

Nov. 15, 1966

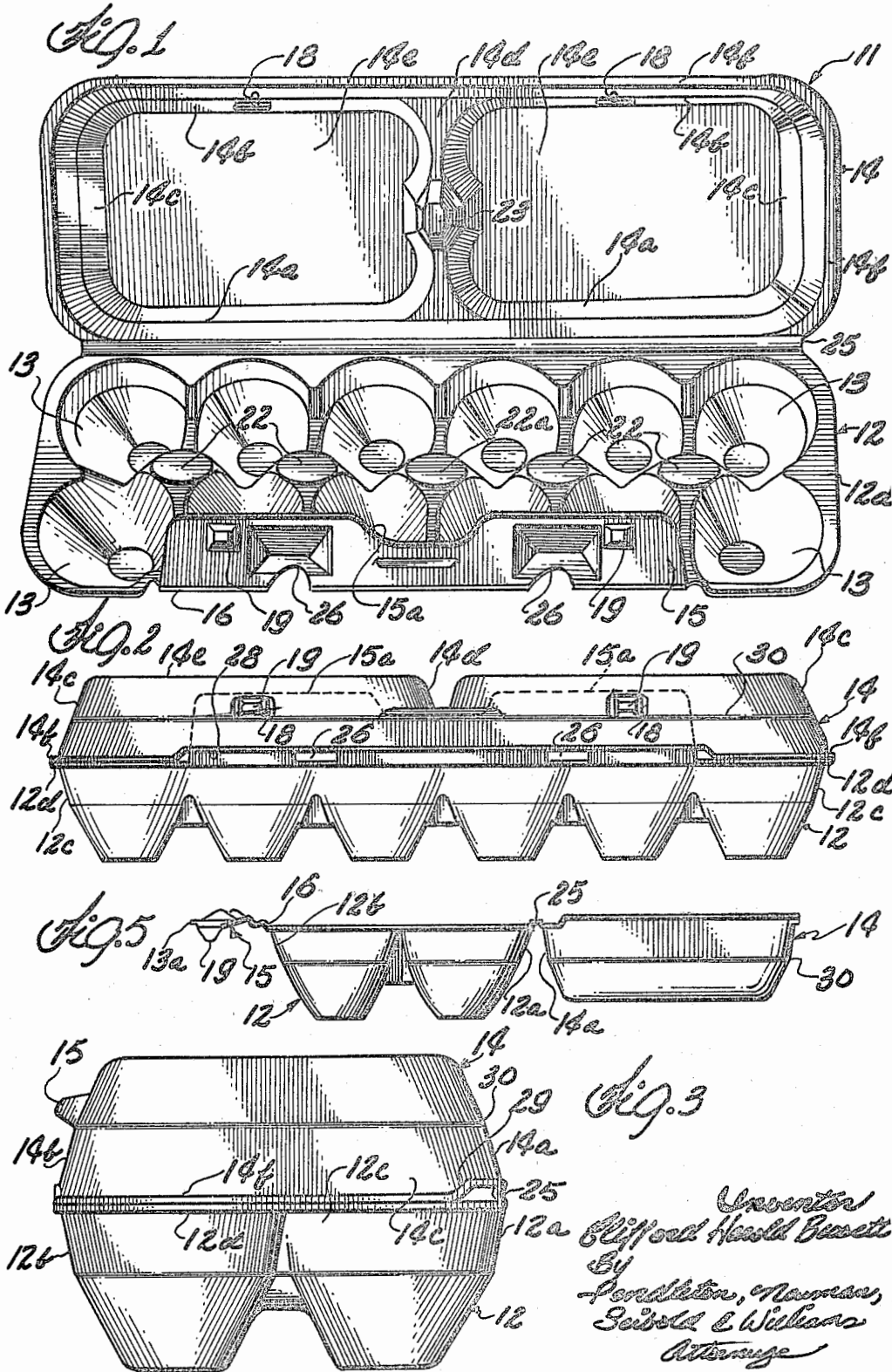
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3,285,491

MOLDED CARTON

Filed Jan. 21, 1965

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Nov. 15, 1966

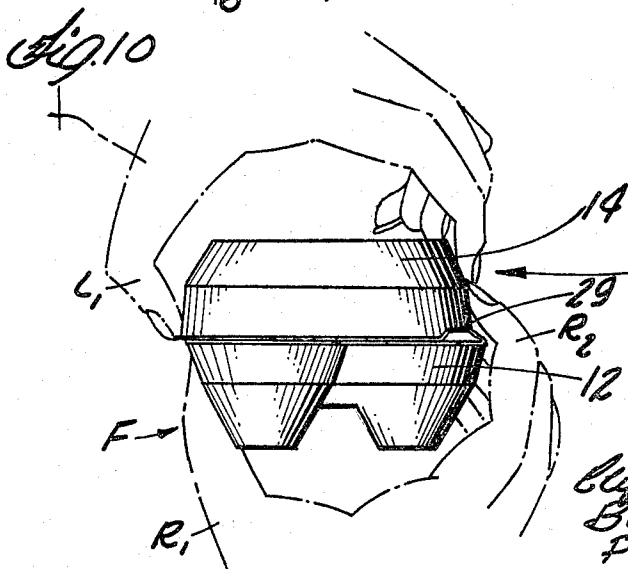
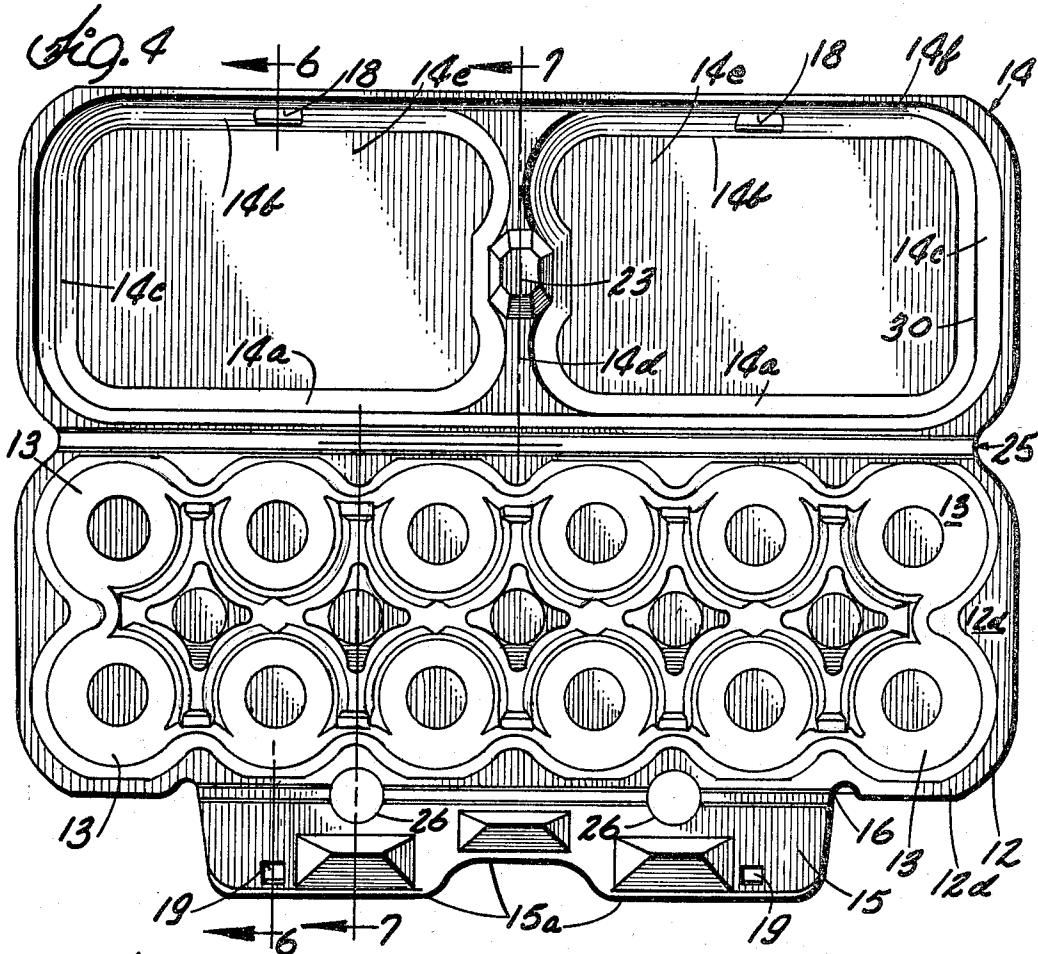
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3,285,491

MOLDED CARTON

Filed Jan. 21, 1965

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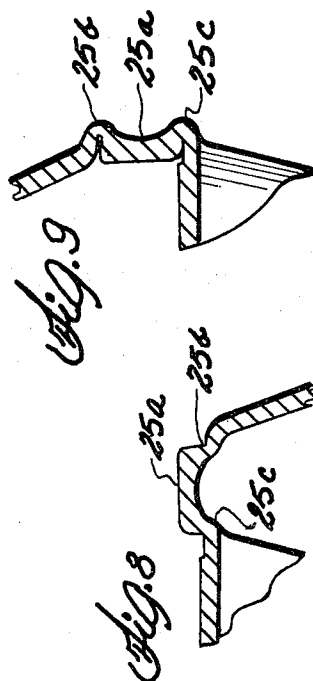
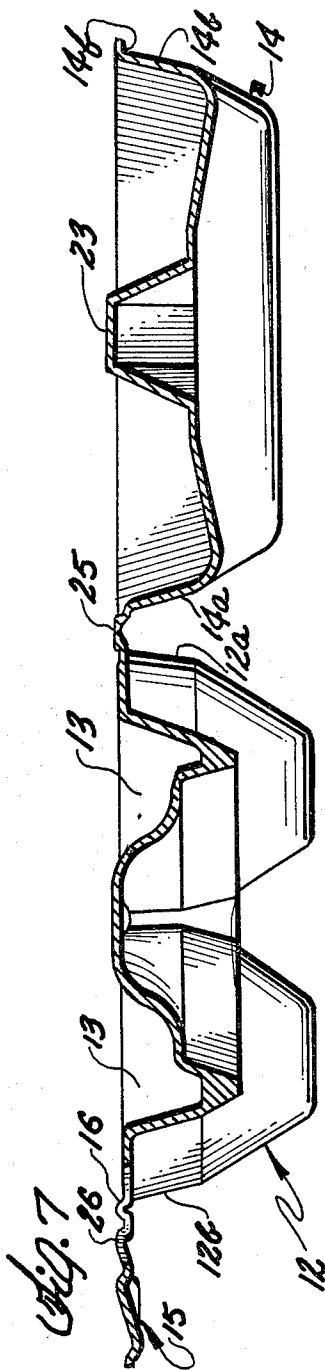
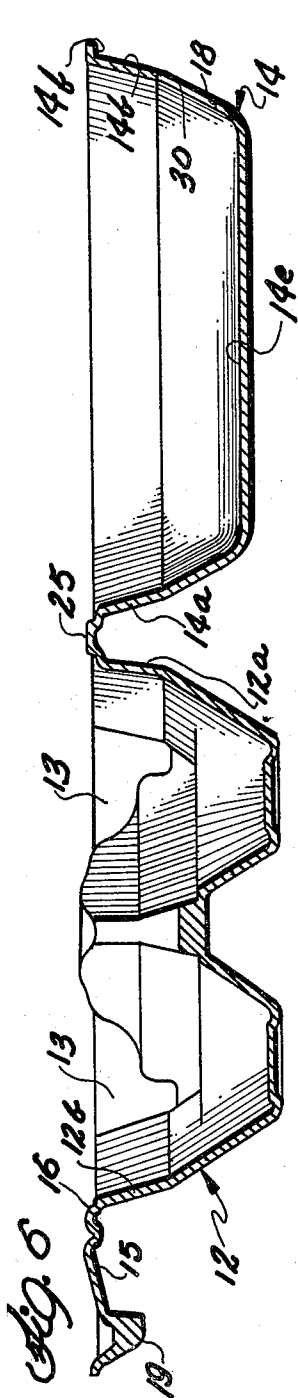
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MOLDED CARTON

Filed Jan. 21, 1965

3 Sheets-Sheet 3



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3,285,491

MOLDED CARTON

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Filed Jan. 21, 1965, Ser. No. 427,002
6 Claims. (Cl. 229-2.5)

The present invention relates in general to packaging cartons for fragile articles and, more specifically to molded pulp cartons used in the packaging of eggs, of which the 2 x 6 style carton is one example.

Molded packaging cartons utilizing the lug-locking principle are widely used today particularly in the packaging of eggs. However, present cartons of this type oftentimes prove unsatisfactory to housewives or other users since they are generally difficult to open. This unsatisfactory condition occurs by reason of one or more factors. One factor is that the outward pressure of the packaged articles against the inner surface of the locking flap attached to the carton bottom does not allow sufficient flexing of the flap relative to locking apertures in the carton cover to provide clearance for easy opening. A second factor is the inordinate stiffness of both the cover and flap caused by the material utilized in the manufacture of the cartons, or by the particular design of the carton cover and/or flap, thus, rendering the packaged articles prone to being damaged during opening or closing of the carton.

Therefore, it is an object of the present invention to provide a new and improved packaging carton which is not beset with the difficulties aforementioned.

It is a further object of this invention to provide a carton having a cover and flap which may readily assume a positive interlocking engagement, and yet locking and unlocking of the cover and flap may be readily accomplished without damage to fragile articles accommodated within the carton.

An additional object is to provide a new and improved cover construction for an article-packaging carton possessed of such rigidity and strength as to provide maximum protection for the accommodated articles.

Still another object is to provide an improved packaging carton which is feasible to mold from the usual pulp stock, and all portions of the carton are so disposed as to provide the requisite draft angles to facilitate removal of the carton from the mold sections.

In a preferred form of the invention, a packaging carton for fragile articles is provided which includes a bottom section having a plurality of article-receiving cells formed therein and preferably arranged in two parallel rows of six cells each. A cover section is hingedly connected to the rear side wall of the bottom section so that the cover section may be pivoted toward or away from the bottom section to respective closed and open positions. A flap is hingedly secured to the front side wall of the bottom section and is provided with at least one projection or lug which is adapted to interlockingly engage an aperture formed in the front wall of the cover section when the latter is disposed in a closed position. The number, shape, and location of the apertures formed in the front wall of the cover section will depend upon the number of lugs provided on the flap, so as to effect a positive interlocking engagement between the flap and closed cover section. Means are provided at the hinge connection between the bottom and cover sections for allowing the cover section to be shifted laterally forward relative to the bottom section so as to move the cover section apertures into positions relative to the flap projections whereby opening of the cover section is greatly

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facilitated. Apertures may be provided at the hinge connection between the front side wall of the bottom section and the flap which provide ventilation for the accommodated articles and also enable the flap to be manually engaged to prevent movement thereof with the cover section when the latter is shifted laterally forward, or permit the front wall of the cover to be flexed outwardly so as to clear the flap projections. Moreover, bends or breaks are provided at substantially mid-height in the side and end walls of the cover section so as to enable the carton to more readily accommodate large size eggs or similar articles without the same being subjected to crushing pressures when the cover is moved to its closed position. In addition such side and endwall configurations minimize or completely eliminate any tendency of the side and endwalls to become warped or bowed which might interfere with the proper opening or closing of the carton.

Other objects and advantages of the invention will become apparent upon reading the attached detailed description, taken in connection with the drawings, wherein:

FIG. 1 is a perspective view of a partially open packaging carton constructed in accordance with the teachings of the present invention;

FIG. 2 is a front elevational view of the carton of FIG. 1 shown in a closed position;

FIG. 3 is an enlarged right end elevational view of the carton of FIG. 2;

FIG. 4 is a top plan view of the carton of FIG. 1 in a fully open position;

FIG. 5 is a right end elevational view of the carton of FIG. 4;

FIG. 6 is an enlarged sectional view taken along line 6-6 in FIG. 4;

FIG. 7 is an enlarged sectional view taken along line 7-7 in FIG. 4;

FIG. 8 is an enlarged fragmentary sectional view showing the hinge employed in the exemplary carton when the carton is in the open position;

FIG. 9 is similar to FIG. 8 but showing the hinge of the exemplary carton when the cover is in a closed position; and

FIG. 10 is an end elevational view similar to FIG. 3 but demonstrating how the carton is manually grasped during opening thereof.

While the invention has been shown and will be described in some detail with reference to a particular, exemplary embodiment thereof, there is no intention that it be limited to such detail. Quite to the contrary, it is intended here to embrace all modifications, alternatives, and equivalents falling within the spirit and scope of the invention as defined by the appended claims. For the purpose of this description, the exemplary packaging carton has been shown and will be described as a 2 x 6 molded pulp egg carton. However, it will be apparent that the carton may take various other forms and may be adapted to receive various other articles.

Referring now to the drawings and more particularly to FIG. 1, the improved molded pulp carton 11 is shown which includes a bottom section 12 having a plurality of article-receiving cells 13 formed therein and a cover section 14 which has its rear wall or rear side wall 14a hingedly connected to the rear wall or rear side wall 12a of the bottom section whereby the cover section may be pivoted toward or away from the bottom section to respective closed and opened positions. The cells, or egg pockets, 13 in the illustrated embodiment are arranged in parallel rows, each row having six cells. The rows of cells are disposed in parallel relation with respect to the hinge connection between the cover and bottom sections.

The bottom section 12 is provided with a flap or sometimes referred to as a locking flap 15 which is hingedly connected at 16 to the top of the front side wall 12b of the bottom section, so that the flap, when in cover-locking position, will be disposed behind the cover front wall 14b when the cover 14 is in its closed position. The front wall 14b is provided with a plurality of apertures 18 (a pair in the illustrated embodiment), which are adapted to receive a corresponding number of locking projections or lugs 19, extending from flap 15, when the latter assumes its upright cover-locking position and the cover is in its closed position. Each aperture is disposed at approximately mid-point between the end walls 14c and a center, re-enforcing, depending rib 14d formed in the top surface 14e of the cover. It will be readily apparent that a greater or fewer number of apertures and projections than that shown may be utilized. As may be seen by reference to FIG. 2, when the carton 11 is closed, the upper marginal portion 15a of the locking flap 15 terminates below and is out of contact with the underside of the carton top panel 14e and the re-enforcing rib 14d formed therein.

As aforementioned, the bottom section 12 is provided with a pair of rows of article-receiving cells 13, which are separated from one another by a center row of hollow upstanding posts 22. These posts 22 may vary in shape and size. The cover section, on the other hand, is provided with a hollow, centrally disposed post 23 which extends downwardly from depending rib 14d.

When the cover section 14 is in closed position, see FIG. 3, the cover post 23 will engage or abut the top of the center post 22a disposed in the row of posts formed in bottom section 12. Consequently, the posts 22a and 23 cooperate to provide support against crushing of the carton 11 when loaded cartons are arranged in stacked relation.

In loading the carton, the eggs are initially placed in the cells 13 with the large end thereof extending upwardly. The flap 15 is then pivoted in the clockwise direction, as viewed in FIG. 5 until it reaches an upright, slightly rearwardly tilted position. The cover section 14 is then pivoted in the counter clockwise direction, see FIG. 5, so that the front wall 14b of the cover section passes over the flap. Upon the cover reaching its fully closed position, the flap projections 19 will automatically snap through the apertures 18 of the cover. The flap 15, when in interlocking position, is disposed between the inside surface of the front wall of the cover section 14 and the row of eggs disposed within the front row of cells formed in the bottom section 12. In FIG. 2, it will be noted that each flap projection 19 is aligned with an egg cell, thus, when an egg is disposed within such cell, the egg will retain the flap projection in a positive interlocking relation with the corresponding cover aperture 18.

The eggs (or articles) accommodated in the front row of cells normally prevent the flap projections from being accidentally or intentionally depressed a sufficient amount so as to disengage the cover openings and permit the cover section to be moved to its open position. To compensate for this situation, cover section 14 is hinged to the bottom section in such a way that the cover may be shifted laterally forward relative to the bottom section 12 and flap 15, whereby the cover apertures 18 are out, or substantially out, of locking relationship with the projections 19. To effect complete clearance of the projections with respect to the apertures, the front wall 14b of the cover in the vicinity of the apertures may be flexed outwardly a slight amount while at the same time the cover is pivoted to its open position. To permit lateral shifting of the cover, the rear wall 14a and the rear wall 12a of the bottom section are connected by a double hinge 25.

As seen in FIGS. 8 and 9, the double hinge includes a broad central strip portion 25a which has one side thereof hingedly connected at 25b to the bottom edge of the rear

wall of the cover defining the open side thereof. The opposite side of portion 25a is hingedly connected at 25c to the upper edge of the rear wall 12a of the bottom section. When the carton is in the normally closed position, the central portion 25a, as shown in FIG. 9, assumes a substantially vertical position. When the cover section 14 is laterally shifted forward, or to the left, as viewed in FIG. 10, center portion 25a pivots in the counter clockwise direction about hinge connection 25c. The width (or height) of portion 25a is such as to normally permit the cover section 14 to be shifted relative to the bottom section 12 an amount sufficient to allow the flap projections 19 to clear cover apertures 18. In instances, however, where large eggs are being packaged, the lateral shift of the cover may not be sufficient to effect complete clearance between the projections and apertures, in which case, a slight outward flexing of the cover in the vicinity of the apertures may be required to effect unlocking of the flap and cover.

To facilitate such outward flexing of the cover front wall 14b, a pair of openings 26 are formed in the bottom section 12 at the hinge line connection 16 between the upper edge of the bottom front wall 12b and the flap 15. The openings 26 are of suitable size and shape to permit a finger F, see FIG. 10, to be readily placed therein and behind the cover front wall when the cover is in a closed position.

FIG. 10 shows a pair of hands in position to effect opening of the carton. The thumb R₁ of the right hand is inserted within one opening 26 while the fingers R₂, of the right hand engage the back of the carton at the double hinge connection 25. The bottom section 12 is then squeezed between the thumb and fingers of the right hand. As squeezing pressure is applied, the thumb L₁ of the left hand is positioned behind the thumb R₁ and beneath the lower edge of the cover front wall whereupon outward flexing of the cover front wall is effected by moving thumb L₁ away from thumb R₁. In many instances, however, outward flexing of the cover front wall is not required, as the forward shifting of the cover is sufficient to cause the apertures 18 to be disengaged from the projections 19.

To accommodate the hinge connection 16 of the flap 15 when the cover is in closed position, a recess 28 is provided in the lower edge of the cover front wall 14b. Consequently, the cover section may be moved to a fully closed position whereby the remainder of the lower edge of the front wall and the end walls 14c, on which is formed an outwardly extending flange 14f, will engage an outwardly extending flange 12d formed on the upper edge of the front wall 12b and the end walls 12c of the bottom section 12. A step 29 is provided at each end wall 14c of the cover adjacent the double hinge 25 and thus permits substantial flush load bearing engagement between the flanges 14f and 12d of the cover and bottom sections, see FIG. 3.

The depending front, rear, and end walls of the cover section 14 are of such design as to permit the carton to accommodate jumbo, or large size, eggs or articles and still permit the cover to assume a fully closed position. To accomplish this result the side walls 14a and 14b and end walls 14c are provided with a elongated break or bend 30. The break is disposed at substantially mid-height of each wall, so that in silhouette each wall appears to be slightly convex.

The break 30 also provides greater stiffness for the depending cover walls and thus minimizes any tendency of the walls to warp or become deformed.

While the carton has heretofore been described as formed of molded cellulosic pulp fiber, the invention is not intended to be limited thereto as the carton may also be formed of numerous other suitable materials such as expanded polystyrene, polyethylene, polypropylene, acetate, vinyls, vinyl acetates, and any of the polymer groups or copolymers or other plastic or semiplastic materials.

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In view of the foregoing, it will be readily apparent that a new and improved packaging carton of the lug-locking type has been provided which facilitates the opening of the carton without fear of damage to articles contained therein. Moreover, such a carton has been provided which has increased strength and rigidity and is readily capable of accommodating various size articles.

While several embodiments have heretofore been disclosed and claimed, the invention is not intended to be limited thereto as further modifications are contemplated, and the submitted claims are deemed to be of sufficient scope to cover such further modifications.

I claim:

1. A packaging carton for articles comprising a cellular bottom section; a cover section having a front wall provided with a first locking means; a double hinge integral with and interconnecting a rear wall of said bottom section with a rear wall of said cover section so that said cover section can assume a closed superimposed position with respect to said bottom section, said double hinge resiliently retaining said cover section in superimposed aligned relation with said bottom section when said cover section is in said closed position; and a locking flap hingedly connected to the front wall of said bottom section, said locking flap including a second locking means complementary with said first locking means and for interlocking therewith when said cover section is in said closed position and said locking flap has assumed a position of hinged adjustment behind the front surface of said closed cover section; said double hinge being provided with a wide intermediate portion so that said cover section, when in said closed position, is shiftable laterally forward relative to said bottom section and said locking flap when said flap is in said position of hinged adjustment, to effect relative movement of first and second locking means to an unlocking position.

2. The packaging carton of claim 1 wherein one of said locking means is an aperture and the other locking means is a protruding lug adapted to extend through said aperture.

3. The packaging carton of claim 1 wherein the front wall of said cover section is provided with angularly offset surfaces which intersect one another to form an elongated outwardly protruding break intermediate the upper and lower limits of said cover section front wall.

4. A packaging carton for articles comprising a cellular bottom section, the upper edge of said bottom section being provided with a laterally extending flange; a cover section having a rear wall connected by a double hinge to a rear wall of said bottom section, said cover section having an apertured front wall, the lower edge of said cover section being provided with a laterally extending flange, the portion of said cover section flange formed on said front wall having a recessed segment, the laterally extending flanges of said bottom and cover sections being in substantial abutting engagement with one another, when said cover section is in a closed superimposed position with respect to said bottom section; and a locking flap hingedly connected to a front wall of said bottom section, said locking flap being provided with a lug for

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interlockingly engaging an aperture in said cover front wall, when said locking flap is in one position of hinged adjustment and said cover section is in said closed position, the recessed segment of said cover front wall laterally extending flange being substantially coextensive with said flap hinge connection; the laterally extending flange of said cover section being provided with stepped recessed portions adjacent opposite ends of the hinge connection between said cover and bottom sections.

5. A packaging carton for articles comprising a bottom section provided with a plurality of article-receiving cells arranged in parallel rows, said rows being delimited by front, rear, and end walls, said rows of cells being separated by a row of posts; a cover section having a top portion and front, rear, and end walls depending therefrom, said front wall being apertured, said top portion being provided with a depending post and adapted to engage the top of a post disposed in said bottom section, when said cover section is in a closed superimposed position with respect to said bottom section; a locking flap hingedly connected to the front wall of said bottom section, said locking flap being provided with a pair of laterally spaced lugs, each lug being aligned with an article-receiving cell, said locking flap, when in one position of hinged adjustment, having the lugs thereof interlockingly engaging apertures in said cover front wall when said cover section is in said closed position; and a double hinge connection between the rear walls of said cover and bottom sections, the hinge axes of said cover section and said locking flap being parallel to the rows of said bottom section cells; the lower edge of the front wall of said cover section being provided with a recessed portion which is superimposed and coextensive with the locking flap hinge connection when said cover section is in said closed position and said locking flap is in said one position of hinged adjustment; the lower edge of said cover end walls adjacent the ends of said double hinge being provided with stepped recessed portions.

6. The carton recited in claim 1 wherein at least one finger opening is formed in said bottom section and interrupts the locking flap hinge connection.

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