April 10, 1934. H. LEVINE 1,954,595

COLLAPSIBLE BOX OR CARTON

Filed March 2, 1929 2 Sheets-Sheet 1

FIG. 1.

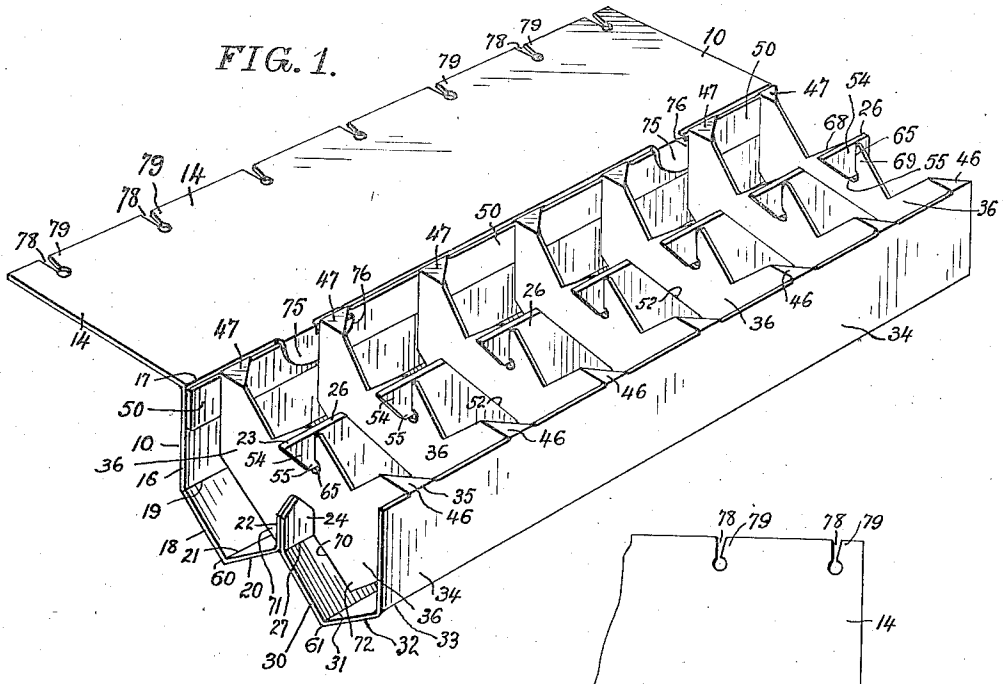


FIG. 2.

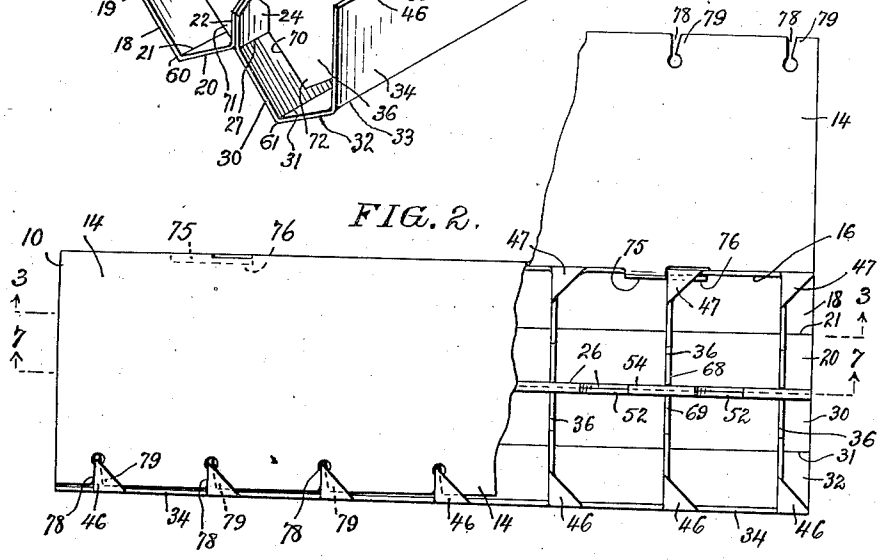
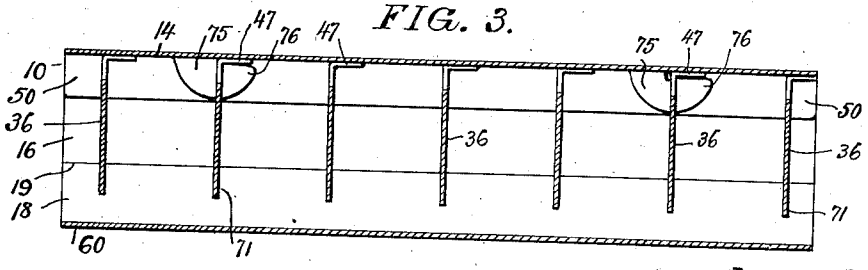


FIG. 3.



Inventor:
Henry Levine
By F. DeWitt Goodwin
Attorney

April 10, 1934. H. LEVINE 1,954,595

COLLAPSIBLE BOX OR CARTON

Filed March 2, 1929 2 Sheets-Sheet 2

FIG. 4.

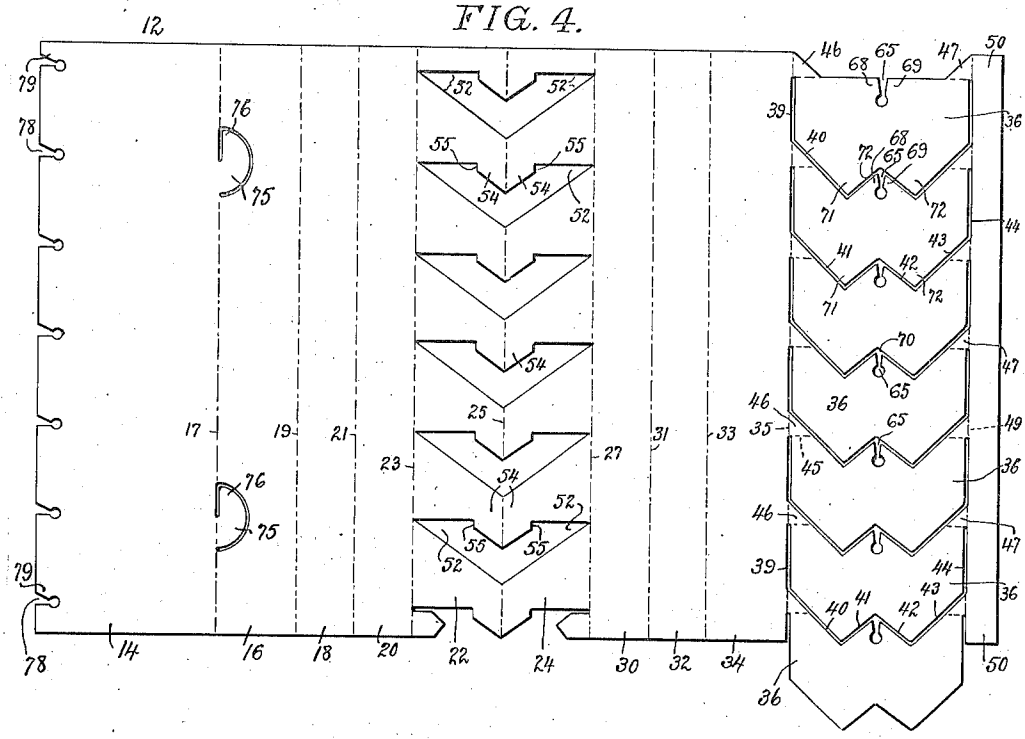


FIG. 7.

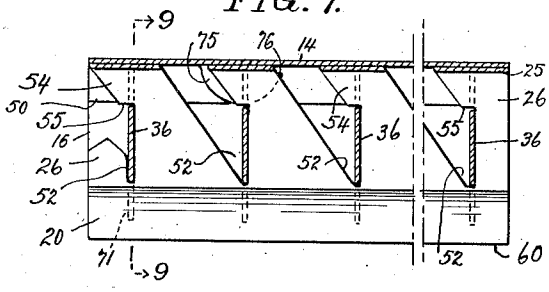


FIG. 5.

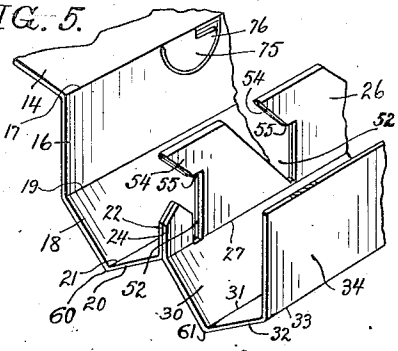


FIG. 8.

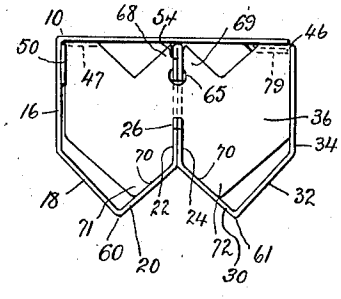


FIG. 9.

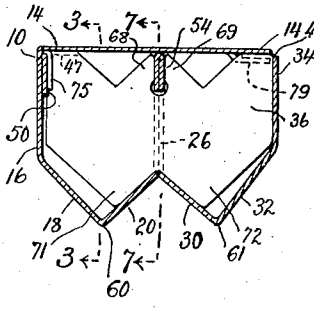
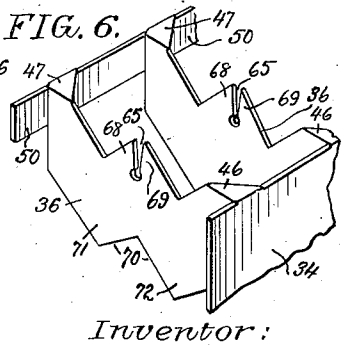


FIG. 6.



Inventor:
Henry Levine
By H. DeWitt Goodwin
Attorney

Patented Apr. 10, 1934 1,954,595

UNITED STATES PATENT OFFICE

1,954,595

COLLAPSIBLE BOX OR CARTON

Henry Levine, Philadelphia, Pa., assignor, by mesne assignments, to Self-Locking Carton Company, Chicago, Ill., a corporation of Illinois

Application March 2, 1929, Serial No. 343,996

18 Claims. (Cl. 229—29)

My invention relates to a collapsible box or carton and particularly to a box or carton for carrying eggs.

The object of my invention is to construct a box from a single blank or sheet of paper, or other suitable material, in such a manner that the blank or sheet may be quickly folded and formed into a box or carton; a further object is to provide a box with V-shaped bottom ribs which add strength and rigidity to the box and which provide inclined bottom walls adapted to support the eggs between said inclined walls, thus supporting the eggs in spaced relation with the rib portions of the bottom of the box which rest upon a supporting surface; a still further object is to provide a box having a longitudinal partition formed of two layers of material for giving additional strength and rigidity to the partition and also to the entire box; a still further object is to form the longitudinal partition by folding adjacent sections of the blank, or sheet, upon themselves so that the layers forming the partition will be joined along the top edge and their lower edges will be integrally connected with the sections forming the bottom of the box; a still further object is to provide a series of transverse partitions, which are connected at one end with a side wall of the box and the other ends are connected with an auxiliary side wall, which latter is detachably secured to the other one of the side walls; a further object is to provide webs which extend horizontally between the transverse partitions and the side walls and provide the box with a lid which is hinged to one of the side walls, and said lid being provided with tongues and recesses which permit the tongues to be extended under the webs for locking the lid in the closed position upon the box. These together with various other novel features of construction and arrangement of the parts, which will be more fully hereinafter described and claimed, constitute my invention.

Referring to the accompanying drawings, Fig. 1 is a perspective view of my improved box or carton showing the lid in the open position; Fig. 2 is a plan view of the box, a portion of which shows the lid in the closed position and the remaining portion shows the lid in the open position; Fig. 3 is a longitudinal vertical sectional view on line 3—3, Figs. 2 and 9; Fig. 4 is a plan view, (drawn on a smaller scale), of the blank or sheet of material cut into the proper form so that it may be folded to form the box shown in Fig. 1; Fig. 5 is a partial perspective view, similar to Fig. 1, with the transverse walls or partitions removed; Fig. 6 is a partial perspective view showing the transverse walls mounted upon a side wall and an auxiliary side wall, the longitudinal partition not being shown; Fig. 7 is a partial longitudinal vertical sectional view of the box as on line 7—7 Figs. 2 and 9; Fig. 8 is an end view of the box; and Fig. 9 is a transverse sectional view on line 9—9, Fig. 7.

In the accompanying drawings in which like reference characters refer to like parts, 10 represents my improved box, which is formed from the blank or sheet 12, shown in Fig. 4. The blank 12 is cut to form a lid 14 and a side wall 16, and provided with depressions to form a fold line 17. The bottom sections 18 and 20 are formed by means of fold lines 19, 21, and 23. Centrally positioned sections 22 and 24, are provided, and have a fold line 25 between them, thus forming the longitudinally extending partition 26. A fold line 27 is provided between the partition section 24 and another bottom section 30, which latter is joined with a bottom section 32, and another side wall 34 having fold lines 31 and 33 formed between the same. Thus, the bottom sections 18 and 20, the longitudinal partition sections 22 and 24 and the bottom sections 30 and 32 constitute a bottom and longitudinal partition-forming section which is connected to the lower portion of the front and rear walls of the carton and which extend upwardly toward the central portion of the carton to form a cushion of substantially inverted V-shape, and the section is suspended to a series of cross partitions to maintain the section in cushion-forming position. It will be seen that the bottom and longitudinal partition-forming section is suspended from the cross partitions, whereby, when eggs are placed in the carton, the cushion portion thereof is prevented from collapsing by the bracing action of the cross partitions.

Along one edge of the side wall 34 is located a fold line 35, and a series of transverse walls or cross partitions 36 are formed by cutting the material along a portion of the fold line 35 forming slits 39. The transverse wall 36 is completed by the angular slits 40, 41, 42, 43, and 44, thus forming the walls 36 and triangular webs 46 and 47; and also an auxiliary side wall 50 which latter is formed upon the blank, and carried upon the triangular webs 47, having a fold line 49 formed between said webs 47 and the auxiliary wall 50.

The sections 22 and 24 of the blank 12 which form the substantially vertical longitudinal parti-

tion 26, are provided with downwardly extending openings or recesses forming V-shaped grooves 52. Hooks 54 having shoulders 55 are formed upon the partition 26, hereinafter more fully described.

The blank 12 is first folded along the fold lines 17, 19, 21 and 23 so that the side wall 16 and the bottom sections 18 and 20 will have the angular relation shown in the end view Fig. 8. The partition sections 22 and 24 are folded upon themselves along the line 25 with the two layers or sections 22 and 24 positioned against each other, forming a longitudinal partition 26 of double thick material with the lower edges having integral connection with the bottom sections 20 and 30. The bottom sections 30 and 32 are folded along the lines 27, 31 and 33 to correspond with the shape of the bottom sections 18 and 20. Ribs 60 and 61 are thus formed which extend longitudinally of the box and add strength and rigidity to the same.

The bottom and longitudinal partition section contact a flat surface upon which the carton is positioned along the single longitudinally extending lines 60 and 61, the remainder of the section being held up or suspended in such a manner as to prevent contact with such a surface, whereby a permanent cushion effect is had.

The side wall 34 is folded along the line 33 into parallel relation with the side wall 16, and the transverse partition walls 36 are folded along the line 35 into a position at right angle to the side wall 34. The walls 36 are again folded along the lines 45 into a vertical position extending at right angles to the side walls 16 and 34 and to the longitudinal rib or partition 26.

The triangular webs 46 and 47 are now positioned horizontally and connect the walls 36 with the side wall 34 and with the auxiliary side wall 50, which latter is folded along the line 49 into a vertical position, parallel with the side wall 16. The transverse walls 36 are provided with vertically extending slots 65 between the portions 68 and 69. Said slots 65 are occupied by the hooks 54 of the partition 26. The upstanding portions 68 and 69 on the walls 36 engage the opposite sides of the hooks 54 and form braces for holding the hooks and the partition 26 against lateral movement.

The walls 36 are each provided upon their under sides with a V-shaped recess 70, and downwardly extending angular projections 71 and 72, clearly shown in Figs. 6, 8, and 9. By inserting the lower portions of the walls 36 into the V-shaped notches 52 of the longitudinal rib 26, with the recess 70 of the walls 36 embracing the inclined bottom sections 20 and 30, the walls 36 may be readily interlocked with the rib 26.

The shoulders 55 of the hooks 54 extend over the walls 36 and hold the latter in the grooves 52 formed in the longitudinal partition 26, thus locking the walls 36 in a vertical position, and said shoulders 55 holding them from coming out of the grooves 52. By this construction the walls 36 are rigidly held by the shoulder 55 upon the longitudinal partition 26, which in turn is integrally connected with the bottom sections, thus firmly securing the walls 36 in the box. The projections 71 and 72 of the walls 36 extend into the dihedral angles formed between the downwardly converging bottom wall sections 18 and 20 and the wall sections 30 and 32, thus holding the bottom sections in the proper angular relation to maintain the ribs 60 and 61. It will be seen that each of the bottom sections will contact a flat surface upon which the carton is positioned along two longitudinal lines only, represented by the ribs or score lines 60 and 61.

By means of the construction described, it will be seen that the cross partitions are inserted into the openings in the longitudinal partition, being held against lateral or longitudinal movement by the longitudinal partition adjacent the lower portion of the cross partitions and against substantial longitudinal movement by engagement with the shoulders on the cross partitions.

The auxiliary side wall 50 is positioned in parallel relation with the side wall 16. Tongues 75 formed upon the wall 16 are folded over the auxiliary wall 50 and the points 76 of the tongues are extended under the webs 46, thus detachably interlocking the walls 36 with the side wall 16 and forming the completed box.

The lid 14 is provided with V-shaped recesses 78 and tongues 79, of obtuse angular formation, located adjacent to said recesses 78, which tongues form fastening devices for holding the lid closed upon the box. Said recesses 78 are located in alignment with the transverse walls 36 and permit the tongues 79 to be depressed and extended under the triangular webs 47, as shown in Fig. 2, thus forming a lock for securing the lid in the closed position.

My invention provides a box of rigid construction which may be readily formed from the blank into the completed box and again opened and restored to the flat formation. That is, the carton may be folded from the collapsed condition as shown in Fig. 4 in which the various elements of the blank, such as the bottom and longitudinal partition sections and the cross partitions, are out of assembled relation, into an erect condition as shown in Fig. 1, in which the various elements are in assembled relation. In such assembled or set-up condition the bottom and longitudinal partition-forming sections are in releasably interlocked condition. As stated hereinbefore, the shoulders 55 of the hooks 54 extend over the walls or cross partitions 36 and hold the latter in the grooves 52 formed in the longitudinal partition section 26, thereby providing releasable means operable upon folding or moving the bottom and longitudinal partition-forming sections from collapsed condition into an erect condition, for interlocking and suspending the bottom and longitudinal partition sections to the cross partitions. The bottom and longitudinal partition sections, with the front and rear walls, form the body of the carton, and the releasable interlocking means provide for the erection of the carton from flattened or collapsed position, and also provide a positive means for interlocking the body portion with the cross partition, whereby relative movement of the two is prevented when the carton is erected, as will be seen in Fig. 1, for example. The longitudinal ribs 60 and 61 add strength to the box and also form downwardly inclined walls below the egg compartments located upon the opposite sides of the longitudinal partition 26, which inclined walls form an added protection to insure the eggs against breakage, as said inclined walls hold the eggs in spaced relation above a table or other flat support upon which the ribs 60 and 61 may rest, and my novel form of locking device for the lid may be operated quickly when it is desired to open or close the lid upon the box.

Various changes in the form and construction of the box may be made without departing from my invention.

I claim:—

1. A box comprising longitudinally extending side walls, transverse walls having their opposite ends connected with the upper edges of said side walls forming compartments, longitudinally extending bottom sections integrally connected with the lower edges of the side walls, said sections positioned in angular relation to each other forming ribs of V-shaped cross section, a longitudinally extending partition formed of two sections having integral connection along their lower edges with said bottom sections, said bottom sections converging downwardly from the side walls and from said partition sections forming converging bottom walls below said compartments, said transverse walls having triangular projections formed upon their lower edges and resting upon the inner surface of the inclined bottom sections, and means located upon the top edges of said longitudinal partition sections and said transverse walls for interlocking said longitudinal partition sections with the transverse walls.

2. A box comprising side walls, transverse walls forming partitions between said side walls, triangular webs having integral connection with the top edge of the side walls and with the top edge of the transverse walls, a flat lid having one edge pivotally mounted upon a side wall, said lid adapted to rest upon said transverse walls with its opposite edge portion in parallel relation with said webs, said lid having recesses formed at right angles to the length of the lid adapted to embrace the upper edges of the transverse walls, tongues positioned upon the lid adjacent to said recesses adapted to interlock with said webs.

3. A box formed of a single blank of material and comprising longitudinally extending side walls, a plurality of longitudinally spaced transverse members the opposite upper corners of each of which are respectively integrally joined to one of said side walls and to an auxiliary strip adapted for securement to the other side wall whereby to provide vertically disposed partitions disposed at right angles to the said side walls, bottom sections upon the side walls, a longitudinally extending partition comprising two layers of material folded upon themselves to form an integral connection along the upper edge thereof and having integral connection along their lower edges with said bottom sections, said bottom sections and said partition jointly forming a bottom for said box of substantially W-shaped cross-section, and means for interlocking the longitudinal partition with the transverse partitions.

4. A box comprising longitudinally extending side walls, transverse walls having their opposite ends attached to the upper edges of the side walls to form upstanding partitions, a bottom portion extending between the side walls and positioned below the transverse walls, a longitudinally extending partition formed integrally in said bottom portion and located in spaced relation between the said walls, said partition being of substantially inverted V-shaped cross-section, and means upon the longitudinally extending partition engaging said transverse walls for maintaining the latter in longitudinally spaced parallel relation and at right angles to said side walls, all of the aforesaid parts being formed of one piece of material.

5. In a box of the character defined in claim 4 wherein said means include a plurality of longitudinally spaced notches formed in the upper edge of said partition for respectively receiving said transverse walls.

6. In a box formed of a single blank of material, a side wall, a lid having integral connection with the upper edge of the side wall, a bottom wall having integral connection with the lower edge of said side wall, a second side wall having integral connection with the bottom wall, a series of transversely extending partitions having one end of each thereof integrally connected with said second side wall, an auxiliary side member to which the opposite ends of said transverse partitions are integrally secured, said member being adapted for securement to said first-mentioned side wall, and a longitudinally extending upstanding partition of substantially inverted V shape formed integrally in said bottom wall and adapted to engage said transverse partitions for maintaining the latter in spaced parallel relation.

7. In a box, a side wall, a lid having integral connection with the upper edge of said side wall, a bottom wall having integral connection with the lower edge of said side wall, a second side wall having integral connection with the bottom wall, a series of transversely extending partitions having one end of each thereof connected with said second side wall, an auxiliary side member to which the opposite ends of said transverse partitions are secured, and a tongue upon the first-mentioned side wall embracing said side member, said tongue being provided with an extension adapted to be received between said side wall and one of said transverse partitions for interlocking the first-mentioned side wall with said auxiliary side member.

8. A carton made of a single blank folded and secured to produce a shell having continuous side and bottom walls bent into the form of a W, and transverse partitions shaped to fit into and fill the valleys in the bottom of the carton and secured at their upper ends to the adjacent side walls of the carton.

9. A carton made of a single blank folded and secured to produce a shell having a bottom wall section bent into the form of an inverted V, and transverse partitions shaped to fit into and fill the valleys in the bottom of the carton and secured at their upper ends to the adjacent side walls of the carton.

10. A carton made of a single blank folded and secured to produce a shell having a continuous bottom wall bent into the form of an inverted V, and transverse partitions shaped to fit into and fill the valleys in the bottom of the carton and secured at their upper ends to the adjacent side walls of the carton.

11. A cellular carton made from a blank cut, scored and folded to form front and rear walls, cross partitions hinged to said walls, and an integral bottom and longitudinal partition-forming section inclined upwardly toward the center of the carton and above a flat surface upon which said carton is positioned to form a cushion for eggs carried by said carton, said section being secured in inclined cushion-forming position by engagement with said cross partitions, the aforesaid elements of said carton being integral with each other.

12. A carton, comprising a single blank cut, scored and folded to form front and rear walls, cross partitions connected to said walls, a bottom and longitudinal partition-forming section composed of two inwardly and upwardly inclined portions connected to the lower portion of said

walls, said inclined portions being drawn up above a flat surface upon which said carton is positioned and suspended in such condition by releasable engagement with said cross partitions to form a cushion for eggs carried by said carton.

13. A carton, comprising a blank cut, scored and folded to form front and rear walls, cross partitions hinged to said walls and being rotatable into vertical position with respect thereto, bottom and longitudinal partition sections connected to the lower portion of said walls and being drawn up in the central portion of the carton to form a cushion of substantially inverted V-shape and a longitudinal partition dividing said carton into longitudinal compartments, said longitudinal partition having downwardly extending openings adjacent said cross partitions whereby the latter may be inserted therein, and means for securing said longitudinal partition to said cross partitions.

14. A cellular carton made from a single blank cut, scored and folded to form a cover-locking strip, a cover, a rear wall, an integral bottom and longitudinal partition-forming section inclined upwardly toward the center of the carton and above a flat surface upon which said carton is positioned to form a cushion for eggs carried by said carton, a front wall, cross partitions, hinges joining said cross partitions to the front wall, said hinges being constructed for engagement with said cover-locking strip, and said bottom and longitudinal partition-forming section being secured in inclined cushion-forming position by engagement with said cross partitions.

15. A carton, comprising longitudinally extending spaced side walls, transverse walls forming cross partitions between said side walls, substantially horizontal web portions having integral connection with the top edge of one of said side walls and with the corresponding top edge of said cross partitions, a lid adapted to rest upon said transverse walls with an edge portion in substantially parallel relation with said web portions, said lid having recesses formed in said edge, and embracing the upper edges of the cross partitions beneath said hinged portions to lock said lid in place.

16. A carton made of a single blank cut, scored and folded to form a cover, a rear wall, a bottom, a front wall, cross partitions hinged to the front and rear walls and cut away in their lower central portion, the cut-away portions of the lower portion of said cross partitions appearing on the upper portion of the next adjacent cross partition and forming a brace for said cover.

17. A collapsible cellular carton, comprising a single blank cut, scored and folded to form front and rear walls, bottom sections joined to the lower portion of said walls and extending upwardly and inwardly in cushion-forming shape, longitudinal partition-forming sections having two sets of aligned slots and extending upwardly from the inner edges of said bottom sections, and a plurality of slotted cross partitions adapted to embrace said slotted longitudinal partitions within the slots of said cross partitions, said cross partitions having means for interlocking engagement with the slotted portions of the longitudinal partition-forming sections and being pivotally hinged to said front and rear walls for holding said cross partitions against downward movement and maintaining said bottom sections in cushion-forming shape.

18. A collapsible cellular carton, comprising a single blank cut, scored and folded to form, in the order named, a rear wall, a rear bottom section, a rear longitudinal partition section, a front longitudinal partition section, a front bottom section, a front wall, a plurality of slotted cross partitions hinged to said front wall and being rotatable from horizontal collapsed position into vertical set-up position, an attaching strip hinged to the opposite sides of said cross partitions and being secured to said rear wall, said longitudinal partition sections having two sets of aligned slots and being folded along a line between said slots, and said cross partitions being adapted to embrace the longitudinal partition sections within the slot of the cross partitions and having means for interlocking engagement with the slotted portions of said longitudinal partition sections, whereby said cross partitions are held against downward movement and said bottom sections are maintained in cushion-forming shape.

HENRY LEVINE.