The present invention relates to egg cartons which comprise an inverted dish-like cover section integrally joined to a bottom cellular section, the bottom cellular section having integrally joined thereto along its longitudinal edge a locking flap. The bottom cellular section of the cartons are characterized by having at least one rib extending transversely across the bottom section, the rib acting as a separating means for eggs contained in the bottom cellular section. The carton is capable of division into two sections by virtue of a slit which extends longitudinally along the centrally located transverse rib in the cellular section of the bottom.

3 Claims, 6 Drawing Figures
DIVISIBLE THERMOPLASTIC EGG CARTON

This is a continuation of application Ser. No. 236,620 filed Mar. 21, 1972, now abandoned.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to cellular egg carton structures comprising egg cartons having twelve egg receiving cavities which may be manually subdivided into two separate carton sections, each individual section having six egg receiving cavities.

2. Description of the Prior Art

In the past, egg carton structures comprising an inverted dish-like cover section, and a bottom cellular section with a locking flap attached thereto have commonly been employed to contain eggs for the retail purchaser. The cellular arrangement of such cartons usually comprises twelve egg receiving cells arranged in two longitudinally extending rows of cell pales, each row consisting of six individual egg receiving cells. Often times, however, the requirements of the purchaser, or alternatively the consumer, of such a product are less than one-dozen and, for example, his needs or requirements may be suited by the purchase of six eggs. In order to satisfy the requirements of such an individual it has been commonplace, in the past, to provide one-dozen capacity egg carton structures characterized by having a line of weakness, susceptible to manual fracturing, continuously extending around the central portion of the carton structure. When such cartons are formed of fibrous pulp material, the centrally located line of weakness around the carton's center may comprise a score line which weakens the resistance of the pulp carton structure to fracturing along such a line when manual pressure is applied to the ends of such a carton, whereby the carton splits into two sections, each section containing six eggs.

Although such an arrangement has been employed in the past for providing divisible pulp cartons, no similar structural arrangement has been commercially employed, when it is desired to produce a divisible carton fabricated from plastic materials, such as for example polystyrene, and in particular a polystyrene foam egg carton. Moreover, to the best of my knowledge, divisible plastic egg cartons, including foam cartons, are not currently commercially available.

In the case of plastic egg cartons, such as polystyrene foam egg cartons, when a line susceptible to manual fracturing similar to that hereinabove described is formed on the plastic carton or, alternatively, a similar line is formed around the center of a carton utilizing a continuous row of perforations through the carton, when an attempt is made to manually subdivide such a plastic carton structure into two sections, the carton does not fracture evenly and a destructive tearing apart of the centrally located cell walls occurs. Accordingly, such prior art structural modifications cannot be successfully employed to produce a divisible thermoplastic egg carton structure.

SUMMARY OF THE INVENTION

For purposes of clarity in describing the present invention, carton structures of the type disclosed in U.S. Pat. No. 3,648,916 are employed. It will be noted that in the bottom cellular portion of such egg cartons, the cell walls are employed, in part, to separate individual eggs contained within the cell receptacles from contact with one another. For example, in U.S. Pat. No. 3,648,916 at least one centrally located transverse rib extends across the bottom cellular portion of the carton. In accordance with the present invention, it has been found that a continuous slit, which extends completely or substantially through the top portion of the centrally located transverse, egg cell barrier rib, will not materially affect the strength of the carton and, moreover, will provide a basis for forming a divisible carton, such as a divisible plastic carton.

The present invention provides an egg carton structure comprising a bottom cellular section and an inverted dish-like cover section hinged thereto. A slit is provided longitudinally across the top of the centrally positioned transverse egg separating means in the bottom cellular portion of the carton. When a carton locking flap is employed to secure the cellular bottom and carton cover portions in a releasably locked position, a row of perforations, or alternatively a slit, extends through the central portion or at the edge of such a locking flap, in alignment with the centrally located slit in the bottom cellular section. Additionally, the carton structures of the present invention are characterized by having a series of perforations or, alternatively, elongated slits extending transversely across the carton cover back wall, top wall, and front wall substantially in alignment with the centrally located slit in the cellular bottom section.

Materials which may be employed to form the divisible egg cartons of the present invention include, for example, cardboard, chipboard, fibrous pulp, plastic; including foamed plastics such as polystyrene; high impact polystyrene, polystyrene, polyvinyl chloride, polyesters such as polyethylene terphthalate, and the like.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1a is a top planar view of an embodiment of the inside of a completely opened egg carton structure of the present invention.

FIG. 1b is a perspective view of the carton structure, illustrated in FIG. 1a, as the carton is being closed.

FIG. 2 is a perspective view of the carton structure illustrated in FIGS. 1a and 1b after the carton has been closed and subsequently divided into two separate carton sections.

FIG. 3 is an end view of one of the carton sections illustrated in FIG. 2.

FIG. 4 is a fragmentary top planar view of another embodiment of the carton structures of the present invention.

FIG. 5 is a fragmentary top planar view of still another additional embodiment of the carton structures of the present invention.

DESCRIPTION OF SPECIFIC EMBODIMENTS

As illustrated in FIGS. 1a and 1b of the attached drawing, one embodiment of the divisible egg carton structures contemplated within the scope of the present invention, comprises a dish-like cover section 10 integrally hinged along hinge member 21 to a bottom cellular section 15, the bottom cellular section 15 additionally has hinged thereto along hinge member 17 a locking flap 18. The twelve-cell carton structure illustrated in FIGS. 1a and 1b has a bottom cellular section 15 which comprises two longitudinally extending rows of egg receiving cavities 16, each row comprising six receiving cavities. In the embodiment illustrated in FIGS. 1a and 1b.
It will be noted that the carton cover section 10 comprises a cover back wall 14 integrally joined to cover top wall 12 which in turn is integrally joined to carton cover front wall 11. Carton cover 10 has side walls 13 at opposite ends of the carton cover section connecting front wall 11 with back wall 14. As more clearly illustrated in FIG. 1b the carton structure may be provided with a cover support post 22 which comprises a concavity in the central area of cover top wall 12. It will be obvious that the base 22' of the center post 22, when the carton is in a closed position comes into contact with transverse rib 40 located in the bottom cellular section 15 whereby, when compressive forces are exerted against the cover of the carton when it is in a closed position, such forces will be resisted to avoid egg breakage by virtue of support post 22 bearing against transverse rib 40.

When it is desired to close and releasably lock the carton structure shown in FIGS. 1a and 1b, carton locking flap 18 is pivoted around hinge 17 to an upright vertical position as illustrated in FIG. 1b and, when the carton is completely closed as shown in FIG. 2, locking flap 18 bears against the inside of the carton cover front wall 11. The carton is maintained in a closed position by virtue of the engagement of the edge detent 20, adjacent aperture 19, with locking rib 41 located on carton locking flap 18 as illustrated in FIG. 1b. When it is desired to reopen such a carton, an inwardly exerted digital pressure may be applied against locking rib 41 which causes disengagement thereof with detent 20 allowing the carton to assume an open position. As further illustrated in FIGS. 1a and 1b, the specific embodiment shown therein is characterized by having a slit B extending longitudinally substantially across the length of transverse rib 40. Another slit C is formed in the base of the cover support post 22 in substantial longitudinal alignment (when the carton is in its opened position) with slit B. Additionally, perforations A when the carton is in its open position as shown in FIG. 1a, extend in substantially longitudinal alignment with slits C and B. It will be noted that perforations A extend transversely along and through carton cover front wall 11, carton top wall 12, carton back wall 14 and carton locking flap 18.

When the carton as illustrated in FIGS. 1a and 1b is loaded with eggs and in a closed position, perforation A and slits C and B will be in substantial alignment around the central portion of the carton and, intermediate the egg receiving cavities 16, so that there are six egg receiving cavities on opposite sides of the weakened central portion of the carton.

When it is desired to divide such a closed carton structure into two sections, slight manual pressure is exerted on opposite ends of the carton structure and the carton easily breaks neatly and cleanly into two individual sections as illustrated in FIG. 2. Also, as shown in FIG. 2, the eggs contain within each of the sections will be protected by walls 22' and 22'' which were formerly opposed sides walls of the support post 22 hereinabove described.

Alternate embodiments of the divisible egg carton of the present invention are illustrated in FIGS. 4 and 5. As shown in FIG. 4, centrally located elongated slits D are employed in the central portion of the carton for ease of dividing the carton into two sections. As shown in the embodiment illustrated in FIG. 4 a plurality of elongated slits D are provided through the central area of the carton. The five slits, positioned substantially in longitudinal alignment when the carton is in its open position are located (1) at the central edge of locking flap 18; (2) through the transverse egg separator rib 40; (3) partially through cover back wall member 14 and extending partially into the concavity which comprises support post 22; (4) through the base of cover support post 22; (5) and another slit D extending from the opposite edge of the concavity which comprises center post 22 to the upper portion of front wall 11 of the cover section.

As shown in FIG. 4 these slits are separated by unslit or unweakened portions of the foam structure, the unweakened portions being in alignment with the slit pattern.

A still further embodiment of the divisible egg carton structure in accordance with the present invention is shown in FIG. 5 wherein it will be noted that, in this particular embodiment, there is no cover support post 22 in top wall 12 of the carton. As illustrated in FIG. 5 the central portion of the carton is characterized by formation of slit E positioned across the top of transverse rib 40 in the carton bottom cellular section 15. In alignment with slit E is a series of perforations which extend from the edge of the central portion of flap 18 up to and substantially in alignment with slit E, and the perforations to extend beyond slit E through the carton cover member including the carton back wall 14, top wall 12 and front wall 11.

A wide variety of manufacturing techniques may be employed to produce the lines of slits, perforations, and the like, in the egg carton structures as described herein. For example, such slits and/or perforations may be incorporated into the carton structure during the process of forming a carton utilizing a particularly desired profile in the central portion of the carton forming mold. Alternatively, such lines of weakness may be formed in the carton structure during formation of the carton employing, for example, a standard profiled heated wire or a profiled cold knife technique. When it is desired to form such lines of weakness in foamed thermoplastic carton structures however, it has been found desirable to produce such lines of weakness in the cartons central area by employing a cold knife, the cutting edge thereof being suitably profiled, to effect weakening in the central area of the carton. Such cutting operations are performed after the carton has been formed, e.g. utilizing, for example, a matched metal mold thermoforming technique to form the carton.

Although the present invention has been described with preferred embodiments, it is to be understood that modifications and variations may be resorted to, without departing from the spirit and scope of this invention, as those skilled in the art will appreciate. Such variations and modifications are therefore considered to be within the purview and scope of the appended claims.

What is claimed is:

1. An egg carton structure formed from polystyrene foam comprising a cover section and a bottom cellular section hinged to said cover section, said cover section having a concavity in the central portion of the top wall of said cover section, said concavity being continuously slit along its bottom edge, and said concavity, when said carton is closed, cooperating with and bearing against a centrally located transverse egg separating member located in said bottom cellular section, said
transverse member being slit along its upper edge and said cover section being further characterized by having slit means separated by unweakened areas of said foam, said slit means being in substantially longitudinal alignment with said transverse separating member when said carton is in an open position whereby when said carton is fractured by applying manual pressure on opposite ends of said carton said unweakened areas of said foam intermediate said slit means fracture along a line in longitudinal alignment with said slits.

2. An egg carton structure in accordance with claim 1 wherein when said egg carton structure is divided into two sections, opposite sides of said concavity form protective end walls for each of said sections.

3. A polystyrene foam egg carton comprising an inverted dish-like cover section and a bottom cellular section hinged to said cover section, said cover section comprising front and rear wall sections and opposite end wall sections integrally joined to said front and rear end wall sections and a rectangular top wall section integrally joined around its edges to said front, rear, and end wall sections, said top section having a centrally located concavity extending transversely of said cover section, said concavity having a continuous slit along its bottom edge, a series of slit means in substantial alignment with said continuous slit said slit means being separated by unweakened portions of said foam; a centrally located transverse egg separating member located in said bottom cellular section, adapted, when the carton is closed, to cooperate and bear against said concavity, said transverse member having a continuous slit along its upper edge, said bottom cellular member being further characterized by having a locking flap hinged along one longitudinal edge thereof, said locking flap having a transverse slit at its outer edge in alignment with the slit in the upper edge of said transverse member whereby, when said egg carton structure is transversely divided into two sections by fracturing said carton along said slits, each opposite side of said concavity forms a protective end wall for the cover section of each of said divided sections and opposite sides of said transverse member provide protective end walls for each of the cellular sections of said divided sections.