April 5, 1966 A. E. RANDLES, JR 3,244,350

EGG CARTON

Filed Sept. 8, 1964 3 Sheets-Sheet 1

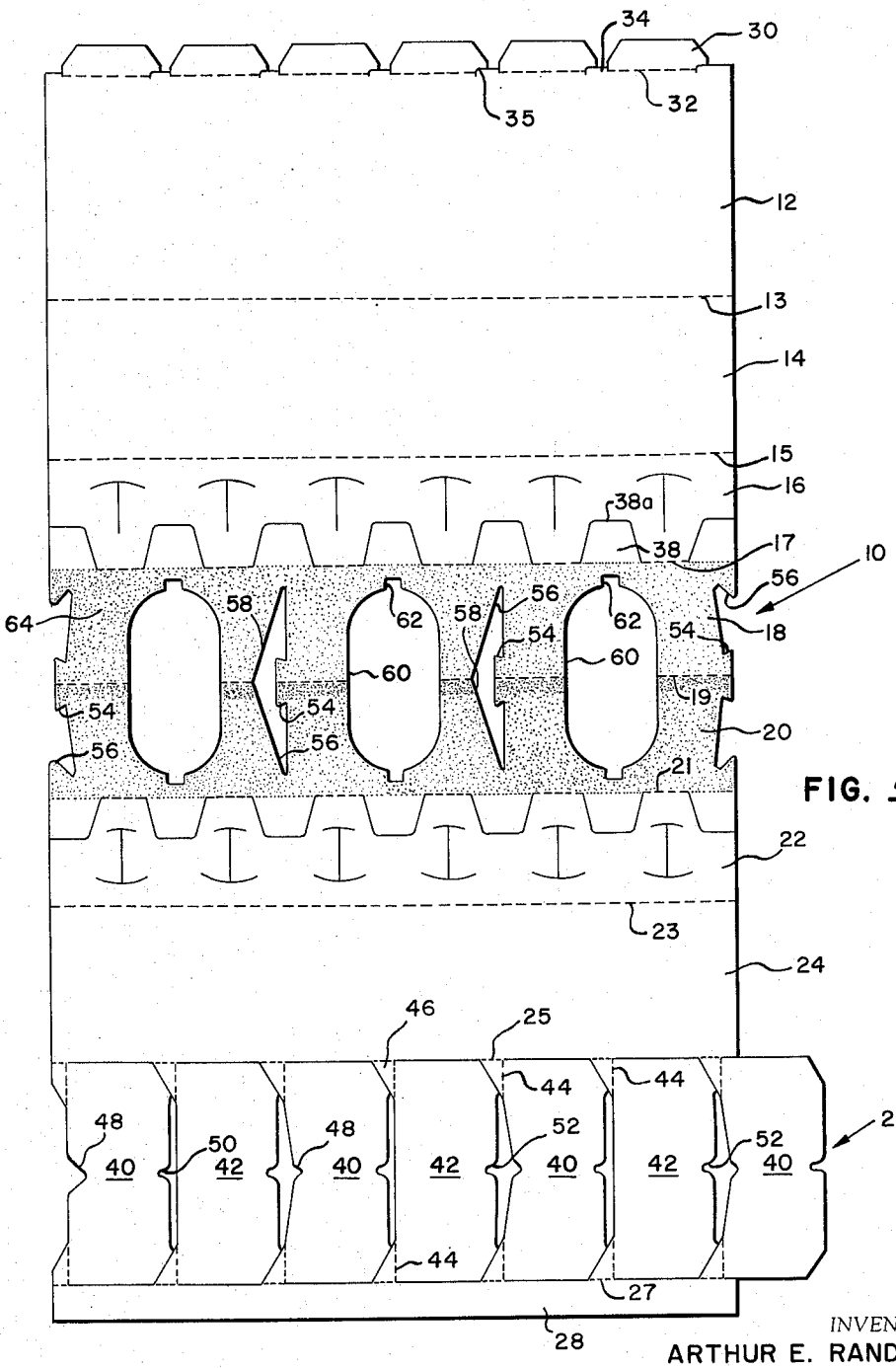


FIG. 1

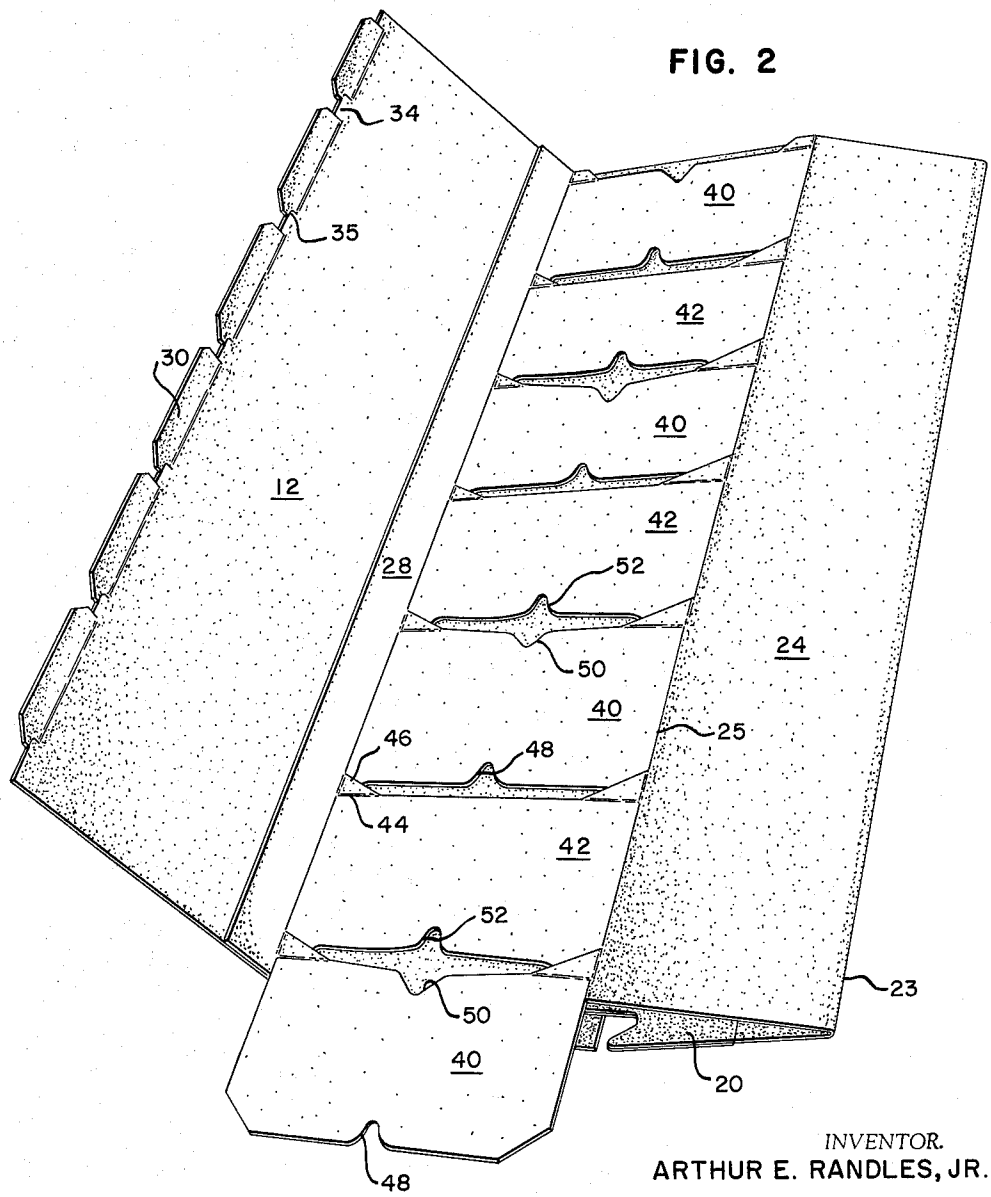
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FIG. 2



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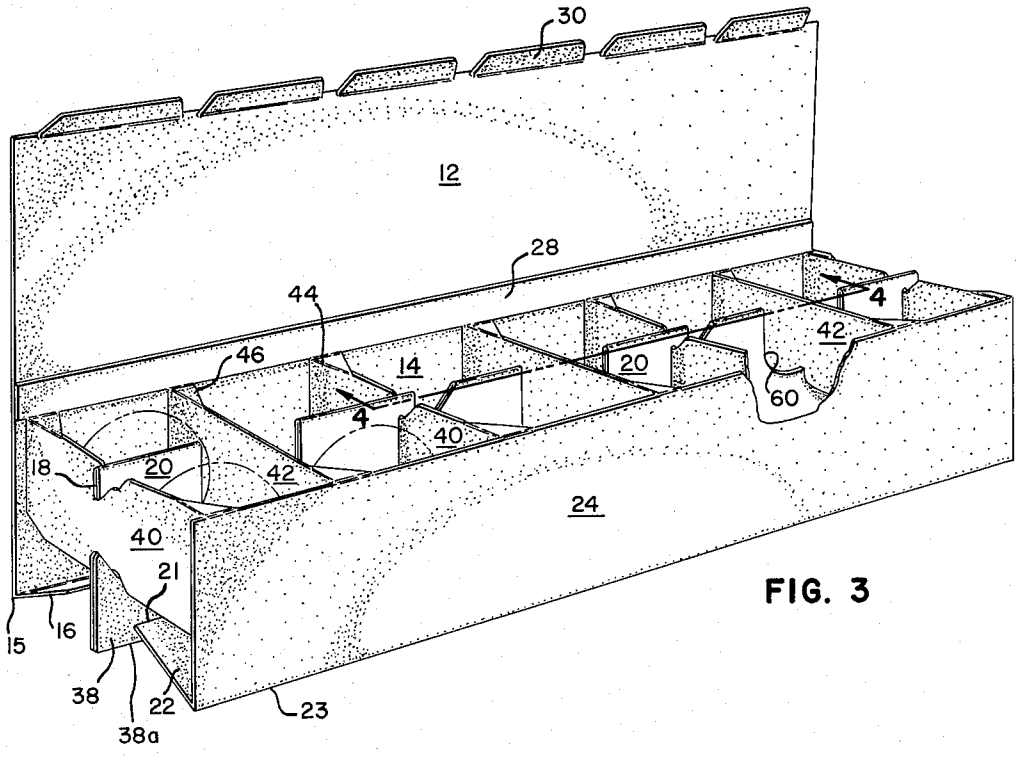


FIG. 3

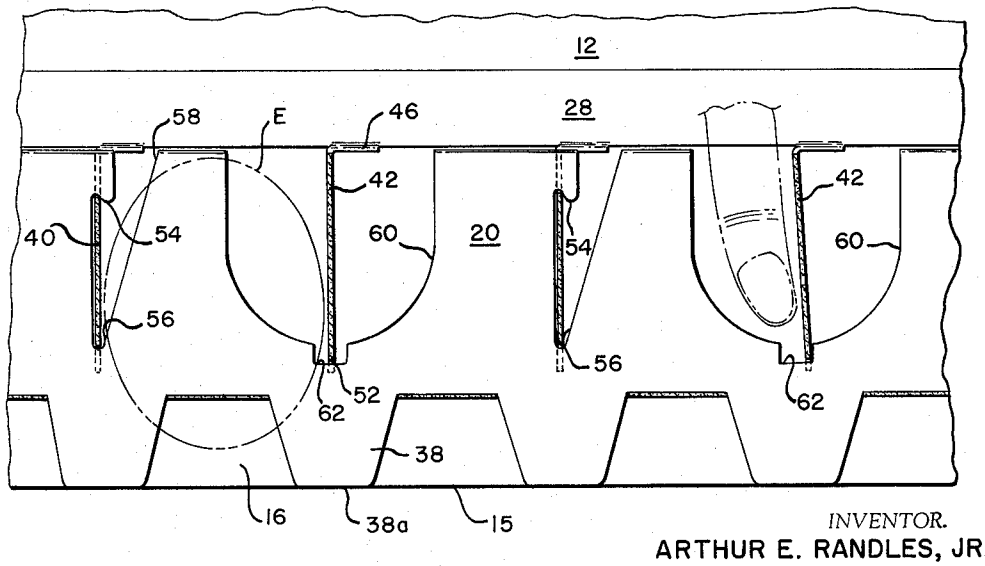


FIG. 4

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EGG CARTON

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Filed Sept. 8, 1964, Ser. No. 394,959
4 Claims. (Cl. 229—28)

This application is a continuation-in-part of my copending application, Serial No. 346,511, filed February 21, 1964.

This invention relates to an egg carton and, more particularly, to an egg carton that is of rigid construction adapted to accommodate and provide protection support for even the largest size eggs and still permit ready access to the carton cells for the removial of eggs without breaking the shells.

Cellular cartons for packing eggs and the like are commonly formed of a plurality of panels including a cover, front and rear wall panels and a pair of bottom panels separated by a longitudinally extending, upright divider panel. A plurality of upright cross partitions interlock with the longitudinal divider panel to form the cells of the carton. Since the rigidity of the carton depends to a large extent upon the interlocking engagement of the divider panel and the cross partitions, it is generally considered desirable to interlock them rather firmly against transverse movement. Additionally, it is desirable that the cells be made as deep as possible in order to provide a complete enclosure for each egg with the carton walls in conjunction with the longitudinal divider and the cross partitions forming a protective shield extending above the tops of the eggs. In this same connection, it is also deemed desirable to have the front and rear walls and the divider panel formed of a height to extend above the tops of the eggs so that they and not the eggs, will support any load placed on the carton top.

The desire for the above-listed features lead to my development of a deep cell egg carton which is disclosed in my copending application Serial No. 346,511, filed Feb. 21, 1964. This carton has been well received and extremely successful in use but I have felt that need for improvement of certain features, and it is these features to which this application is specifically directed.

In a cellular egg carton, it is desirable that the cells be of widths in horizontal cross-section just a little larger than the length of the minor axis of the eggs so that the eggs will be held erect and restrained against undue lateral movement as the carton is being transported. As a result, when the walls are extended above the tops of the eggs, some problem has been experienced in providing access to and around the eggs when it is desired to remove them. Specifically, since the upper portion of the egg is not fully exposed as in many cartons, it is usually necessary, in order to remove an egg, to insert one's finger between it and the walls of the cell and this is difficult to do in the egg carton of my aforesaid pending application. Of course, provision can be made for openings or yieldable panels in the carton bottoms through which the eggs might be pushed upward but most consumers seem to prefer direct access from the top.

It, therefore, is an object of this invention to provide a deep cell egg carton wherein the individual eggs are completely enclosed but wherein means are provided for direct access of the fingers to the egg cells.

It is a further object of this invention to provide a deep cell egg carton providing direct access to each cell from above, which carton permits yielding of cell walls without sacrificing rigidity of the carton.

In carrying out this invention, I provide an egg carton having front and rear wall panels and a longitudinal divider panel, all of a height in access of the major axes

of the eggs to be accommodated. The longitudinal divider panel is formed by folding a pair of panels upward from the bottom panels intermediate the front and rear walls and adhesively securing them together in face to face relationship. Preferably, the bottom panels join the central divider panel above its lower edge so that the eggs are suspended above the surface on which the carton is supported. A series of cross partition panels are hingedly connected to the front and rear panels to span across them and, during assembly, are folded downwardly to be received in a complementary series of slots formed in the upright central divider panel. For example, in a typical egg carton made up of twelve cells, there are seven cross partitions engaged in a like member of slots in the central divider panel. In the invention here disclosed, only the two outside cross partitions and alternating partitions therebetween are firmly interlocked with the divider panel so that they are mutually restrained against transverse displacement and, hence, rigidly hold the carton erect. Intermediate the interlocking elements on the longitudinal central divider panel, a series of extra-large slots are formed in the divider panel to open from the top and continue downward a sufficient distance to accommodate a cross partition. At the bottom of the extra-large slot, there is formed a small notch of generaly rectangular configuration that receives the cross partition to hold it generally centered between the sides of the large slot. The large slots are of sufficient width that when so centered they permit passage of the consumer's fingers on opposite sides of the central divider. Additionally the notch at the bottom of the slot permits a limited range of transverse movement of the cross partition so that the cells can yield slightly to cushion the eggs and also further to facilitate the insertion of the fingers for egg removal.

Other objects and advantages of this invention will become apparent from the description following when read in conjunction with the accompanying drawings wherein:

FIG. 1 is a plan view of a die cut egg carton blank embodying features of this invention;

FIG. 2 is a view in perspective showing the carton blank in an intermediate stage of assembly;

FIG. 3 is a view in perspective showing a carton assembled from the blank of FIG. 1; and

FIG. 4 is a partial section view of the completed carton taken along line 4—4 of FIG. 3.

Referring now more particularly to FIG. 1, the carton blank **10** may be formed from any suitable relatively stiff sheet material, such as fiberboard. The blank **10** may be cut from a sheet of material by means of a pre-formed die and scored to form a series of panels. Viewing from top to bottom in FIG. 1 the panels include a cover panel **12**, the rear wall panel **14**, the rear bottom panel **16**, central divider panels **18** and **20**, the forward bottom panel **22**, the front wall panel **24**, a cross partition panel **26** and attachment strip **28**. These panels are connected in the order designated along foldable score lines **13**, **15**, **17**, **19**, **21**, **23**, **25** and **27**, respectively.

At the upper end of the cover panel **21** are formed six locking tabs **30** each of which is connected to the cover panel along a score line **32**. A small separator tab **34** extends between each locking tab to form hook-like extensions **35** that engage other portions of the carton in order to secure the cover closed as described in my aforesaid copending application.

Extending from each of the central divider panels **18** and **20** are a number of tongues or extensions **38** which are uninterrupted by the score lines **17** and **21** so that as the central panels are folded together along the score line

19, the extensions 38 will remain in the plane of the particular central divider panel 18 or 20 from which it extends.

The cross partition panel 26 is die cut into a two alternating series of cross partitions 40 and 42 which form transverse rows of cells, there being normally seven cross partitions with six rows of cells. The cross partitions 40 and 42 are hingedly connected at scorelines 44 to the connector tabs 46 which, in turn, are hingedly connected at the score lines 25 and 27 to the front panel and attachment strip 28, respectively. That series of cross partitions 40 comprising the two outside cross partitions and the two alternately disposed partitions extending inwardly therefrom, are V-notched at both top 48 and bottom 50 for interlocking engagement with the central divider panels 18 and 20 as will hereinafter be described. The other series of partitions, i.e., the second, fourth and sixth partition from either end are V-notched only at the bottom 52, also for engagement with the central divider panels.

In approximate alignment with the score lines 44 hingedly connecting each of the interlocking series of cross partitions 40 to its supporting tab 46 are a spaced, opposing pair of hook-like extensions 54 and 56 formed in each central divider panel 18 and 20. At the side edges of the carton blank 10, direct access between the hooks 54 and 56 is provided naturally from the edges. For the interior hooks a relatively wide converging slot 58 is provided so that complementary cross partitions 40 may be inserted between the hooks 54 and 56.

Alternating with the interlocking hook-like elements 54 and 56 acros the central divider panels 18 and 20 is a series of wide, generally oval openings 60 at the opposite ends of which are formed small notches 62 of generally rectangular configuration. When the central partitions are folded together along score line 19, the openings 60 form a wide, open end slot with the notches 62 in registry at the bottom.

After the carton blank has been die cut and scored, it is passed to a gluing machine (not shown) wherein a strip of glue 64 is applied to the central divider panels 18 and 20 between the score lines 17 and 21, and to the under side of the attachment strip 28 is viewed in FIG. 1. Thus, the central divider panels may be adhesively united in face to face relationship whereby the front and rear bottom panels form effectively a single panel with the central divider panels 18 and 20 forming a single laminated divider wall. Then, the attachment strip 28 is secured to the cover panel 12 as shown in FIG. 2 so that the carton blank forms a very compact, flat article preparatory to assembly.

When the carton is asembled as shown in FIG. 3, the panels of the interlocking series 40 are securely gripped by engagement of the hooks 54 and 56 on the central divider panel with the V-notches 48 and 50 of the cross partitions 40. This prevents any appreciable transverse movement of either the cross partitions 40 or the central divider panel 18, 20 and thereby provides a very rigid assembly. The second, fourth and sixth panels 43 however, are received within the extra large slots 60, with the V-shaped notch 52 at the bottom of each cross partition 42 engaging the central divider panel in the small notched extension 52 of the large slot 60. Thus, the cross partition assists in holding the central divider panel against transverse movement but, at the same time, the width of the small notch extension permits limited transverse movement of the cross partition for a purpose hereinafter to be described.

Referring to FIGS. 3 and 4, it will be noted that the egg carton is of the deep cell type wherein the depth of the cells is greater than the length of the major axis of the eggs. Thus, the eggs are completely enclosed and below the tops of the back wall 14, the front wall 24, the central divider panel 18, 20 and the cross partitions 40 and 42. Additionally, since the bottom panels 16 and 22 are connected to the central divider panels 18 and 20 above their lower edges 38*a*, the eggs are supported above the surface on which the carton may be supported at extension edges

38*a* as well as the corners 15 and 23 at the lower edges of the front and rear walls 24 and 14. Similarly the eggs E will not support loads carried on the cover 12 when closed since it, and any loads thereon, will rest on the tops of the front, rear and divider walls.

This structure provides maximum protection for the eggs but, since the eggs are fully nested, it is more difficult to grasp them for removal without squeezing them. Since the cells are only slightly larger than the length of the minor axes of the eggs it is normally difficult to insert one's finger between the egg and the cell walls 14, 18, 20, 24, 40 or 42 and reach under the egg to lift it. Thus, it is normally necessary to grasp the exposed top firmly; to reach under the cross partitions 40 and 42 from adjacent cells; or to poke the eggs up from the bottom. None of these methods is completely satisfactory.

Therefore, it is the principal function of the structural combination of large slots 60 and floating partitions 42 to permit access to the lower portion of the eggs so that they may be lifted from their cells. Specifically, with particular reference to FIG. 4, the extra large notch 60 provides a through opening in the central divider panel 18, 20 into which one might extend a finger or suitable lifting device from the open top of a cell, down to a level below the center of the eggs where the natural curve of the egg provides more room to reach under the egg and lift without squeezing. Egg removal is fruther facilitated by reason of the fact that the cross partitions 42 are free to float, i.e., to move transversely a limited amount in order to increase the size of the cell.

While this invention has been described in connection with preferred embodiments thereof, it is to be understood that modifications and changes therein may be made by those skilled in the art without departing from the spirit and scope of this invention as defined by the claims appended hereto.

Having described my invention, I claim:

1. An egg carton comprising:
front and rear walls,
forward and rear bottom panels connected along fold lines to said front and rear walls, respectively,
a pair of central panels each hingedly connected to one of said bottom panels to extend upwardly therefrom,
means joining said central panels together in face to face engagement to form a central divider panel,
a plurality of upright cross partitions extending transversely between said front and rear walls,
a series of complementary interlocking means on said central divider panel and certain of said cross partitions holding said central divider panel and said certain cross partitions in substantially fixed, upright positions,
means forming enlarged slots in said central panels receiving others of said cross partitions intermediate the sides thereof to provide an opening on both sides of said cross partitions,
means forming a notch wider than the thickness of said other cross partitions in said central panels at the lower end of each of said slots receiving the lower edge of one of said other cross partitions to retain said other cross partitions generally upright but enabling a limited range of transverse movement thereof.

2. An egg carton comprising:
front and rear walls,
forward and rear bottom panels connected along fold lines to said front and rear walls, respectively,
a pair of central panels each hingedly connected to one of said bottom panels to extend upwardly therefrom,
means joining said central panels together in face to face engagement to form a central divider panel,
a plurality of cross partitions extending between said front and rear walls,

a series of complementary interlocking means on said central divider panels and certain of said cross partitions holding said central divider panel and said certain cross partitions in substantially fixed, upright positions,

means forming enlarged slots in said central divider panel intermediate said complementary interlocking means, said slots receiving others of said cross partitions intermediate the sides thereof to provide a through opening on both sides of said cross partition,

means forming a notch wider than the thickness of said other cross partitions in said central panels at the lower end of each of said slots, and

means forming a complementary notch in the lower edge of each of said other cross partitions,

said notch and said complementary notch being interengaged to retain said other cross partitions generally upright but enabling a limited range of transverse movement of said other cross partitions.

3. The carton defined by claim 2 wherein:

said front and rear walls and said central panels are of substantially equal height greater than the major axis of an egg.

4. An egg carton blank comprising:

front and rear walls,

forward and rear bottom panels connected along fold lines to said front and rear walls, respectively,

a pair of central panels connected along a fold line and each hingedly connected to one of said bottom panels,

means joining said central panels together in face to face engagement to form a central divider panel,

a plurality of cross partitions extending between said front and rear walls,

a series of complementary interlocking elements on said central divider panels and certain of said cross partitions for holding said central divider panel and said certain cross partitions in substantially fixed, upright position,

means forming enlarged slots in said central divider panels alternating with interlocking elements, said slots being aligned with others of said cross partitions so as to receive them intermediate the sides of said slots,

means forming a generally rectangular notch in said central panels at the lower end of each of said slots, each said notch being adapted to receive one of said other cross partitions to retain it generally upright but to enable a limited range of transverse movement thereof, and

means forming a complementary V-shaped notch in the lower edge of each of said other cross partitions for snugly embracing said central divider panel at the lower edge of said notch.

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