A cellular, molded egg carton in which the cells are stretched transversely and length-wise for accommodating jumbo-sized eggs, and in which the cells include a unique cushioning bottom permitting elongation or stretching of the cells without peripheral rupture at the cell bottoms.

8 Claims, 9 Drawing Figures
EGG CARTON CELLS FOR JUMBO-SIZED EGGS

This is a continuation of application Ser. No. 117,249, filed Feb. 22, 1971, and now abandoned.

This invention generally relates to molded, cellular egg cartons of a character disclosed in the U.S. Pat. No. 3,145,896 to Reifers et al issued Aug. 25, 1964. The cells disclosed in this issued patent are highly satisfactory for the purpose intended, however, the packaging of jumbo-sized eggs requires a deeper and wider cell than has heretofore been provided. When attempting to widen and deepen cells of the character disclosed in the patent mentioned above, by suitably redimensioning pressing dies, although transverse dimensioning can be enlarged within the limits of the outside dimensions of the carton preform, the elongation or stretching could not be readily accomplished on preforms presently used for producing the carton of the above-identified patent.

In order to radically enlarge transversely and depthwise cells of the character disclosed in the patent mentioned above, it would generally be necessary to completely retool both the molding and pressing dies, entailing production shut-downs, complete redesigning of the molding dies and/or the pressing dies.

Primary objects of the present invention are to provide a novel egg carton including cells produced from a conventional molded preform whereby the cell areas are radially enlarged laterally and vertically within the conventional width and length dimensions of the finished cartons; to provide a novel egg carton in which the cell bottoms include unique reinforcing and cushioning portions permitting elongation or stretching depthwise of the cells; to provide cellular egg carton cells which are circumferentially or transversely enlarged or stretched within the width and length dimensions of the conventional carton to accommodate jumbo-sized eggs.

These together with other objects and the nature and advantages of the invention will become apparent from a consideration of the following description when taken in conjunction with the drawings forming a part thereof.

FIG. 1 is a front elevational view of an egg carton incorporating the improved cells of the present invention;

FIG. 2 is an enlarged elevational view looking from left to right at FIG. 1;

FIG. 3 is a further enlarged vertical section taken substantially on the plane of line 3-3 of FIG. 2;

FIG. 4 is a view similar to FIG. 3 showing a fragmentary portion of a preform from which the carton portions of FIG. 3 are produced;

FIG. 5 is a fragmentary perspective view looking at the underside of one of the cells of the egg carton of FIGS. 1 and 2;

FIG. 6 is a fragmentary top plane view looking into the cellular bottom of the egg carton;

FIG. 7 is a fragmentary section taken on the plane of line 7-7 of FIG. 6;

FIG. 8 is a section taken substantially on the plane of line 8-8 of FIG. 6; and

FIG. 9 is a bottom plan view of one of the cells of the egg carton.

It will be understood by those skilled in the art that the cartons are produced on suitable suction molds by the deposition of slurry of pulp material to form a pulp preform which is subsequently subjected to drying, pressing and reworking by cooperating male and female pressing dies.

Considering FIG. 1, an egg carton is generally indicated at 10 and in this embodiment comprises two separate separable sections 12 and 14 which are connected by a tunnel structure 16, although it is within the contemplation of this invention that the carton may be in the form of a single section not normally intended to be separable. The tunnel structure 16 has a weakened line 18 extending thereabout accordingly providing two similar, sub-containers each accommodating one-half dozen eggs and commonly being described as 2 x 3 cellular cartons.

The carton section 12, for example, includes a cellular bottom portion 20 and a lid portion 22. The cellular bottom 20 has hingedly connected thereto along one side edge 24 the cover 22, and along the other opposed parallel side edge 26 a lock flap 28; see FIG. 6. The cellular bottom 20 will be defined in relation to its peripheral marginal flange 30.

Extending vertically from cell bottom walls 32 are support posts 34. The support posts project above flange 30 and include an upper abutment surface 36 engageable with the under surface of the lid 22; see FIG. 3.

The posts 34 preferably comprise a pyramidal configuration having a rectangular cross section in which each of the sides of the posts face into a respective cell 38. The sides 40 of the posts continue down to the previously mentioned bottom wall 32 of the cells and edge portions of the post between the respective sides 40, merge into relatively low saddle portions 42 disposed at right angles. The sides 40 of the posts 34 extend vertically substantially the same extent therealong concave indent portions 44. These indents 44 enlarge the cells 38 inwardly or laterally accordingally accommodating jumbo-sized eggs.

The cells 38 are generally five-sided as seen in FIG. 6, and the upper portions thereof are provided with circumferentially spaced, concave indents 46, generally on the same radius as the indents 44 of the posts 34, these indents being formed to accommodate the relatively large maximum dimension of jumbo-sized eggs.

Referring to FIGS. 3 and 4, in FIG. 4, the preform is indicated as having a lid portion 22', cellular bottom portion 20'. The upper marginal edge 30' of the preform when oriented parallel to the corresponding portion 30 of the finished carton in FIG. 3, accordingly disposes the bottom 32' of cells 38' a considerable distance above the bottom 32 of the finished carton. When the lid 22' of the preform is pressed, it is maintained at substantially the same height as when originally molded. However, the depth of the cells is radically increased and at the same time the transverse dimension is radically increased; this radical reforming is made possible by the subsequently described structure.

Referring to the under surface of the bottom 32 of the cells 38, adjacent the peripheral, polygonal shoulder 48 is an enlarged substantially torus shaped cushioning element or portion 50 concentric to a downwardly extending hollow projection or detent portion 52 and these portions are connected by equidistantly spaced flutes or bridging elements 54.

Considering the inner surface of the bottom 32 of the cells 38, as seen in FIG. 7, overlying the flutes or bridging elements and extending upwardly within the cell is
a torus shaped circular portion 56 surrounding a dimple or detent 58, overlying lower, central portion 52, and a circumferential groove 60 overlies the lower torus shaped portion 50.

When the cell is stretched from the condition shown in FIG. 4 to that of FIG. 3, material is forced to the outer peripheral edge of the bottom 32 of the cells forming the circular portion 50 but also reinforcing the cells at the area where they would normally rupture in the absence of the particular configuration disclosed. Additionally, the cushioning portion 56 is produced and this overlies on the inner surface, the flutes 54 which connect the relatively thin portion 50 to the thin portion 52.

In effect, what is accomplished is the basic cell is lowered or stretched from its uppermost peripheral edge 30' over its entire length and a ring cushion is added to the increased depth. Embossed within this projecting ring is a cushion profile which is connected by four flutes or bridges as viewed from the outer surface of the bottom 32. It will be noted that these flutes or bridges are not apparent then looking into the cells 38; see FIG.

6. Additionally, the bubble indents or fragmentary portions of an increased circumferential area 46 are provided adjacent the hinge line of the lock flap or cover as well as adjacent the ends of the carton.

By stretching the cells of the carton, standard packing cases which conventionally accommodate 30 dozen standard eggs, will now only accommodate 24 dozen eggs because the packing crates will no longer accommodate five layers of egg cartons, but will only accommodate four layers of egg cartons, six-dozen cartons per layer.

The disclosed carton incorporating an increased transverse area dimension in the cells and a deeper cell for accommodating jumbo-sized eggs, is produced from preforms which would normally be used to produce the carton disclosed in U. S. Pat. No. 3,145,896. By incorporating the novel bottom wall structure it is possible to produce cartons with cells for readily accommodating jumbo-sized eggs, without retooling molding dies to produce the preform shown in FIG. 4. This is a considerable accomplishment, inasmuch as retooling form, and closing down all the equipment for installing new dies that produce preforms, is a major expense in molded pulp productions. By merely installing retooled pressing dies, the cartons of U.S. Pat. No. 3,145,896 may be produced and/or those of the present application may also be produced, each from identical preforms.

It will be obvious to those skilled in the art that various changes may be made without departing from the scope of the inventors and the invention is not to be considered limited to that shown in the drawings and as described in the specification.

What is claimed is:

1. In a carton including a cellular bottom section, said cellular bottom section comprising at least one vertical post surrounded by cells depending from an upper marginal flange, the cells comprising side wall portions converging to a transverse bottom wall, the improvement wherein said bottom wall includes on the under surface a circumferential cushioning ring portion surrounding a centrally disposed hollow projection and connected thereto by bridging flute portions, said bottom wall inner surface comprising a groove overlying said cushioning ring portion and a recess overlying said hollow projection, and a circular cushioning rib overlying said bridging flute portions and extending upwardly into said cell.

2. The structure as claimed in claim 1 in which said cushioning ring and said circular cushioning rib have a concave surface on the upper surface of said bottom wall and on the outer surface of said cell, respectively.

3. The structure as claimed in claim 1 in which said cells are polygonally sided and said vertical post comprises one of said sides, each of said cell sides including a concave recess on a generally common radius and adjacent the upper flange of said cell whereby jumbo-sized eggs are readily accommodated in the cells.

4. The structure as claimed in claim 1 in which said bridging flute portions are disposed at 90° intervals.

5. The structure as claimed in claim 1 in which said vertical posts are rectangular in cross section and taper vertically above the upper margin flange of said cellular section.

6. The structure as claimed in claim 1 in which said cellular bottom section is produced from a molded preform having a molded cell depth substantially less than the cell depth of the finished cells by stretching the cells vertically and transversely beyond their initial molded depth and horizontal dimension to accommodate jumbo-sized eggs.

7. The structure as claimed in claim 1 in which said carton is in the form of two separate separable sections connected by a tunnel portion having a weakened line extending thereabout to facilitate separation of said sections.

8. In a carton including a cellular bottom section, said cellular bottom section comprising at least one vertical post surrounded by cells depending from an upper marginal flange, the cells comprising side wall portions converging downwardly to a generally transverse bottom wall, the improvement wherein:

a. said bottom wall includes on the under surface thereof:
  1. an outer shoulder portion which surrounds
  2. a circumferential cushioning ring portion which in turn surrounds
  3. a centrally disposed hollow projection,

b. the inner or upper surface of said bottom wall comprising
  1. a groove overlying said cushioning ring portion,
  2. and a recess overlying said hollow projection,

c. said bottom section being molded from a preform wherein the cell depth is substantially less than the cell depth of the finished cells and the cell width is less than the width of the finished cells of said carton, and

d. at least portions of said cushioning ring and said hollow projection being stretched below the original bottom cell wall of the preform and the cell width being stretched to a wider dimension from the original width of said preform, whereby said carton cells may accommodate exceptionally large or jumbo-sized eggs.