

Oct. 2, 1962

R. F. REIFERS ET AL
PACKAGING

3,056,494

Filed March 31, 1959

5 Sheets-Sheet 1

FIG. 1.

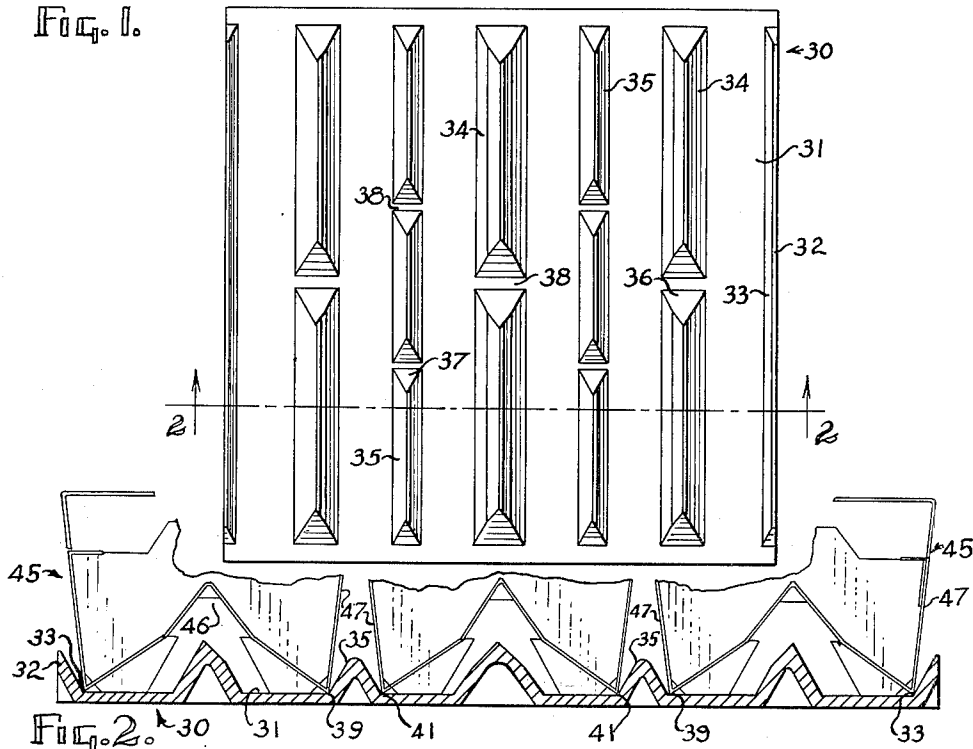


FIG. 2.

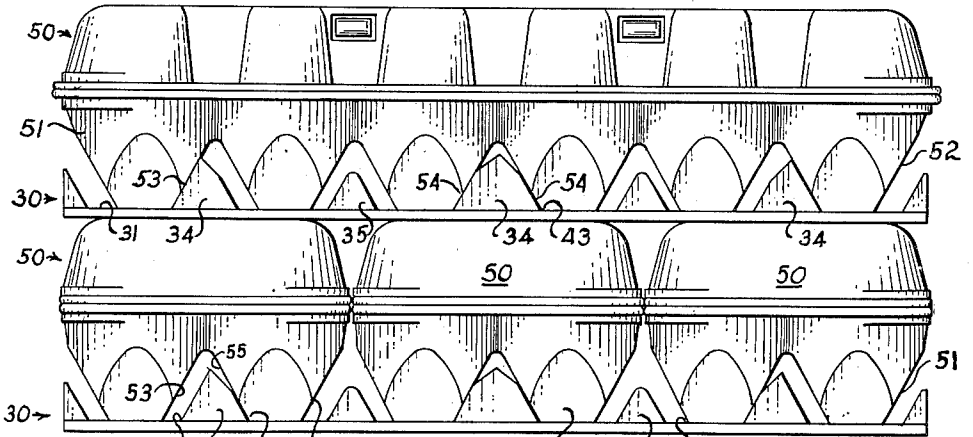
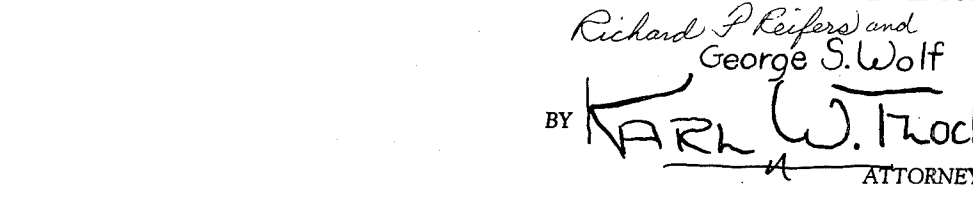


FIG. 3.



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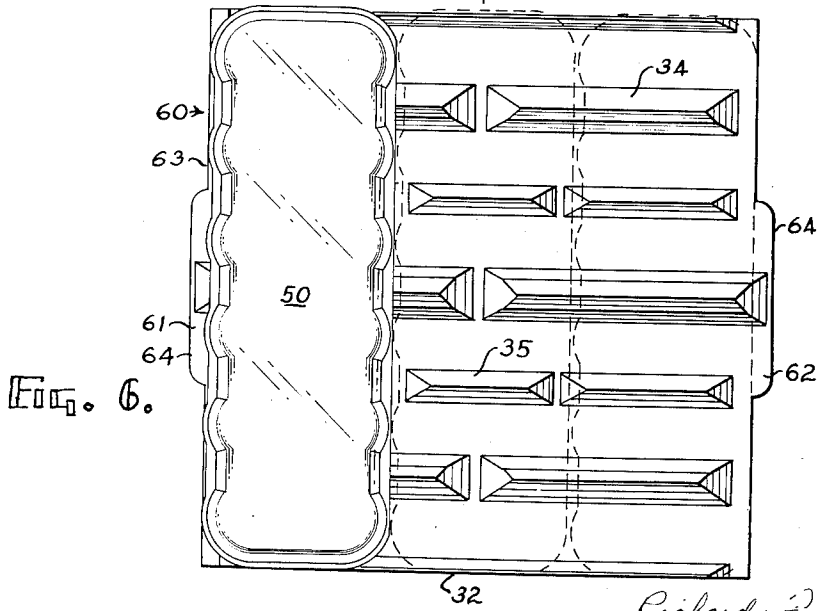
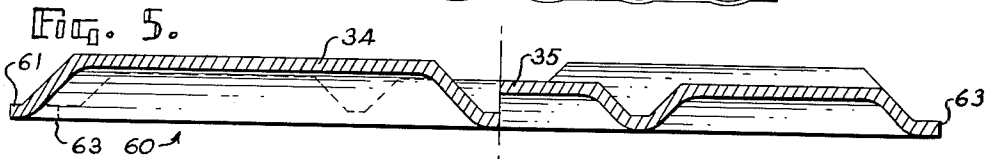
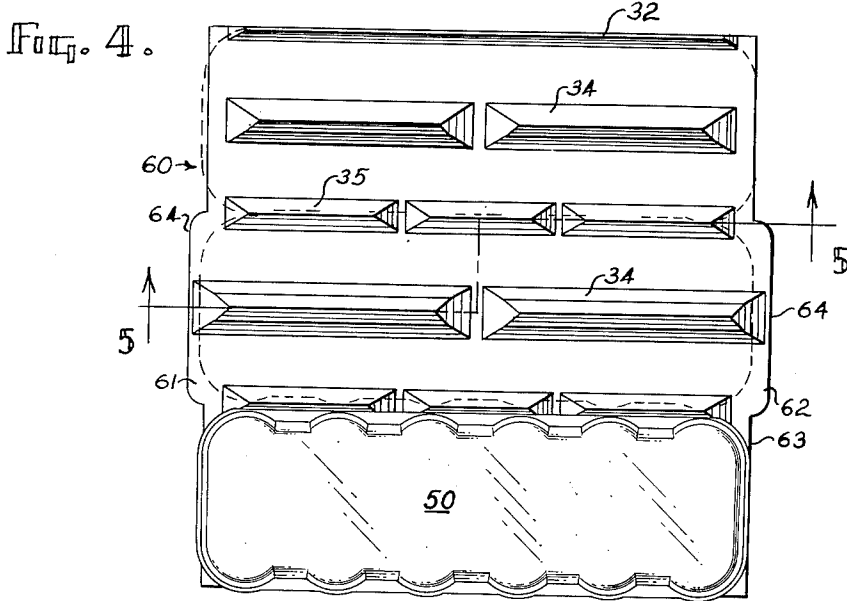
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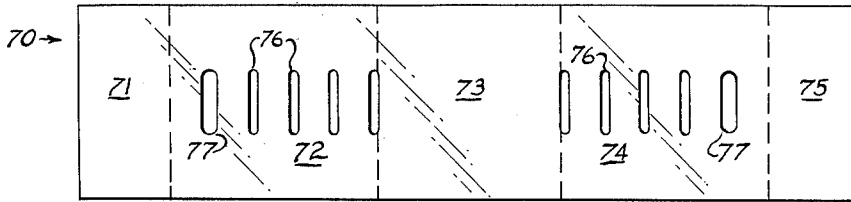


FIG. 7.

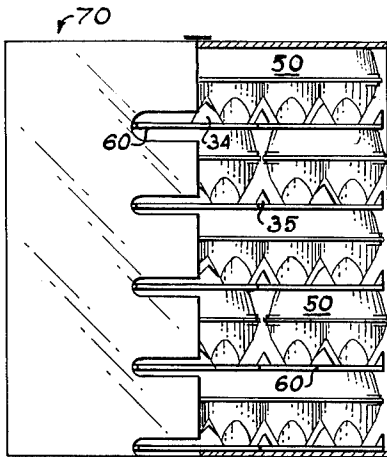


FIG. 8.

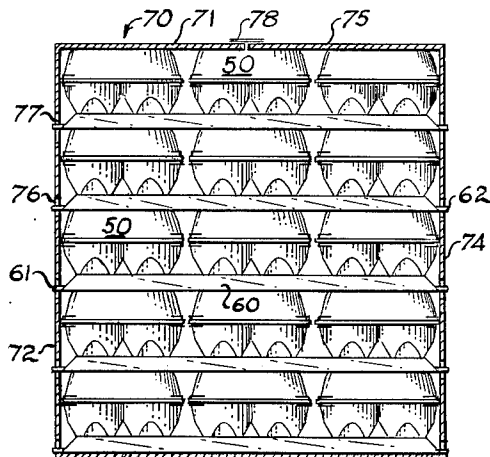


FIG. 9.

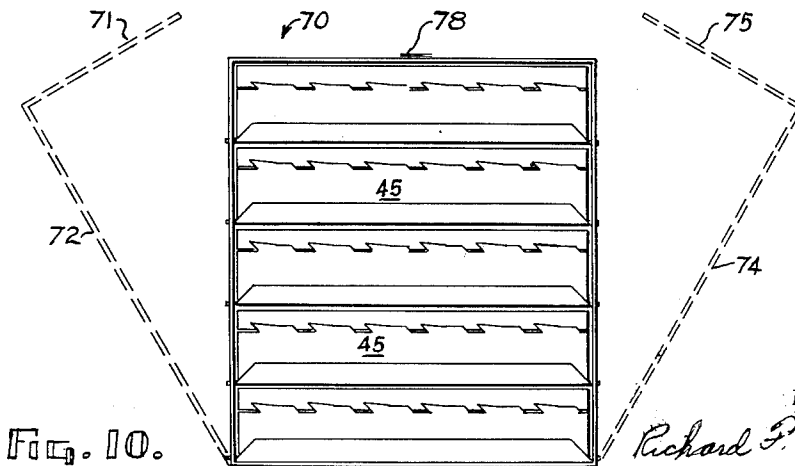


FIG. 10.

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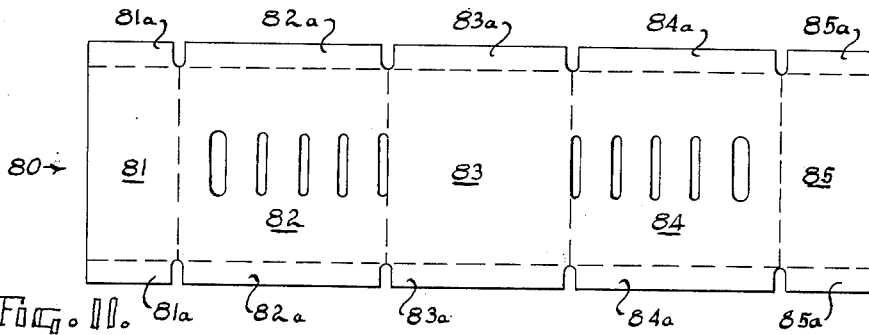


FIG. 11.

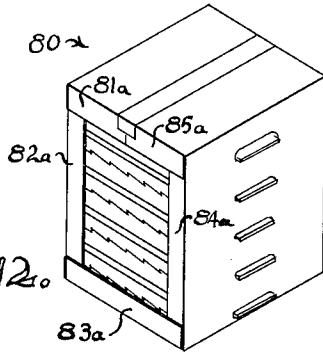


FIG. 12.

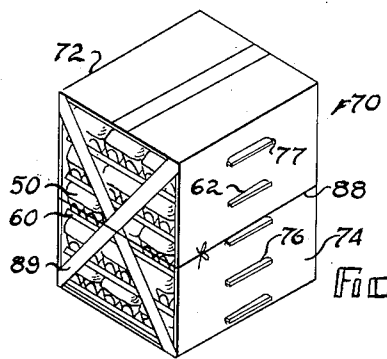


FIG. 13.

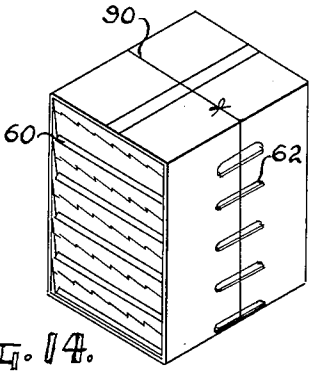


FIG. 14.

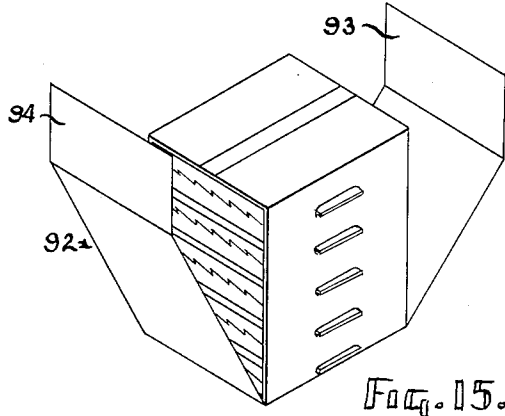


FIG. 15.

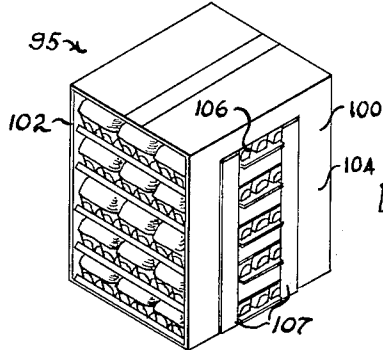


FIG. 16.

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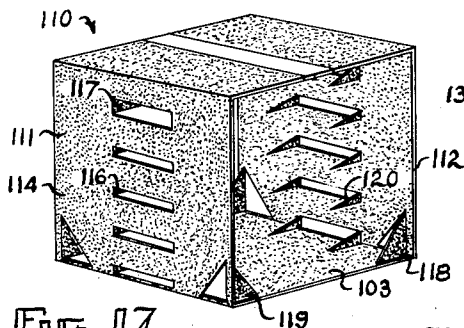


FIG. 17.

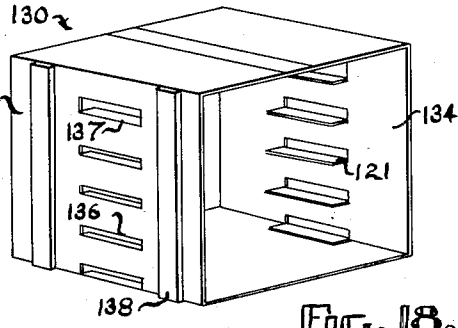


FIG. 18.

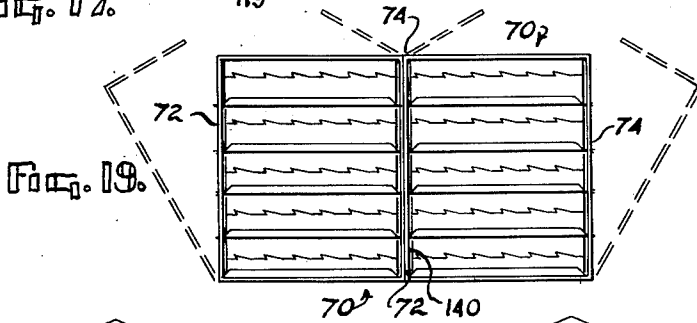


FIG. 19.

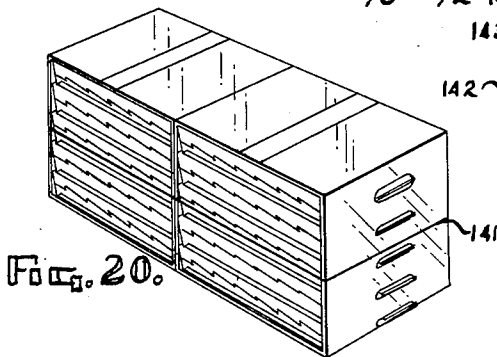


FIG. 20.

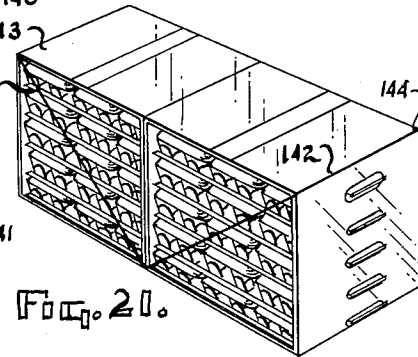


FIG. 21.

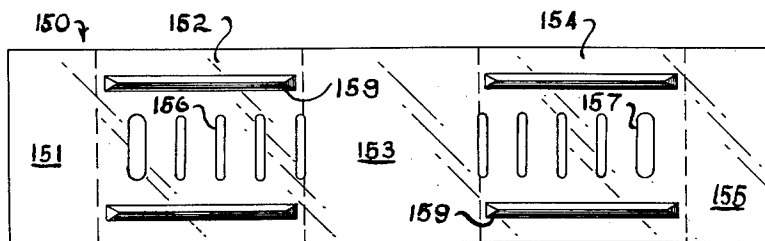


FIG. 22.

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 Filed Mar. 31, 1959, Ser. No. 803,127
 31 Claims. (Cl. 206-65)

The present invention relates to egg packaging, and more particularly to improved separators to be used in an egg case to hold cartons of eggs, and to improved and economical egg cases.

The advent of the practice of shipping eggs in cases holding fifteen or thirty dozen eggs, and in which the eggs are packed in cartons holding one dozen eggs each is set forth and explained in Patent No. 2,739,753 issued to George S. Wolf on March 27, 1956. In said patent there is disclosed an egg case separator that is used to support and restrain paperboard egg cartons characterized by an inverted V bottom. This separator has met with signal success and is widely used at the present time in the manner disclosed in said patent. In general, the egg case separator disclosed in said patent is rectangular and has transversely extending cleats that engage with parts of the paperboard egg cartons to restrain movement thereof, these cleats also providing additional strength to the separator.

Subsequent to the introduction of the aforesaid egg separator, there has arisen a demand for an egg separator that may conveniently be used with either the paperboard egg cartons above referred to or molded pulp egg cartons having two rows of six egg receiving cells each, each of the cells presenting an individual foot upon which the carton rests. Further, it is desirable that for added strength of the total package, comprising the molded pulp egg cartons, the egg separators and the egg case, that the cartons in one layer be placed at right angles to the cartons in the adjoining layers. Such an arrangement of the cartons would insure better egg protection and better appearance to the cartons, particularly after long shipments and relatively rough handling.

Conventional egg cases in use at the present time are made of corrugated paperboard, are of a generally standard size to hold thirty dozen eggs, and generally provide a top, a bottom, two end walls and two side walls, all integrally joined and set up in a known manner. It has been found that such egg cases are unduly expensive in that they use a relatively large amount of corrugated board.

It is an object of the present invention to provide an egg case separator which will receive both paperboard type egg cartons and molded pulp egg cartons.

It is another object of the present invention to provide an egg case separator that will receive molded pulp egg cartons thereon in either of two directions, and will restrain such egg cartons against movement.

Another object of the present invention is the provision of an egg case separator that will interlock with an egg case.

A still further object of the present invention is to provide an egg case separator that will interlock with an egg case and will be relatively strong at the place where it interlocks.

Another object of the present invention is to provide an egg case that is highly economical.

A still further object of the present invention is the provision of an egg case that is sufficiently strong to protect eggs therein, and is more economical than previous egg cases.

A still further object of the present invention is the provision of an egg case and egg flat that interengage with

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each other, and that are both economical and of great strength.

A still further object of the present invention is the provision of an economical egg case having easily applied and economical adjuncts to strengthen the same and maintain the egg case against deformity.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a plan view of an egg case separator in accordance with the present invention;

FIG. 2 is a cross sectional view taken on the line 2-2 of FIG. 1, and showing paperboard egg cartons positioned on the egg separator thereof;

FIG. 3 shows egg separators in accordance with FIG. 1, and having molded pulp egg cartons arranged thereon;

FIG. 4 is a plan view of another egg separator in accordance with the present invention;

FIG. 5 is a cross sectional view taken on the line 5-5 of FIG. 4;

FIG. 6 is a view similar to FIG. 4, and showing molded pulp egg cartons arranged thereon at right angles to the cartons of FIG. 4;

FIG. 7 is a plan view of a blank for an egg case in accordance with the present invention;

FIG. 8 is a partially sectional side elevational view of an egg case made from the blank of FIG. 7, and having egg separators and egg cartons therein;

FIG. 9 is a side view of an egg case made from the blank of FIG. 7, with separators therein and molded pulp egg cartons that extend parallel to each other;

FIG. 10 is a side view of an egg case made from the blank of FIG. 7, together with egg separators and paperboard egg cartons therein;

FIG. 11 is a plan view of another blank for an egg case in accordance with the present invention;

FIG. 12 is a perspective view of an egg case, with cartons and separators, made from the blank of FIG. 11;

FIG. 13 is a perspective view of the filled egg case of FIG. 9, and showing a securing member thereon;

FIG. 14 is a perspective view of the filled egg case of FIG. 10, and showing a securing string therearound;

FIG. 15 is a perspective view of the filled egg case of FIG. 10, and showing a paper over-wrap partially applied thereto.

FIG. 16 is a perspective view of a filled egg case made from a modified blank;

FIG. 17 is a perspective view of another embodiment of the egg case of the present invention;

FIG. 18 is a perspective view of still another embodiment of the egg case of the present invention;

FIG. 19 is a side view showing an egg case of thirty dozen capacity;

FIG. 20 is a perspective view of a thirty dozen egg case having a securing string therearound;

FIG. 21 is a perspective view of a thirty dozen egg case and showing a diagonal securing and strengthening string applied thereto;

FIG. 22 is a plan view of a blank of another egg case in accordance with the present invention.

Turning now to the drawings, wherein like reference characters are used to designate like or corresponding parts throughout the several views, there is shown in FIG. 1 a separator 30 that is a unitary and integral, specially shaped sheet having a roughly tray-like outline. This sheet or separator 30 is molded by conventional processes from a watery slurry of paper pulp, and has a flat horizontal floor 31 terminating at its opposed side margins in upturned side restraining flanges or ribs 32. These flanges, though otherwise unbraced, are substantially stiffened by the molding of the angle 33 at which

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they join floor 31. Inwardly of the opposed side flanges 32, separator 30 is shaped to provide alternate rows of individually elongated and upwardly tapered carton engaging and bracing elements, abutments or cleats 34, 35 respectively. These are of inverted V-shaped or triangular outline in transverse cross section, the cleats 34 being substantially larger in this plane than the cleats 35, as may be seen from FIG. 2. Each of the cleats 34, 35 merges integrally with alternate zones of the separator floor 31 and are spaced from one another in the transverse direction.

There are two of the larger sized cleats 34 provided in each row thereof, and these cleats 34 are arranged in longitudinally spaced, end to end alignment. There are three of the smaller sized cleats 35 in each alternating row, and these are also arranged in longitudinally spaced, end to end alignment. While the number of the individual cleats 34, 35 may be varied, it is desirable to space the larger cleats 34 immediately of the length of separator 30.

The ends of the cleats 34 and 35 are truncated, as at 36 and 37, respectively, and the adjacent ends of cleats in a row are separated from one another as at 38. The parts 38 of the floor 31 provide connecting drain passages between the cleats, thus to permit egg meat to flow readily through the saddle thus provided. The cleats 34 and 35 of the separator 30 substantially rigidify the separator, but without reducing its cushioning action. Individually, of course, the cleats 34 and 35 are relatively inflexible and substantially more rigid than the sheet in which they are formed, considered as a whole.

One of the types of carton that separator 30 is particularly adapted to receive and anchor is constructed in general accordance with the teaching of the patent to Troyk Re. 18,922 of August 22, 1933. Such cartons, three of which may be seen, with parts broken away, in FIG. 2 are characterized by a bottom having a longitudinally extending central recess 46. Recess 46 of each of the paperboard cartons 45 is of inverted V-shaped cross section, and the cartons 45 are further characterized by downwardly tapering side walls 47. The bottoms of the side walls 47, where they join the bottom forming the inverted V of the cartons 45 are uniformly spaced from each other, from one carton to another carton, this being due to the fact that the cartons are made with a certain amount of precision. Referring to the left hand carton 45, it may be seen that it is anchored on the underlying separator 30 against movement in the transverse direction by the engagement of one side wall 47 in the juncture 33 between flange 32 and the bottom face or floor 31 of the separator 30. The other (right hand) side wall 47 of the carton 45 is similarly received in and anchored by the juncture 39 of cleat 35 and separator bottom face 31. The second or middle carton 45 is anchored by engagement of the bottoms of the walls thereof with the junctures 41 of the two inwardly facing surfaces of the cleats 35. The third carton 45 is restrained and anchored by junctures 33 and 39 in the same manner as the first carton 45. Thus, it will be seen that the spacing between the juncture 33 and the closest juncture 39, the spacing between the two junctures 41 and the spacing between the bottoms of the walls 47 of the cartons 45 are substantially equal and that cartons 45 of the paperboard type, characterized as above noted, are positively restrained against lateral movement when placed on the separator 30.

In FIG. 3, there is illustrated the accommodation of molded pulp egg cartons, constructed in general accordance with the teaching of the patent to Cox No. 2,771,233 of November 20, 1956, by the separator 30. There are two such separators 30 shown in FIG. 3, and it will be seen that there is a first layer of such molded pulp egg cartons 50 positioned on the bottom separator 30, that a second separator 30 rests upon the tops of the cartons 50 and that one (or more) of the cartons 50 rests on the

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second separator 30. It is seen that the upper of the cartons 50 has the longitudinal axis thereof lying in generally perpendicular relationship to the longitudinal axis of the lower cartons 50 in FIG. 3.

The cartons 50 have two rows of six egg receiving cells 51, and each of the cells 51 has four downwardly tapering walls 52. These walls are inclined, in the carton of the above referred to patent to Cox at an angle of approximately 28° to the vertical. In producing the separator 30, the surfaces of the cleats 34 have an angle of 118° with the separator bottom face 31 from which they rise, and thus may be seen to have substantially the same slope as the walls 52 of the cells 51 of the cartons 50. In addition, the outwardly facing surfaces of the two end cleats 34 have the junctures 42 thereof with the separator bottom face 31 spaced apart a distance substantially equal to the distance between the bottoms of the longitudinally inwardly facing walls 53 of the end cells 51 of the carton 50. Consequently, as shown in the upper part of FIG. 3, the walls 53 have substantial face abutting engagement with the outwardly facing surfaces of the two end cleats 34. In addition, the outwardly facing surfaces of the middle cleat 34 has the junctures 43 thereof with the separator bottom face 31 spaced apart a distance substantially equal to the distance between the bottoms of the longitudinally adjacent walls 54 of the two middle cells 51 of the carton 50. Consequently, the walls 54 are in substantially face abutting relationship with the surfaces of the middle cleat 34 and the four abutting and facing walls and surfaces of the separator 30 and the carton 50 serve to substantially anchor the carton 50 against movement to the left and right, as viewed in FIG. 3.

Referring now to the lower of the separators 30 in FIG. 3, and to the cartons 50 thereon, it will be seen that the inwardly facing surfaces of the end cleats 34 have the junctures 44 thereof with the separator bottom face 31 spaced apart a distance that is substantially equal to the maximum width of the carton 50 plus twice the horizontal distance between the outermost side of the carton 50 and the bottom of a cell wall 55, which latter faces away from said side of the carton 50. This relationship provides for the anchoring of the left carton 50 of the bottom layer shown in FIG. 3 against movement towards the left, due to face abutting contact of a surface of left hand cleat 34 and the successive side walls 55 of the various cells 51 along the length of the carton 50. In similar fashion, the right hand carton on the bottom layer is anchored against movement towards the right.

The middle carton of the lower layer has the walls 55 in face abutting relationship with the surfaces of the middle cleat 34, and thus the middle carton 50 is anchored and restrained against movement to both the left and the right. The several cartons 50 abut against each other at their maximum girths, as shown, and this serves to restrain the end two cartons 50 from moving towards each other.

The separator 30 may be seen to have all of the advantages possessed by the separator of the aforementioned patent to Wolf No. 2,739,753, and in addition thereto and to the advantage thereof of anchoring paperboard cartons of the inverted V bottom type, the separator 30 of the present invention provides for the anchoring of molded pulp egg cartons 50, and such cartons 50 may be placed thereon either in alignment with the cleats 34 or transversely thereof.

The separator shown in FIGS. 4, 5 and 6 is designated 60, and has cleats 34 and 35 thereon in the same relative position as the cleats 34 and 35 on the separator 30. Also, the cleats 34 and 35, the plural ones of which in a single row may be considered as a single cleat, have the same slopes to the faces thereof as do cleats 34 and 35 of the separator 30. The separator 60 is particularly characterized by a pair of ears 61, 62 that project from the mid parts of opposite margins thereof. These

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margins, which may be designated 63, extend perpendicularly to the flanges 32, and the outer free margins 64 of the ears 61 and 62 are generally parallel to the margins 63 of separator 60.

It will be observed in FIG. 4 that the middle cleat or cleats 34 extend into the ears 61 and 62, and thus serve to buttress and strengthen the ears 61 and 62 against bending and deformation. There may also be seen in FIG. 4 a carton 50 on the separator 60, this carton being arranged with the longitudinal axis thereof parallel to the cleats 34 and 35, and there may also be seen the positions the carton 50 would occupy if placed astraddle the other two of the cleats 34, these positions being shown in dashed lines.

FIG. 5 shows a cross sectional view of the separator 60, and it is particularly noted that the ear 61 is shown extending a relatively great distance outwardly of the margin 63 at the left hand side of this figure.

FIG. 6 is a view similar to FIG. 4, but showing a carton 50 arranged on the separator 60 so that the longitudinal axis thereof extends transversely of the cleats 34 and 35. In the dotted line positions of the carton 50, the abutting relationship of the sides thereof may be clearly seen.

The separator 60 has, as has been noted, all of the advantages of the separator 30, and in addition is particularly adapted to cooperate with any one of the egg cases that also form a part of the present invention.

Referring now to FIG. 7, there may be seen a blank for an egg case of the present invention, this blank being generally designated 70 and being made, preferably, of corrugated board. Other materials usable are wood, aluminum, steel, pressed board, hard board and plastic. Blank 70 is generally rectangular and comprises, in order, a top panel 71, a side panel 72, a bottom panel 73, a second side panel 74 and a second top panel 75. These panels are arranged in a longitudinal row, and are separated by score lines, as shown. The top panels 71 and 75 have a combined length along the longitudinal axis of the blank equal to the length of the bottom panel 73. The side panels 72 and 74 are of equal size and shape and each has a plurality of apertures or openings 76, 77 therein. One opening in each of the panels 72 and 74 is placed adjacent the score that separates that side panel from the bottom panel 73, and these openings 76, 77 extend in a series toward the score separating each of the side panels 72, 74 from the adjacent top panel 71, 75 respectively.

The openings for apertures 76, 77 are intermediate the sides of the panels in which they occur, and each is a generally elongate opening having a major axis that is parallel to the aforementioned score lines. The ends of the openings or apertures 76, 77 are generally rounded and the openings 77, which are closest to the adjacent top panels, have a minor axis that is larger than the minor axes of the openings 76, the minor axes of the openings 76 all being substantially equal. The edges of the various panels of the blank 70 that are at right angles to the score lines are all free edges.

In use, a separator 60 is placed upon the bottom panel 73 of the blank 70 with the ears 61 and 62 thereof overlying the innermost apertures 76 of the side panels 72 and 74. Three egg cartons of either of the types specified above are then placed upon the separator 60, and a second separator 60 is placed on top of the first layer of three egg cartons. Successive layers of separators and cartons are placed one on top of the other in similar manner until there are five such layers. Then the side walls 72 and 74 are folded up along the score lines that divide them from the bottom panel 73, the ears 61 and 62 of the separator 60 at this time entering into the apertures 76 and 77 and frictionally engaging therein. The top panels 71 and 75 may then be folded on their score line and suitable tape, having an adhesive applied to one surface thereof, may then be placed across the seam

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formed by the abutting edges of the top panels 71 and 75 to hold the entire egg case assembled. Such an assembled egg case, utilizing the blank 70, is shown in FIG. 8, attention being invited to the five separators 60 therein and to the five layers of cartons 50. The cleats 34 and 35 of the separators 60 are all parallel to each other and the longitudinal axes of the cartons 50 in the first, third and fifth layers are parallel to the cleats 34 and 35; the longitudinal axes of the cartons 50 in the second and fourth layers are transverse to the longitudinal axes of the cartons in the adjacent layers and to the cleats 34 and 35.

In FIG. 9, there may be seen the blank 70 when erected to form an egg case, the view being taken from an open side of the egg case thus formed. The cartons 50 in the FIG. 9 showing each has the longitudinal axis thereof parallel to the longitudinal axis of each other carton in the egg case. The ears 61 and 62 of the separators 60 may be seen extending through the apertures 76 and 77 in the side panels 72 and 74. There may also be seen the abutting relationship of the free ends of the top panels 71 and 75 and the tape 78 applied to the seam thus formed to thereby secure the blank 70 in assembled and erected relationship.

In FIG. 10, there may be seen a blank 70 erected into an egg case, the case thus formed being open sided as in FIG. 9 and being filled with cartons 45 of the paper-board type. By the dashed line positions of the side panels 72 and 74 and the top panels 71 and 75, there is demonstrated the position that these parts take during disassembly of the egg case formed by the blank 70 (and also re-assembly thereof). As will be understood, the stack of separators and egg cartons is first formed and then the egg case is assembled around the stack and when it is desired to remove the cartons from the egg case it is only necessary to sever the tape 78, as with a knife, to thereby permit the top panels and side panels to fall away, leaving the cartons and separators in the same stacked array.

The blank 70 will form an egg case, as has been described, that will hold fifteen one-dozen cartons of eggs. This is the standard packaging arrangement in the industry, and has been so for many years. A blank 70 may be made from corrugated medium and will have a size of 49 inches in length by 12 inches in width. This is one half of the size of the blank for the carton now used to package fifteen one-dozen egg cartons. Hence, the egg case erected from the blank 70 may be seen to be extremely economical of the board medium of which it is made. In addition, because of the open sides of the egg case made from the blank 70, extremely good ventilation is provided, thereby permitting quick cooling of eggs in processing. The egg case made from the blank 70 is extremely easy to handle, especially to unload at the retail store, particularly because of the size and shape thereof and the provision of the openings or apertures 77 which permit the fingers of a person to be inserted therein to pick up the filled egg case.

In FIG. 11, there is shown a blank 80 that is generally similar to the blank 70 of FIG. 7; however, it will be observed that each of the panels 81 to 85, which correspond to the panels 71 to 75 has at either side thereof a flap that is designated by the number of the panel to which it is joined plus the letter *a*. The flaps 81*a*, 82*a* . . . are separated from each other and are relatively narrow, so as not to unduly consume the material of which the blank 80 is made. In practice, each of the flaps has a width extending transversely of the fold line joining the flap to the panel that is in the order of one or two inches, and in any event the width of the flaps will be less than one half the length of the panel to which it is connected, as measured between successive score lines.

When the blank 80 is erected to form an egg case, as is shown in FIG. 12, the flaps will be folded so as to

extend at right angles from the panels to which they are connected and will partially close the open sides of the egg case thus formed.

In FIG. 13, there is shown an egg case that is generally similar to the egg case of FIG. 9, and there may be seen therein the blank 70 erected to form an egg case around a stack of cartons 50 and separators 60. In FIG. 13 the egg case has been made more secure by means of a string 88 encircling said case about the girth thereof and lying at about the level of the third or middle separator 60. This string 88 serves to prevent the side panels 72 and 74 from bulging outwardly and thus insures that the ears 61 and 62 of the separators 60 will remain in the position in which they extend through the openings or apertures 76, 77 of said sides 72 and 74. Additionally or alternatively, the egg case may have diagonally extending strips of tape 89 applied across the open ends thereof. The diagonal strips 89 will serve to keep the side walls of the egg case from leaning, and thus will improve the strength and appearance of the egg case and the condition of the cartons therein.

In FIG. 14 there is shown a filled egg case similar to the egg case of FIG. 10, and there is additionally applied thereto a string 90 that encircles the case in a generally vertical plane, which plane is perpendicular to the separators 60 therein. String 90 preferably engages the ears 61 and 62 of the separators 60 to further hold them against shifting.

In FIG. 15, there may be seen an egg case similar to that of FIG. 10 and having an over-wrap of paper applied, as a girdle, so as to encircle the case and close the open sides thereof. The over-wrap 92 may have the end panels 93 and 94 thereof placed in abutting or overwrapping relationship and secured by gummed tape. Preferably, the over-wrap 92 is a single sheet of paper of a fairly heavy grade. The embodiment shown in FIG. 15 is particularly desirable where dust is liable to enter into the open ends of the egg case thereof and thus settle on and make unattractive the egg cartons therein.

In FIG. 16 there may be seen an egg case 95 that is made from a blank 100 that is generally similar to the blank 70, but is provided with opposite side walls 102 and 104 that have a single elongate opening 106 therein. The material removed to form the openings 106 may be folded back in the form of flaps 107 which are stapled to the underlying parts of the side panels 102 and 104 to thus form a double thickness of material adjacent the openings 106. The side panels 102 and 104 of the egg case 95 are thus strengthened and more easily resist outward bowing thereof.

To provide adequate strength for the paper material of which an egg case in accordance with the present invention is made, the paper material may be impregnated with a suitable material to provide added stiffness thereto, and such material is indicated by the stippling 111 shown on the egg case 110 in FIG. 17. Alternatively, or in addition thereto, the egg case 110 may have one or more tabs 118 partially severed from the corners of side walls 112, 114. These tabs 118 are integrally joined to the side walls from which they are partially severed along vertical fold lines and are caused to extend outwardly from their respective walls as shown. The tabs 118 each have a horizontal bottom edge 119 that is in substantially engaging relationship with the bottom panel 103. Thus, the two tabs 118 in the near sides of the side walls 112 and 114 serve to buttress these side walls from pivoting inwardly towards a superposed relationship with the bottom panel 103. It will be understood, of course, that the tabs 118 may be provided in the upper parts of the side walls 112 and 114, to thereby engage with the underside of the top panels of the egg case 110.

It will be observed that the fold lines for the tabs 118 are spaced inwardly from the free side edges of the side walls 112, 114 and thus these free vertical side edges ex-

tend continuously from top to bottom of the egg case 110. Hence, the strength of the egg case 110 is substantially maintained.

To further aid in supporting separators 60 to be placed in the egg case 110, apertures 116, 117 may be so provided that there remains foldably connected to the lateral margins thereof inwardly directed tabs 120. As may be seen particularly with reference to the side wall panel 114, the tabs 120 are integrally joined to the side wall panel 114 along vertical fold lines that define the side margins of the apertures 116, 117. These tabs 120 thus provide additional support for the separators 60.

In FIG. 18 there is shown an alternate arrangement of tabs 121 which are partially severed from the side walls 132, 134 of the egg case 130. The tabs 121 are integrally joined to the side walls from which they are struck along horizontal fold lines that define the bottom margins of the apertures 136, 137 therein.

In some instances it may be desirable to strengthen the side walls of an egg case made in accordance with the present invention to an even greater extent, and in such event there are provided, as shown in FIG. 18, elongate structural elements 138 which may conveniently be wooden boards. The elements or boards 138 extend in a generally vertical direction, are secured to the side walls 132 and 134 by known means, and are placed on either side of the apertures 136, 137.

Any one of the blanks herein described may serve as a modular unit for the erection of an egg case for holding thirty one-dozen egg cartons, and such a construction is shown in FIG. 19, wherein there may be seen two of the blanks 70, for example, having side panels 74, 72 thereof in face abutting relationship, secured together as by staples 140. Thus, it may be seen that any of the blanks of the present invention are completely adaptable to being used in the general manner of egg cartons presently used, so as to pack thirty one-dozen egg cartons. In order to provide additional strength for the carton shown in FIG. 19, a suitable securing device such as a string 141 (FIG. 20) may be provided to encircle said composite carton about the girth thereof, and the string 141 is preferably spaced midway up the walls of the carton. To provide security to the composite carton against shifting of the walls thereof, a string 142 (FIG. 21) may be placed so as to extend diagonally from an outer corner 143 across the open face of one half of the composite carton down to the bottom thereof, at the midpoint of said bottom. The string 142 may then be similarly brought up to the other outer corner 144 of the composite case to thus secure the case against swaying of the end walls thereof. The springs 141 and 142 may be used alternatively or together and thus will provide superior strength to the composite carton.

A still further embodiment of the present invention is shown in FIG. 22, wherein there may be seen a blank 150 that is made of molded pulp, and is generally similar to the blank 70. However, to provide additional strength to the molded pulp blank 150, the side wall panels 152 and 154 are provided with ribs 159 on either side of the openings 156, 157. These ribs 159 extend from adjacent the score line with the bottom panel 153 to adjacent the respective score lines with the top panels 151 and 155. The ribs 159 may be in the same general shape as the cleats 34, 35 of the separator 60.

The egg case provided by the present invention is highly economical, and offers great advantages in their ability to be readily manufactured and shipped in knock-down condition. The egg case may be readily erected around a stack of separators and cartons and may be provided with several adjuncts such as string, tapes and paper overwraps to enhance the strength thereof. The egg case of the present invention may further be recognized as providing a highly novel modular unit for the production of egg cases to hold thirty one-dozen egg cartons and may be strengthened by either impregnating compounds or structural board members against collapse. Also, novel

tabs are provided to prevent folding of the side walls of the egg case and also tabs are provided to support the separators used therewith.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A separator for the case packing of cartoned eggs comprising a generally rectangular tray member of molded paper pulp having upstanding from one surface thereof three successive transversely separated cleats for engaging within downwardly opening recesses in the bottoms of a row of egg cartons which are positioned in side by side arrangement on said cleat bearing surface, said cleats being individually relatively inflexible as compared to the flexibility of a sheet as a whole, each of said cleats being tapered at the sides and ends thereof, said tray member having a pair of ears projecting from opposite margins thereof that extend transversely of said cleats, the tapered ends of said middle cleat extending into said ears in an angular plane intersecting a vertical plane passing through the margin from which said ears project.
2. A separator as set forth in claim 1 wherein said ears include outer margins parallel to those from which said ears project.
3. A separator as set forth in claim 2 wherein the tapered ends of said middle cleats merge into the general plane of said tray member adjacent the outer margin of said ears.
4. An egg case comprising a bottom, a pair of spaced parallel side walls integral with said bottom and a top parallel to said bottom and comprising a pair of connected panels each integrally joined to the top of one of said side walls, said case being open on two opposite sides thereof, a vertical series of apertures in the mid part of each of said side walls, and means adjacent each said aperture for supporting a tray.
5. The egg case of claim 4, said last mentioned means comprising a tab partially severed from said side wall and integrally joined thereto along a horizontal fold line defining the bottom margin of said aperture.
6. The egg case of claim 4, and further including a tab partially severed from at least one corner of each said side walls and integrally joined thereto along a vertical fold line, said tab extending outwardly from said side wall and having a horizontal edge thereof substantially in engaging relationship with a horizontal part of said egg case adjacent said side wall, whereby to buttress each of said side walls from pivoting into superposed relationship with said top or bottom.
7. The egg case of claim 6, said tab being triangular and said vertical fold line being spaced inwardly from the free vertical edge of said side wall, each said side wall free vertical edge extending continuously from said top to said bottom.
8. The egg case of claim 4, said last mentioned means comprising at least one tab partially severed from said side wall and integrally joined thereto along a vertical fold line defining a side margin of said aperture.
9. The egg case of claim 8, there being two each tabs at each aperture.
10. The egg case of claim 4, and means impregnating said egg case, side panels for providing said egg case with additional strength.
11. The egg case of claim 4, and elongate structural elements attached to the sides of said egg case on either side of said apertures.
12. The filled egg case of claim 4, said side walls, bottom and top each having pairs of marginal flaps foldably joined thereto and extending at right angles therefrom, said flaps partially closing said open sides.
13. The filled egg case of claim 4, a plurality of trays disposed in spaced parallel relation and including opposed

ear portions extending through opposed apertures in said side walls, egg cartons supported on said trays, and a flexible securing member encircling said case about the girth thereof.

14. The filled egg case of claim 13, the plane of said flexible securing member being at about the level of the third tray in a five tray egg case.

15. The filled egg case of claim 4, a plurality of trays in spaced parallel relation and including opposed ear portions extending through opposed apertures in said side walls, egg cartons supported on said trays, and a flexible securing member encircling said case in a plane substantially perpendicular to said trays.

16. The filled egg case of claim 15, said member engaging the ears of said trays.

17. The filled egg case of claim 4, a plurality of trays in spaced parallel relation and including opposed ear portions extending through opposed apertures in said side walls, egg cartons supported on said trays, and a paper girdle over-wrap encircling said case and substantially closing the open sides thereof.

18. The filled egg case of claim 17, said over-wrap comprising a single sheet.

19. The filled egg case of claim 4, a plurality of trays in spaced parallel relation and including opposed ear portions extending through opposed apertures in said side walls, egg cartons supported on said trays, and strengthening means secured thereto and extending diagonally across the open ends of said egg case.

20. The filled egg case of claim 19, said strengthening means comprising adhesively secured tape.

21. An egg case comprising a bottom, a pair of spaced parallel side walls integral with said bottom and a top parallel to said bottom and comprising a pair of connected panels each integrally joined to the top of one of said side walls, said case being open on two opposite sides thereof, aperture means in the mid part of each of said side walls, a tab partially severed from at least one corner of each said side walls and integrally joined thereto along a vertical fold line, said tab extending outwardly from said side wall and having a horizontal edge thereof substantially in engaging relationship with a horizontal part of said egg case adjacent said side wall whereby to buttress each of said side walls from pivoting into superposed relationship with said top or bottom.

22. The egg case of claim 21, said tab being triangular and said vertical fold line being spaced inwardly from the free vertical edge of said side wall, each said side wall free vertical edge extending continuously from said top to said bottom.

23. A filled egg case comprising a bottom, a pair of spaced parallel side walls integral with said bottom and a top parallel to said bottom and comprising a pair of connected panels each integrally joined to the top of one of said side walls, means securing said top panels in said connected relationship, said case being open on two opposite sides thereof, a vertical series of apertures in the mid-part of each of said side walls, a vertical series of separators in said egg case, each said separator being generally the same size and shape as the top and bottom of said case and a pair of ears projecting from the mid-parts of opposite margins thereof, each said ear extending into and engaging in one of said apertures, said case having a plurality of molded pulp egg cartons on each of said separators.

24. The filled egg case of claim 23, the egg cartons of each layer having their longitudinal axes substantially parallel, the axes of the cartons of each layer extending transversely of the axes of the cartons in the adjacent layers, said separators being identical and in vertical registry, and integral means on said separators for restraining the cartons thereon against movement.

25. The filled egg case of claim 23, said egg cartons having the longitudinal axes thereof substantially parallel, said separators being identical and in vertical registry,

and integral means on said separators for restraining said cartons against movement.

26. A filled egg case comprising a bottom, a pair of spaced parallel side walls integral with said bottom and a top parallel to said bottom and comprising a pair of connected panels each integrally joined to the top of one of said side walls, means securing said top panels in said connected relationship, said case being open on two opposite sides thereof, a vertical series of apertures in the mid-part of each of said side walls, a vertical series of separators in said egg case, each said separator being generally the same size and shape as the top and bottom of said case and a pair of ears projecting from the mid-parts of opposite margins thereof, each said ear extending into and engaging in one of said apertures, said case having a plurality of set up paperboard egg cartons characterized by a bottom having a longitudinally extending central recess of inverted V-shaped cross section and downwardly tapered side walls, said separators being identical and in vertical registry, and integral means on said separators for restraining said cartons against movement.

27. An egg case for holding thirty one-dozen egg carton comprising a pair of egg cases for holding fifteen one-dozen egg cartons, each of said pair of egg cases comprising an egg case comprising a bottom, a pair of spaced parallel side walls integral with said bottom and a top parallel to said bottom and comprising a pair of connected panels each integrally joined to the top of one of said side walls, said case being open on two opposite sides thereof, each said side having vertically extending aperture means intermediate the edges thereof, a plurality of trays in spaced parallel relation and including opposed ear portions extending through opposed aperture means in said side walls, egg cartons supported on said trays, means securing said top panels in connected relationship and means securing a side panel of one of said pair of egg cases to a side panel of the other egg case of the pair in face-abutting relationship.

28. The egg case of claim 27, and securing means encircling said egg case about the girth thereof.

29. The egg case of claim 28, said securing means being equally spaced from the top and bottom of said egg case.

30. An egg case for holding thirty one-dozen egg cartons comprising a pair of egg cases for holding fifteen

one-dozen egg cartons, each of said pair of egg cases comprising an egg case comprising a bottom, a pair of spaced parallel side walls integral with said bottom and a top parallel to said bottom and comprising a pair of abutting panels each integrally joined to the top of one of said side walls, said case being open on two opposite sides thereof, each said side having vertically extending aperture means intermediate the edges thereof, means securing said top panels in abutting relationship and means securing a side panel of one of said pair of egg cases to a side panel of the other egg case of the pair in face-abutting relationship, and securing means extending diagonally across the open faces of said egg case from the upper outer corners thereof.

31. An egg case comprising a bottom, a pair of spaced parallel side walls integral with said bottom and a top parallel to said bottom and integrally joined to the top of said side walls, said case being open on two opposite sides thereof, a vertical series of apertures in the mid-part of each of said side walls, and means adjacent each said aperture for supporting a tray.

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