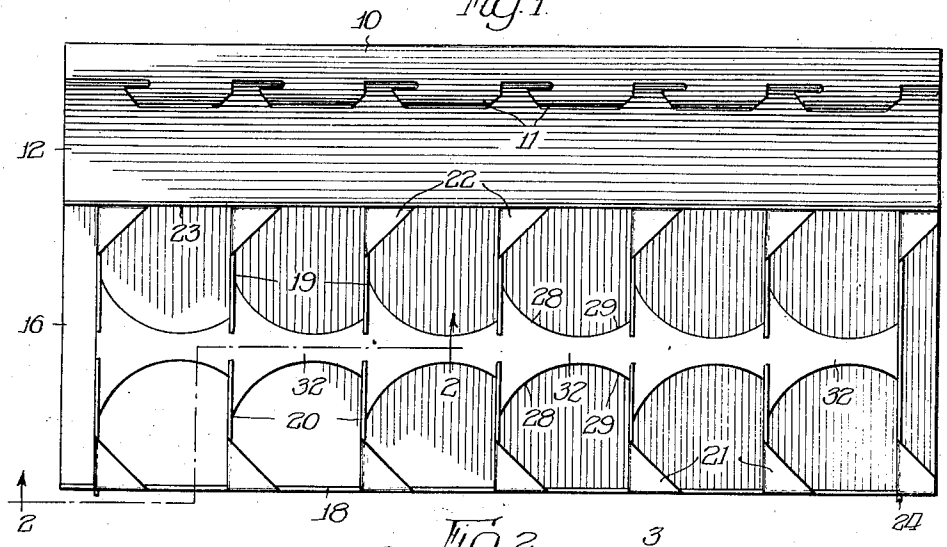


Fig. 2.

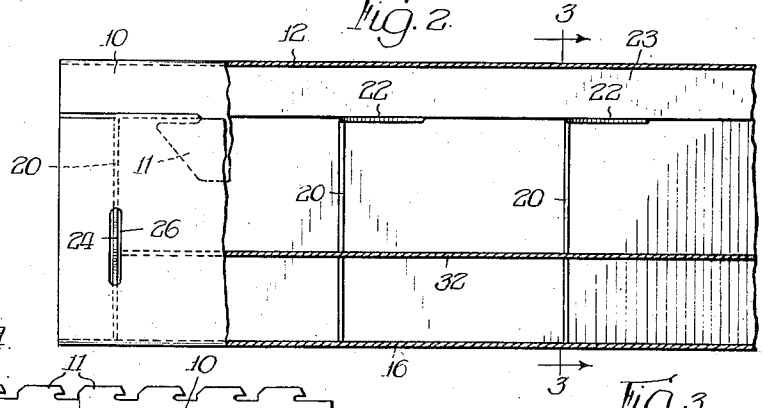


Fig. 4.

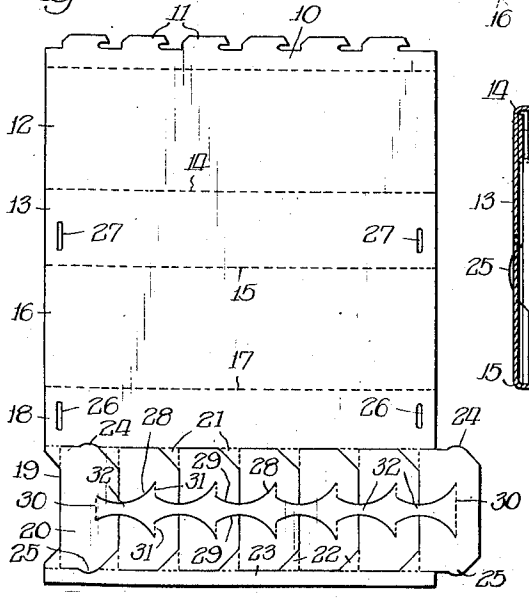
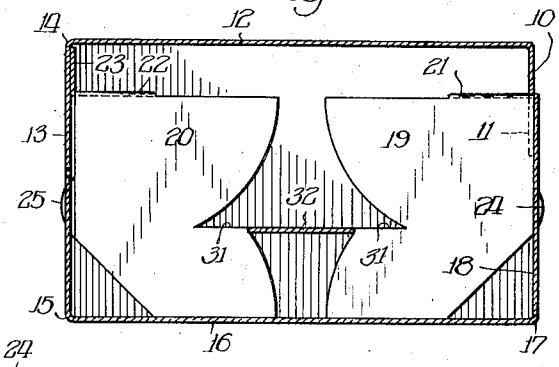


Fig. 3.



Inventor:
Carl H. Lowe,
By Cromwell, Greist & Warden
Attys

April 12, 1938. C. H. LOWE 2,113,622

CELLULAR CARTON

Filed Feb. 10, 1936 2 Sheets-Sheet 2

Fig. 5.

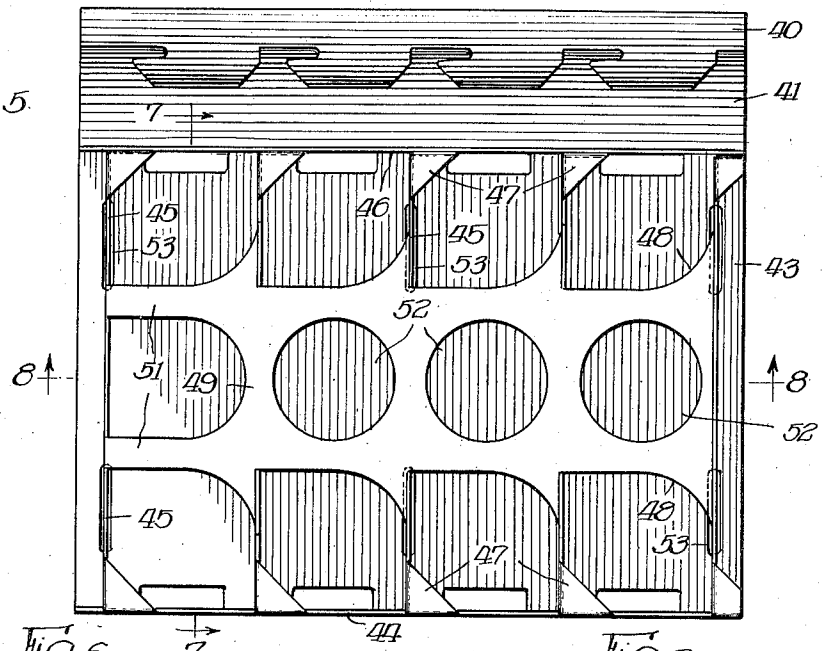


Fig. 6.

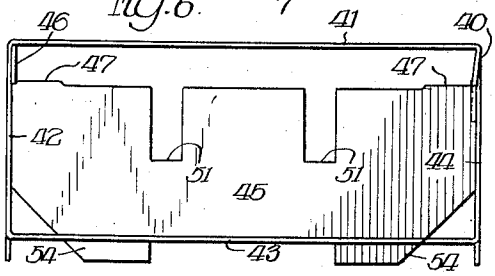


Fig. 7.

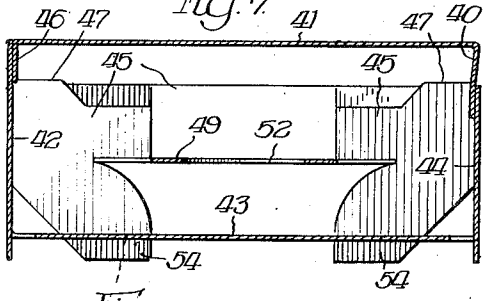


Fig. 9.

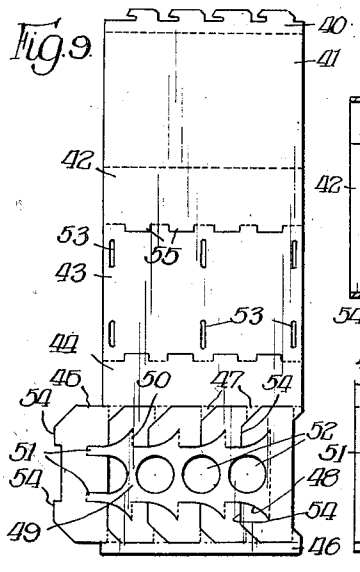


Fig. 8.

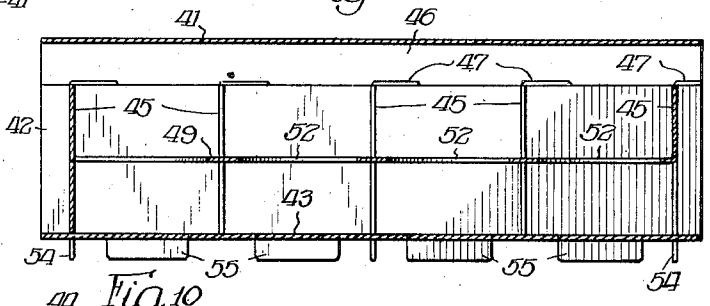
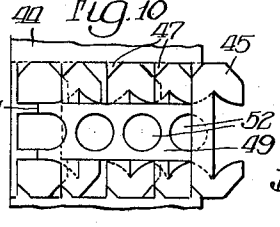


Fig. 10.



Inventor:
Carl H. Lowe,
By Cromwell, Treist & Warden
attys.

Patented Apr. 12, 1938 2,113,622

UNITED STATES PATENT OFFICE

2,113,622

CELLULAR CARTON

Carl H. Lowe, Chicago, Ill., assignor to Self-Locking Carton Co., Chicago, Ill., a corporation of Illinois

Application February 10, 1936, Serial No. 63,140

18 Claims. (Cl. 229—29)

The present invention pertains to cellular cartons of the type commonly used in packaging fragile articles such as eggs and has particular reference to an improved carton of this type in which the carton is economical and easily erected from the flattened condition in which such cartons normally are shipped to the user.

A principal object of the invention is the provision of a carton of the one-piece type in which the blank is cut in such a manner as to provide a longitudinally extending central member which is integral with each of the various cross partitions and which is operative to erect the latter when moved into proper position.

An additional object is the provision of a carton of the type described which will provide a plurality of adjacent longitudinal rows of cells without the necessity of employing vertically extending separating partitions.

Another object is to provide a carton having a series of cross partitions which are erected from horizontal position by rotation into a vertical plane, the cross partitions having an integral strip extending between the various cross partitions in a horizontal plane.

Still another object is to provide a carton of the 3 x 4 style, in which a horizontal longitudinally extending strip integrally connected with and composed of material struck from the cross partitions serves as a longitudinal partition and an egg-receiving member.

These and other objects will be apparent from a consideration of the following specification and by reference to the accompanying drawings, in which

Fig. 1 is a plan view of a carton constructed in accordance with my invention;

Fig. 2 is a horizontal section taken on line 2—2 of Fig. 1;

Fig. 3 is a cross section taken on line 3—3 of Fig. 2;

Fig. 4 is a view of a blank from which the carton shown in Fig. 1 is constructed;

Fig. 5 is a plan view of a modified embodiment of the carton of the 3 x 4 style;

Fig. 6 is an end view of the carton shown in Fig. 5;

Fig. 7 is a sectional view taken along line 7—7 of Fig. 5;

Fig. 8 is a longitudinal sectional view taken along line 8—8 of Fig. 5;

Fig. 9 is a view of the blank from which the carton shown in Fig. 5 is constructed; and

Fig. 10 is a fragmentary view of the blank showing the cross partitions in reversed position.

In Figs. 1 to 4 the invention is shown as applied to a well known type of 2 x 6 carton which has been employed by the trade for many years. Heretofore it has been necessary to provide this type of carton with a vertically extending longitudinal partition, and the carton usually is erected by squaring the side walls and pressing a separate longitudinal partition against the free ends of the cross partitions, thereby causing the latter to rotate into erect position and forming an interlock with the longitudinal partition.

The carton is formed from a blank of paper board which is cut in the manner shown in Fig. 4. The cover-locking strip 10 is provided with hooks 11 adapted to maintain the carton in closed position. Adjacent the cover-locking strip 10 is a top or cover 12 which is hinged to the rear wall 13 along a score line 14. The rear wall 13 is connected along score line 15 to a bottom 16, the latter being of the so-called "flat bottom" type which extends along a surface on which the carton is positioned. The opposite side of the bottom member 16 is joined along a score line 17 to an upwardly extending front wall 18 which is of somewhat less height than the rear wall 13. Joined to the front wall 18 is a cross partition section indicated generally at 19 which is of substantially the same width as the carton. This section is cut to provide a series of cross partitions 20 which separate the carton into six adjacent compartments extending the entire width of the carton. The cross partitions are joined to the front wall by means of hinge portions 21 of well known construction. The opposite sides of the cross partitions are joined to the hinge portions 22 which are similar in construction to the hinges 21, and the hinges 22 are in turn connected to an attaching strip 23. In manufacture of the carton the attaching strip is folded over and glued to the rear wall at a point which will provide a combined width of the cross partitions and front wall which is equal to the combined width of the rear wall below the point at which the attaching strip is connected and the bottom member.

The end cross partitions of the series are provided with hooks 24 on one side which are cut from the material of the front wall and projections 25 on their opposite side which are cut from the material of the attaching strip 23. It will be understood that in the case of the end cross partition which extends beyond the longitudinal edge of the blank, the projections 24 and 25 will be cut from the material of the next adjacent blank. The front wall is provided with

vertically extending slots 26 which receive the projections 24 when the cross partitions are rotated into vertical position. Similarly, the rear wall is provided with slots 27 which receive projections 25 when the cross partitions are rotated into vertical position, thereby forming an interlock which maintains the end cross partitions in position and prevents their collapse.

The cross partition-forming section 21 is provided with a series of cuts which form a horizontal and integral strip connecting the various cross partitions together. These cuts include portions 28 extending upwardly from an interior portion of the cross partitions to the top thereof and offset portions 29 extending from the lower portions of the cross partitions to the bottom thereof. The lower terminal portions of cuts 28 then are connected by score lines indicated at 30 which also connect the upper terminal portions of cuts 29. The distance between the lower terminal portions of cuts 28 is somewhat greater than the distance between the upper terminal portions of cuts 29, thereby forming hinge lines 31 on each side of the upper terminal portions of cuts 29.

The series of cuts 28 and 29 and score lines 30 form a horizontal longitudinally extending strip 32 which divides the carton into two adjacent longitudinally extending rows of cells. The cuts 28 and 29 preferably are of a curved nature as indicated in the drawings, which will receive and properly position the rounded portions of eggs placed in the carton. That is, the longitudinally extending strip 32 is provided with reduced portions between adjacent cross partitions.

When eggs are placed in the carton the rounded portions of the eggs have a tendency to rest on the rounded portions of the longitudinal strip 32 and there is reduced tendency of the cross partitions to collapse, since for the cross partitions to collapse it is necessary that the strip 32 rise to the top level of the cross partitions. The eggs interfere with this action and tend to form a rigid construction.

In erecting the carton the walls of the same may be squared up in the usual manner and the end cross partitions adjacent the leading end of the strip 32 may be rotated downwardly. This downward rotation about hinges 21 and 22 causes the end portion of the strip 29 to be depressed and to be moved longitudinally of the carton in the same direction as the direction of rotation of the end cross partition. This movement causes a corresponding movement in all of the cross partitions and the latter are brought into erect position. It will be noted that the longitudinal strip 32 retains its horizontal position, so that there is a reduced cross strain on the portions by which this strip is attached to the cross partition, and consequently there is a reduced tendency for the strip to tear away from the cross partitions. It has been suggested heretofore to employ separate elements such as a string or a separate strip of cardboard attached to the bottom of the cross partitions for pulling the latter into erect position, but it is obvious that this construction is not practical due to the expense of attaching the separate elements and to the added difficulty of their use. Also, it is necessary in such constructions to employ separate and vertically extending longitudinal partitions for separating the carton into a plurality of longitudinally extending cells. In accordance with the construction described herein these vertical longitudinally extending partitions are unnecessary and the carton is constructed with a considerable saving in the amount of paper board employed. Also, the carton may be rapidly erected by hand without the necessity of employing mechanical structures for facilitating the erection of the cross partitions, although these devices may be employed if desired. The manufacture of the carton is in fact less expensive than is the manufacture of similar cartons known heretofore, since it is not necessary to strip material from the cross partitions.

After the erection of the cross partitions in the manner described, the locking elements 24 and 25 secure the end cells in rigid vertical position. Other conventional locking elements may be employed for this purpose.

In Figs. 5–10 the invention is shown as applied to a carton of the so-called 3 x 4 style. In this embodiment of the invention the carton is constructed from a blank of the type shown in Fig. 9, in which a sheet of paper board or the like is cut and scored to form a cover-locking strip 40, a cover 41, a rear wall 42, a bottom 43, a front wall 44, cross partitions 45, and an attaching strip 46. The cross partitions 45 are attached to the front and rear walls by means of triangular hinge members 47. In this embodiment of the invention there are five cross partitions forming four parallel rows of egg-receiving cells. The several cross partitions are formed from a single section by cutting the section in the manner shown in Fig. 9. More particularly, the cross partition-forming section is provided with a series of curved cuts 48 which form a wide strip 49 extending the length of the carton when the cross partitions are erected, the strip 49 having integral connections 50 with each of the cross partitions. The connections 50 are positioned approximately in the middle of the cross partitions, so that when the cross partitions are erected the strip 49 is spaced a substantial distance above the bottom of the carton. The strip 49 is integrally attached to the trailing cross partition by two spaced strips 51. The points of attachment of the strip 49 to the various cross partitions are below the points at which the cross partitions themselves are hinged to the front and rear walls.

In order to provide a central longitudinally extending row of egg-receiving compartments, the central strip 49 is provided with cut-away portions 52. The openings 52 are rounded to receive the small end of an egg, and the strip 49 is positioned above the bottom of the container sufficient distance to allow the egg to extend through the openings 52 far enough to form a stable seat therefor.

The bottom member is provided with holes 53 which are adapted to receive the projections 54 on the lower portion of certain of the cross partitions. Additionally, the bottom is cut to form a series of projections 55 of substantially the same size as shown in Carter Patent No. 927,488, these projections being formed as an integral part of the front and rear walls and acting to space the bottom of the carton in cushion-forming position with respect to the surface upon which the carton is placed. Spacing the bottom above a surface upon which the carton is positioned also provides room for the projection of hooks 54 through the bottom to maintain the cross partitions in erect position.

As will be seen from Fig. 4, the intermediate cross partitions, that is, the cross partitions between the end cross partitions, are divided into sections spaced apart a distance equal to the width of the strip 49. The material between the spaced sections forms the longitudinally extend-

ing strip. The strip 49 acts as an egg-receiving section for the middle longitudinal row of eggs and, additionally, provides two longitudinal partitions for separating the eggs positioned in the middle row from the eggs in the outer longitudinal rows. In functioning as longitudinal partitions, the strip 49 avoids the use of the extra amount of paper material heretofore employed as separate longitudinal partitions.

It will be recognized that many changes will be made in the structure of the carton described herein for purposes of illustration and explanation without departing from the scope of the invention, and such changes are intended to be included in the appended claims.

I claim:

1. A carton of the type described, comprising a series of cross partitions cut from a single blank to provide hinge elements, said partitions being collapsible into flattened condition in a horizontal plane and rotatable into erect parallel position about said hinge elements, and a horizontal erecting strip integral with said cross partitions, said strip being composed of portions cut from the tops of cross partitions and other portions cut from the bottoms of said cross partitions and said portions having hinge portions therebetween.

2. A carton of the type described, comprising a series of cross partitions hinged to rotate into spaced erect position, said partitions having a connecting strip cut from the material thereof and adapted upon rotation of said cross partitions to move longitudinally of said carton, said strip being connected to said partitions intermediate the tops and bottoms thereof.

3. A carton of the type described, comprising front and rear walls, a series of cross partitions hinged adjacent their upper portions to said walls, and a longitudinally extending horizontal strip integral with and cut from the material of said cross partitions and having a transverse horizontal hinge line on each cross partition.

4. A carton of the type described, comprising front and rear walls, cross partitions hinged to said walls and rotatable into spaced erect position, a longitudinally extending horizontal erecting strip integral with and connected at intermediate points to said cross partitions and adapted to rotate said cross partitions into erect position upon longitudinal movement of the leading portion thereof, and means coacting with said cross partitions to prevent further longitudinal movement of said erecting strip.

5. A carton of the type described, comprising an outer wall structure including a bottom, a front wall and a rear wall, cross partitions hinged to said front and rear walls and rotatable into spaced erect position, a longitudinally extending horizontal erecting strip integral with said cross partitions and adapted to rotate the latter into erect position upon longitudinal movement, and projections on said cross partitions for engaging said outer wall structure when said cross partitions are in erect position.

6. A cellular carton of the type described, comprising front and rear walls, and a series of cross partitions extending between said walls and hinged thereto, said cross partitions including end cross partitions and intermediate cross partitions formed of transversely spaced vertical sections, and there being a longitudinal partition-forming strip integral with and connecting the transversely spaced sections of said cross partitions, said strip being connected to said partitions intermediate the tops and bottoms thereof.

7. A carton of the type described, comprising opposite walls, a series of cross partitions hinged to said walls and formed of a single blank, said cross partitions having transversely spaced vertical sections joined together at points intermediate the tops and bottoms thereof by a horizontal longitudinal partition-forming section formed integral therewith.

8. A carton of the type described, comprising front and rear walls, cross partitions hinged to said walls and movable from horizontal position into erect position, said cross partitions including an intermediate horizontal section integral therewith and movable longitudinally of the walls upon movement of said cross partitions.

9. A carton of the type described, comprising front and rear walls, a bottom section, a series of cross partitions hinged to said front and rear walls, and a horizontal strip spaced upwardly from said bottom section sufficiently to constitute a longitudinal partition-forming section, said strip being integrally attached to said cross partitions at points vertically spaced from the hinged portions of said cross partitions and movable longitudinally of the carton upon rotation of said cross partitions.

10. A carton of the type described, comprising front and rear walls, cross partitions hinged to the front and rear walls by means of horizontal hinge elements, said cross partitions being reversed to lie beneath said hinge elements, and there being a longitudinal strip integrally connected to said cross partitions at points above the bottoms of the cross partitions and below the hinged portions thereof.

11. A carton of the type described, comprising front and rear walls, cross partitions hinged to said walls, and a horizontal strip integrally connected with said cross partitions below the hinged portions thereof, said strip being wider than the eggs to be packaged in said carton and having spaced egg-receiving openings therein.

12. A carton of the type described, comprising front and rear walls, a series of cross partitions extending between said walls, and a longitudinally extending strip integral with and cut from the material of said cross partitions, said strip being positioned intermediate the tops and bottoms of said cross partitions and constituting a longitudinal partition dividing said carton into a plurality of rows of cells.

13. A carton of the type described, comprising front and rear walls, a series of cross partitions extending between said walls and being hingedly mounted to rotate from a collapsed position in a plane to spaced erect positions, and a longitudinally extending strip integral with and cut from the material of said cross partitions, said strip being connected to said cross partitions by integral hinge portions at intermediate points with respect to said cross partitions.

14. A carton of the type described, comprising front and rear walls, cross partitions cut from a blank and hingedly connected between said walls, said cross partitions having vertical sections adjacent said walls and the sections of individual cross partitions being transversely spaced, and a longitudinally extending strip integral with and cut from the material of said cross partitions, said strip being connected to said cross partitions at points below the hinged portions and above the lower portions of said cross partitions.

15. A carton of the type described, comprising

front and rear walls, cross partitions hingedly connected between said walls, said cross partitions having vertical sections adjacent said walls and the vertical sections of individual cross partitions being transversely spaced, and a longitudinally extending strip cut from the material of said cross partitions and connected to intermediate portions thereof, said strip having egg-receiving openings therein dividing said carton into three longitudinal rows of cells.

16. A carton of the type described, comprising front and rear walls, end and intermediate cross partitions having hinge portions connected to said walls dividing said carton into a plurality of cells, and a longitudinally extending strip integral with said cross partitions and connected thereto by hinge portions at offset points with respect to the hinge portions of said cross partitions, said strip having a relatively wide portion on one side and a relatively narrow portion on the other side of said intermediate partitions.

17. A carton of the type described, comprising a body portion, end and intermediate cross partitions providing a plurality of cells, and a longitudinally extending strip integrally connected with said cross partitions at intermediate points thereof, said strip having a relatively wide portion on one side and a relatively narrow portion on the other side of said intermediate cross partitions and having egg-receiving openings.

18. A carton of the type described, comprising front and rear walls, end and intermediate cross partitions hingedly connected to said walls to divide said carton into a plurality of cells, and a longitudinally extending strip integral with said cross partitions and connected to the latter by hinged portions which are offset wtih respect to the hinged portions by which said cross partitions are attached to said front and rear walls.

CARL H. LOWE.