

March 24, 1942.

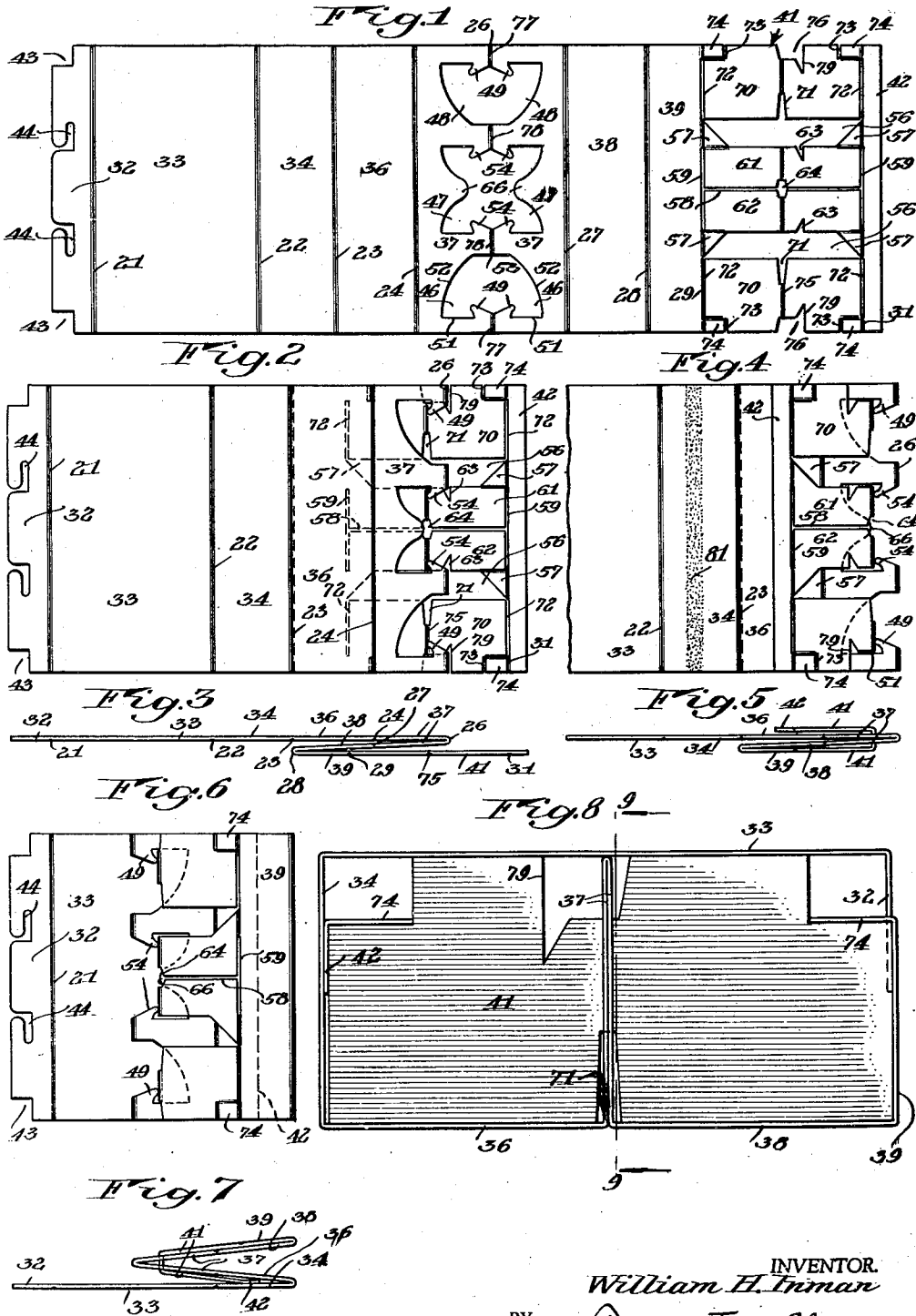
W. H. INMAN

2,277,232

EGG BOX AND THE LIKE

Filed Nov. 23, 1938

2 Sheets-Sheet 1



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Fig. 9

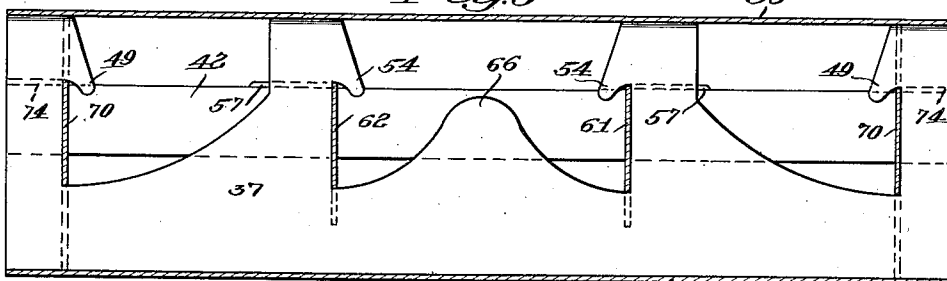


Fig. 11

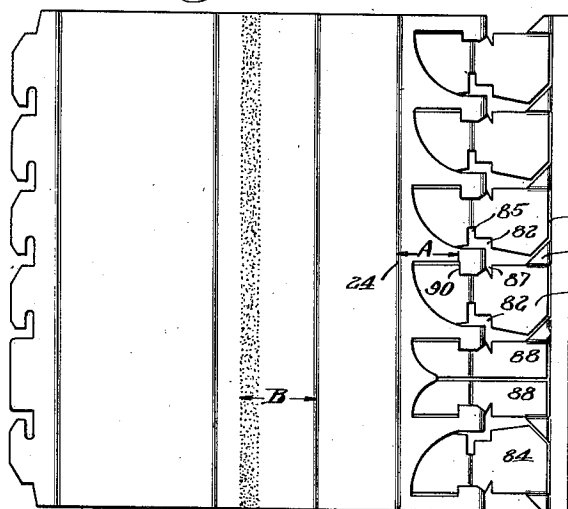


Fig. 10

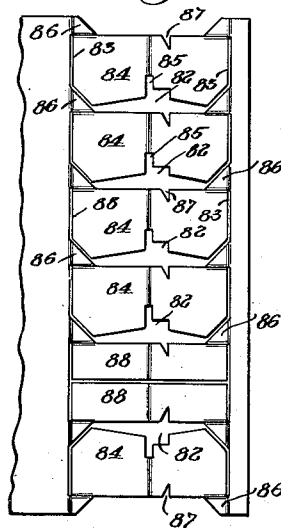


Fig. 13

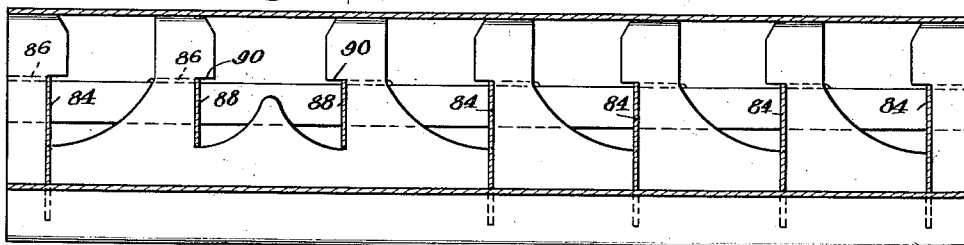
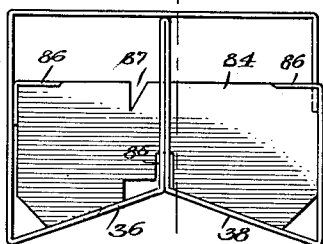


Fig. 15



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UNITED STATES PATENT OFFICE

2,277,232

EGG BOX AND THE LIKE

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Application November 23, 1938, Serial No. 242,015

3 Claims. (Cl. 229—29)

My invention relates to egg boxes or cartons of the multiple cell type, although the invention has other applications for packaging fragile or easily damaged articles, such as tomatoes, peaches, and so forth.

An object of my invention is to provide a collapsible carton or box formed from a minimum amount of sheet material, such as cardboard, and which is adapted to be folded by machine and shipped in flat condition and quickly erected as the eggs or other articles are placed in the box.

Another object of my invention is to provide a box of the cell type which can be shipped flat in a partially assembled condition, and quickly erected by merely opening the box to an extended position and folding down the cross partitions.

A further object of my invention is to provide a cell type box or carton made of a single blank of material which may be pre-assembled at the place of manufacture, entirely by machine folding operations, and shipped to the user in a flat condition and there erected and filled with eggs or other articles with a minimum of effort and delay.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

Fig. 1 is a view of the blank cut and scored preparatory to folding;

Fig. 2 is a view showing the blank in the first stage of the folding operation;

Fig. 3 is a sectional view taken through the blank in the condition shown in Fig. 2;

Fig. 4 is a view of the blank in the second stage of the folding operation;

Fig. 5 is a sectional view showing the blank folded as shown in Fig. 4;

Fig. 6 is a view of the blank in the third stage of the folding operation, in which condition the blank is adapted to be shipped;

Fig. 7 is a sectional view taken through the blank folded as shown in Fig. 6;

Fig. 8 is an end view of the box erected;

Fig. 9 is a view taken on the line 9—9 of Fig. 8 in the direction indicated by the arrows;

Fig. 10 is a view of a portion of the blank of a modified form of my invention showing the manner in which the crosswise partitions of the box are cut;

Fig. 11 is a view showing the blank of Fig. 10

folded into the position occupied by the parts after the first folding operation;

Fig. 12 is an end view of the box of Fig. 10 erected;

Fig. 13 is a view taken on the line 13—13 of Fig. 12.

The same reference numerals throughout the several views indicate the same parts.

The blank from which the cell type box or carton of my invention is made may be of cardboard, pasteboard or any other suitable sheet material. The blank, preferably rectangular in shape, is divided by score lines 21, 22, 23, 24, 26, 27, 28, 29 and 31, the distance between score lines being properly determined in advance. The sections thus defined by the score lines may be termed, a flap section 32, a top section 33, a rear wall section 34, a bottom section 36 forming half of the bottom, two longitudinal partition forming sections 37, a second bottom forming section 38 forming the other half of the bottom of the box, a front wall section 39, a crosswise partition forming section 41 and a flap section 42.

The flap section 32 has its corners cut out as shown at 43 and is provided with two oppositely disposed bayonet slots 44 for a purpose later to be described. In the longitudinal partition forming sections 37 there are formed, centrally located with respect to the fold line 23, matching cut-outs 46, 47 and 48. Extending into each of the cut-outs 46 is a projection 49, which is adapted when the blank is folded along the fold line 23 to form a locking element. The cut-outs 46 have straight sides at 51, sides 52 formed on the arcs of circles, of which the end of the opposite projection 49 is the approximate center, and straight sides 53. The cut-outs 48 are similar to the cut-outs 46 except that they are opposed in direction. The cut-outs 47 are the same in shape both above and below the crosswise center line of the blank and are generally somewhat similar in shape to the cut-outs 46 and 48. The cut-outs 47 are provided with two sets of projections 54, which are oppositely disposed, and which are adapted to form locking elements when the blank is folded along the score line 26.

The crosswise partition forming section is provided with a pair of cut-outs 56 which are oppositely disposed and trapezoidal in shape. There are thus formed four tabs 57, which serve to retain partition parts on the adjacent sections 39 and 42 and upon which the partition parts are hinged. Intermediate the cut-out portions

56, there are provided a crosswise slit 58 and two vertical slits 59, which are cut along the score lines 29 and 31. There are thus provided two partitions 61 and 62, which are capable of being bent downward out of the plane in which they are shown in Fig. 1 about the tabs 57 as hinges. Provided on the crosswise hinge line of each of the partitions 61 and 62 is a triangular shaped cut-out notch 63 for a purpose later to be described. At the center of their meeting edges the partitions 61 and 62 are provided with cut-outs forming a somewhat diamond shaped cut-out 64 for the purpose of receiving the projections 66 of the cut-outs 47 when the blank is folded.

Also formed partly by the cut-outs 56 are two end partitions 70, which are oppositely disposed with respect to each other. Cut out of each of the partitions 70 is a substantially centrally located slot 71, which is adapted to receive the longitudinal partition when the blank is folded. At their side edges, along the fold lines 29 and 31, the partitions are cut, as indicated at 72, so that the partitions may be folded down out of the plane in which they normally lie. In the partitions 70 at their remote edges incisions 73 are provided, which leave small tabs 74 secured to the adjacent sections 39 and 42 upon which the partitions 70 are hinged. Also provided in the remote edges of the partitions 70 are cut-outs 76 having notches 79, the purpose of which is to receive the end bridging parts 77 and locking elements 49 of the longitudinal partition when the blank is folded.

When the blank has been completely stamped out, in the form shown in Fig. 1, it may be folded into the condition shown in Fig. 6, in which condition the blank is flat to enable convenient shipment, but is capable of being quickly erected. In folding the blank, the first step in the operation is the folding of the blank on the fold line 28, following which the longitudinal partition forming section is folded on the fold line 26. In this operation the fold line 23 is brought over into coincidence with the fold line 28. The blank, with these folding operations completed, then has the parts thereof in the relative positions shown in Fig. 2.

With the parts of the blank in the position shown in Fig. 2, the bridging parts 77 are in registry with the cut-outs 76, and the bridging parts 78 are in registry with the cut-outs 56. Further, the locking projections 49 are in registry with the notches 79 formed in the cut-outs 76, and the locking projections 54 are in registry with the notches 63. Further, it will be noted that the projections 66 are in alignment with the diamond shaped cut-out 64. With the parts in this position, the cross-wise partition forming section 41 may be folded on the substantially central fold lines 75 formed in the crosswise partitions 70, 61, 62 and 70, so that the bridging parts 77 and 78, together with the locking projections 49 and 54, may be extended through the openings without bending, folding or otherwise deforming any parts of the bridging portions 77 and 78 or the locking projections 49 and 54. Thus folded with the outer half of the cross-wise partition forming section overlying the longitudinal partition forming section and the bottom sections 36, the relation of parts is that shown in Fig. 4.

Adhesive, if not previously applied, is then applied to the inside surface of the back wall in a strip extending longitudinally of the blank as

shown at 81. The blank may then be folded on the fold line 23 so that the back wall section and the top section underlie the flap 42 and the remainder of the blank. The flap is then adhesively applied to the inside surface of the back wall section. Adhesive is also preferably applied between the sections 37 to retain the sections 37 in the position shown in Fig. 8 when the box is erected. In this condition of the blank, the blank is flat and ready for shipment, as shown in Fig. 6.

When the box is to be conditioned for use, the rear wall is held and the front wall pulled away from it, as suggested in Fig. 7, wherein the blank has been shown in exaggerated condition rather than in flat condition for purposes of better illustration. The crosswise partitions 70, 61, 62 and 70 are then bent down about the tabs, either while placing the articles in the box or prior thereto, until the two bottom sections are in the same plane and the crosswise partitions are perpendicular to the bottom sections. After the articles have been placed in the box, the flap 32 may be bent around the score line 21 until the margins of the bayonet slots 44 are behind the tabs 57. The flap 32 may then be released and it will spring forward so that the margins of the bayonet slots 44 lie beneath the tabs 57.

It will be noted that the two end crosswise partitions are oppositely disposed and are bent down in opposite directions. This, together with the use of central partitions 61 and 62 of the type illustrated, forms four crosswise partitions without the crosswise partition forming section being wider in the longitudinal direction of the box than the remainder of the blank thereby enabling a saving in material.

In Figs. 10-13, inclusive, I have illustrated a somewhat modified form of my invention wherein the parts are proportioned so that when assembled the box has a raised bottom, as shown in Fig. 12, for the purpose of cushioning the eggs or other articles in the box. In this modification, the longitudinal partition forming section is formed in substantially the same manner as shown in Fig. 1. However above the cut-out corresponding to the upper cut-out 48 the material is wide enough to form three additional similar cut-outs to that of the cut-out 48 so as to provide a box having two rows of six cells each.

The crosswise partition forming section of this modification is provided with cut-outs 82 having slots 85 and shaped and positioned as shown. The cut-outs 82, together with incisions 83 along the side edges, form crosswise partitions 84, leaving tabs 86 secured to the adjacent sections and upon which the crosswise partitions are hinged. Notches 87 corresponding to and serving the same function as the notches 79 of Fig. 1 are cut in the crosswise partitions.

Partitions 88 are also provided similar to the partitions 61 and 62 of Fig. 1, and are used in this modification for the same purpose as in the preferred form of the invention, namely of changing the direction in which the end cross-wise partition is folded down so as to enable a saving of material.

The blank of this modification is folded for shipment, glued and erected in the same manner as described above in connection with the preferred form of the invention. The essential difference in this modification, from that previously described, is that the height of the locking edge 90 of the locking elements above the hinge line 24, the dimension A (Fig. 11), is less than

the height of the front wall or the dimension B of the back wall, so that when the box is assembled the bottom sections 36 and 38 extend at an angle to each other and are raised above a single plane so as to provide, as shown in Fig. 12, a cushioned bottom for the box.

While I have described the preferred forms of my invention, it will be appreciated that various changes and modifications may be made particularly in the form and relation of parts without departing from the spirit of my invention as set forth in the appended claims.

I claim:

1. A cell type box formed from a single blank of material comprising a top section, a front wall section, a pair of bottom sections, a pair of longitudinal partition forming sections separated by a fold line, said longitudinal partition forming sections lying between the bottom sections and having cut-outs and longitudinally projecting locking portions extending into said cut-outs, a rear wall section, a crosswise partition forming section, and means in connection with said crosswise partition forming section, after the blank has been folded on the fold line between said longitudinal partition forming section and on the fold line between said rear wall and the adjacent bottom section, enabling said locking portions to be extended through parts of the crosswise partition forming section without folding or bending any additional portion of the longitudinal partition forming section, said means including longitudinally extending fold lines in said crosswise partition forming section and cut-out notches spaced transversely from said last-mentioned fold lines.

2. A cell type box formed from a single blank of material comprising a top section, a front wall section, a pair of bottom sections, a pair of longitudinal partition forming sections separated by a fold line, a rear wall section, a crosswise partition section and a flap section, said sections being separated by fold lines, said longitudinal partition forming section having a plurality of sets of matched cut-outs with portions of the blank between the cut-outs and adjacent the fold lines between the sections constituting projecting locking elements, said crosswise partition section having crosswise cut-out portions, and longitudinally extending incisions on each side

thereof separating the crosswise partition section into a plurality of crosswise partitions which may be bent downward out of their normal plane when the box is set up for use, tabs by which the crosswise partitions are retained attached to adjacent sections and upon which the crosswise sections are hinged, said crosswise partitions each having a longitudinally extending fold line, a slot adapted to receive the longitudinal partition and a notch for the reception of said projecting locking elements, said box structure being pre-assembled for shipment by folding the longitudinal partition forming sections on the fold line between them, then folding the blank on the fold line between the front wall section and one of the bottom sections, then inserting the locking elements into the crosswise cut-out portions and said notches and bending the crosswise partitions on their fold lines until part of the crosswise partitions overlie the longitudinal partition, said folding operation being accomplished by machine and without bending any portion of the locking elements, then folding the blank on the fold line between the rear wall section and the adjacent bottom section to bring the rear wall section into position to be adhesively secured to the flap section, the blank then being in a flat condition for shipment, the blank being erected for use merely by spreading out the base sections with respect to each other and bending down the crosswise partitions into locking engagement with the locking elements of the longitudinal partition.

3. A cell type box formed from a single blank of material cut, scored and folded to form a box comprising a longitudinal partition having two back to back sections separated by a fold line, transverse partitions so constructed and arranged as to be swung into straddling relation with the longitudinal partition, said longitudinal partition having cut-outs extending from said fold line toward the bottom of the longitudinal section adapted to receive the crosswise partitions, said longitudinal partition also having adjacent said fold line locking parts which have undercut locking edges, each of said transverse partitions having a central fold line and a cut-out transversely spaced from said fold line for the reception of said locking parts.

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