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Jackson

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[54] **DIVISIBLE THERMOPLASTIC EGG CARTON**

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[73] Assignee: **Mobil Oil Corporation,** New York, N.Y.

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[21] Appl. No.: **450,970**

Related U.S. Application Data

[63] Continuation of Ser. No. 236,620, March 21, 1972, abandoned.

[52] **U.S. Cl.** ..... **229/51 DB;** 229/2.5; 229/44 R; 229/45

[51] **Int. Cl.**[2] **B65D 1/26;** B65D 17/24

[58] **Field of Search** ..... 229/2.5, 44 R, 45, 51 DB; 220/9 F

[56] **References Cited**

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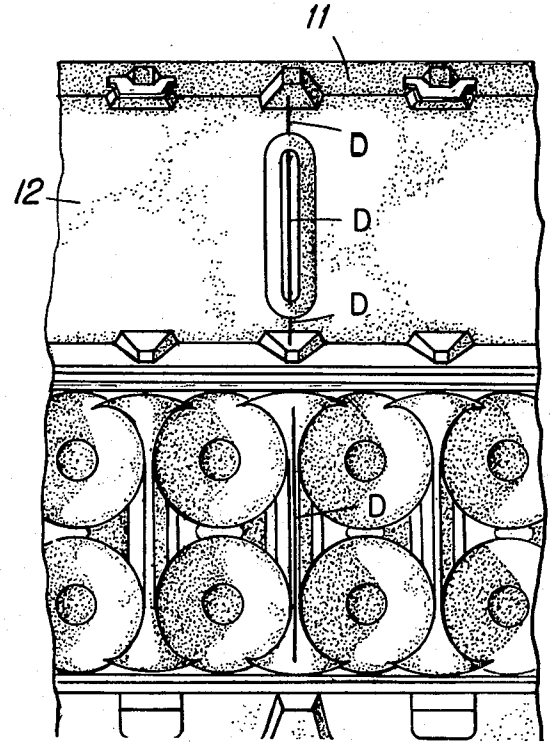
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Assistant Examiner—Stephen Marcus
Attorney, Agent, or Firm—Charles A. Huggett; James D. Tierney

[57] **ABSTRACT**

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



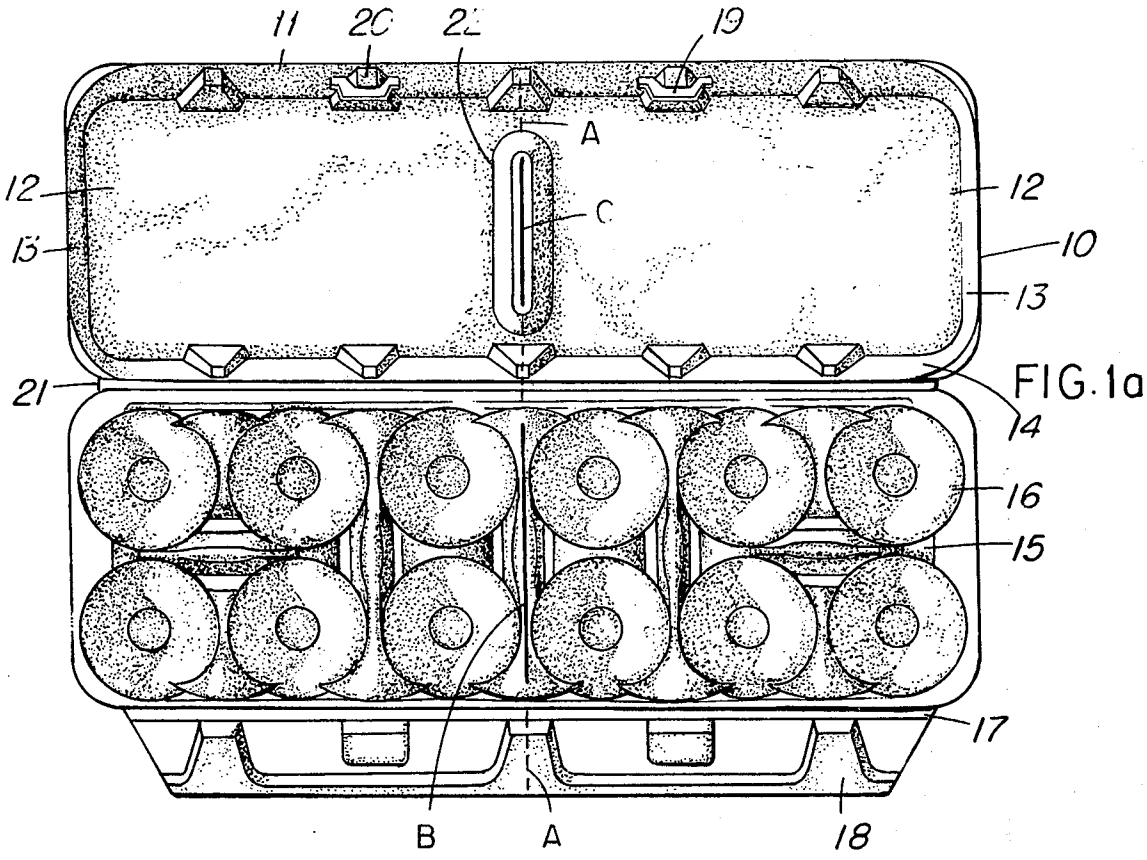

11
20
22
19
A
12
C
12
15
10
13
21
14
16
15
17
B
A
18

FIG. 1a

FIG. 1b

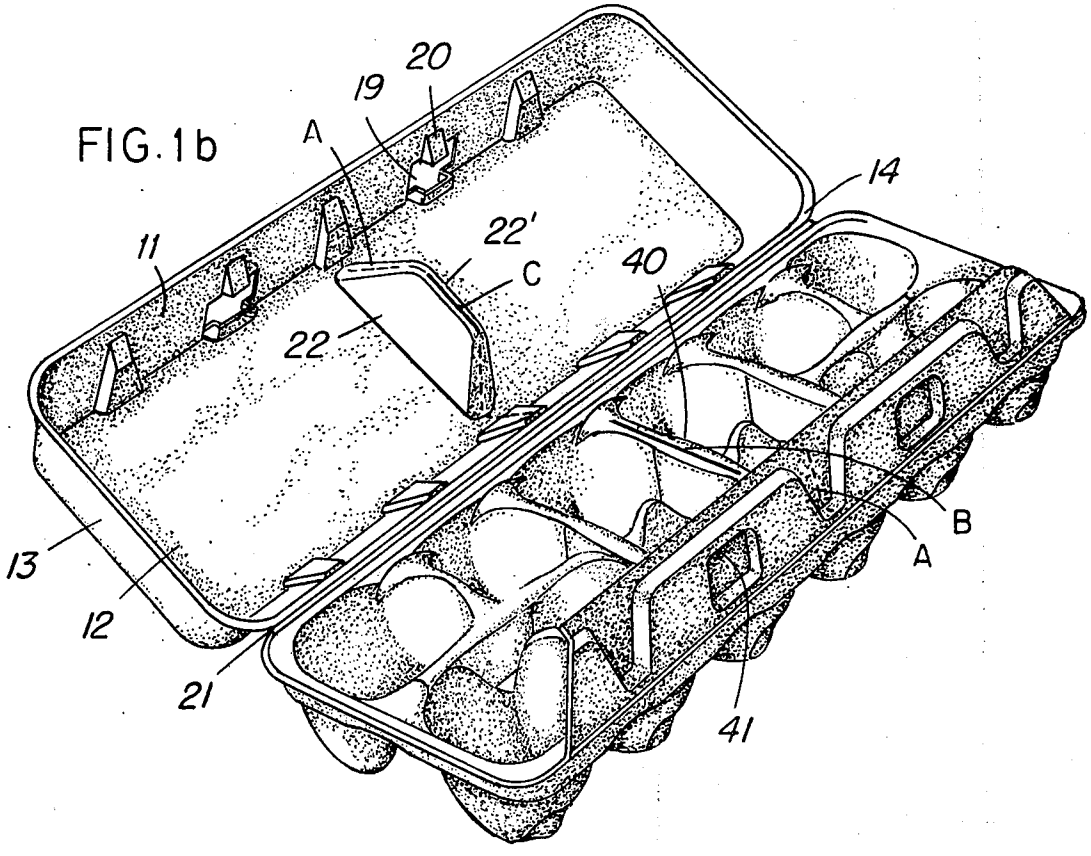

20
19
A
14
11
22'
C
40
22
B
A
13
12
21
41

FIG. 2

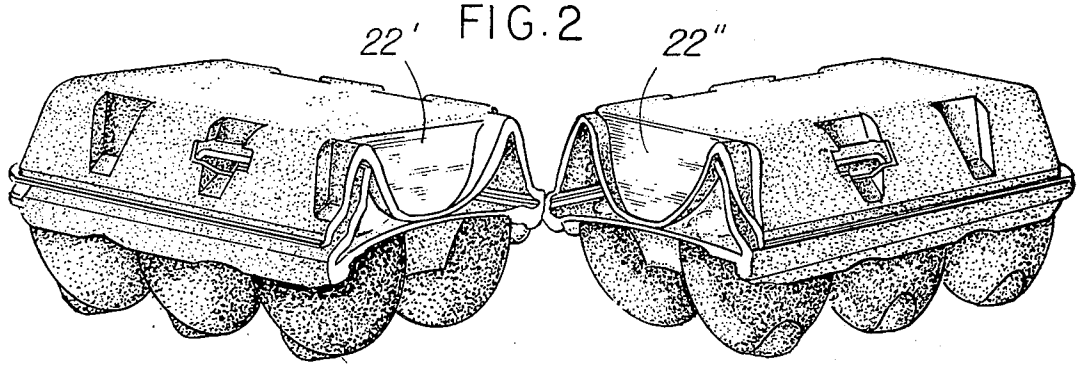


FIG. 3

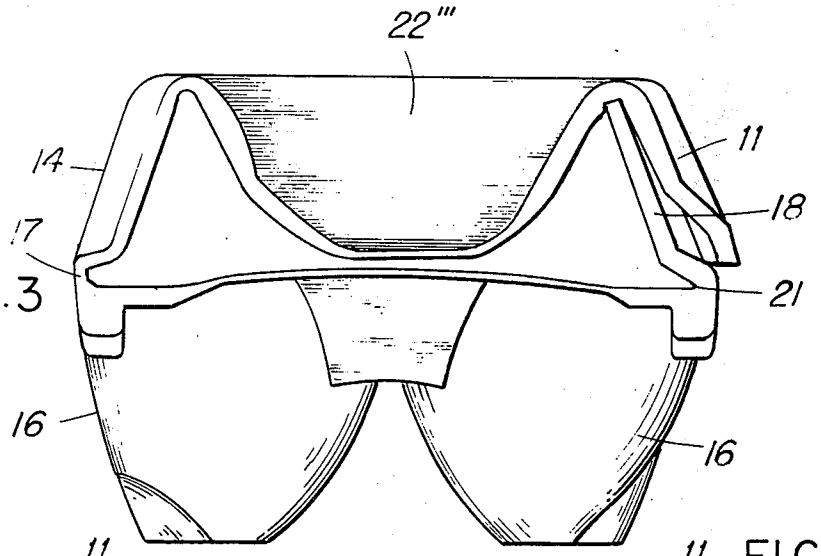


FIG. 4

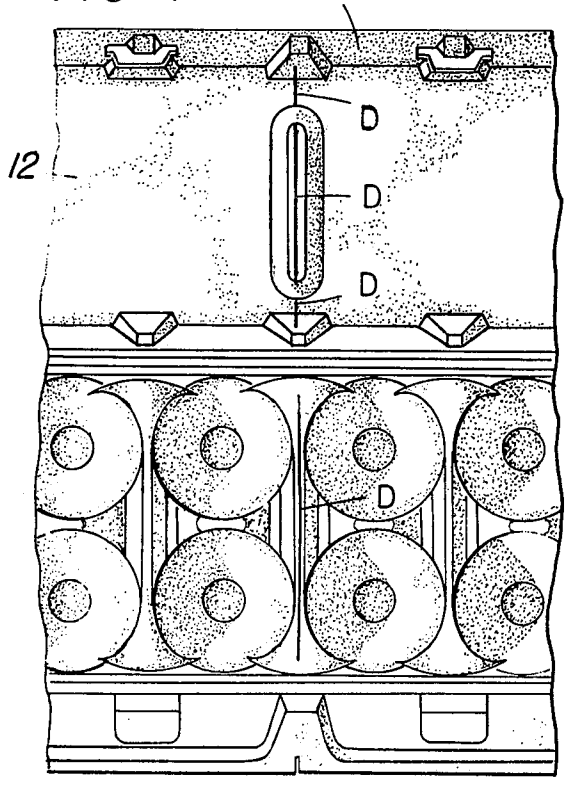
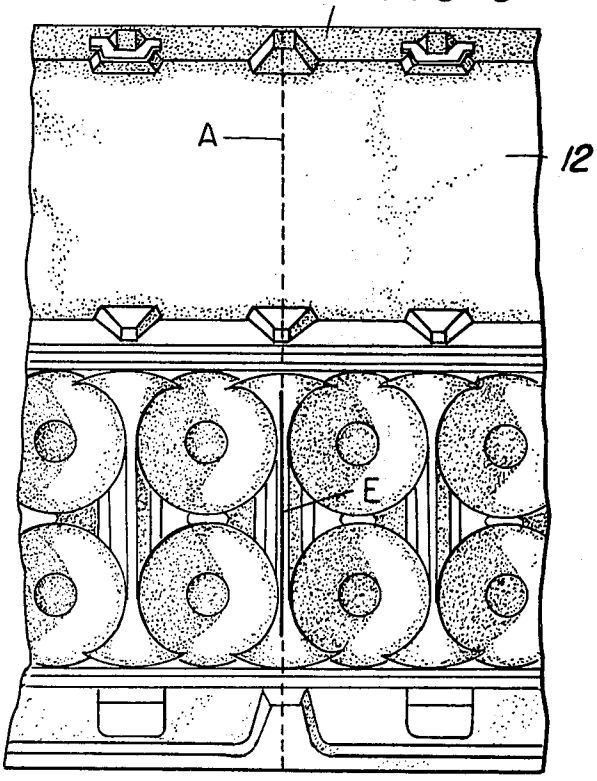


FIG. 5



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 pares, each row consisting of six individual egg receiving cells. Oftentimes, 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 occur. 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 effect 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 releaseably 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, polyolefins, polyvinyl chlorides, polyesters such as polyethylene terephthalate, and the like.

BRIEF DESCRIPTION OF THE DRAWINGS

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

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

FIG. 2 is a perspective view of the carton structure illustrated in FIGS. 1*a* and 1*b* 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 an additional embodiment of the carton structures of the present invention.

DESCRIPTION OF SPECIFIC EMBODIMENTS

As illustrated in FIGS. 1*a* and 1*b* 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. 1*a* and 1*b* 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.

1*a* and 1*b* 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. 1*b* 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 releaseably lock the carton structure shown in FIGS. 1*a* and 1*b*, carton locking flap **18** is pivoted around hinge **17** to an upright vertical position as illustrated in FIG. 1*b* 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. 1*b*. 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. 1*a* and 1*b*, 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. 1*a*, 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. 1*a* and 1*b* is loaded with eggs and is 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.

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