March 4, 1969 C. H. BESSETT 3,430,838

CARTON CONSTRUCTION

Filed March 28, 1968 Sheet 1 of 2

Fig. 1

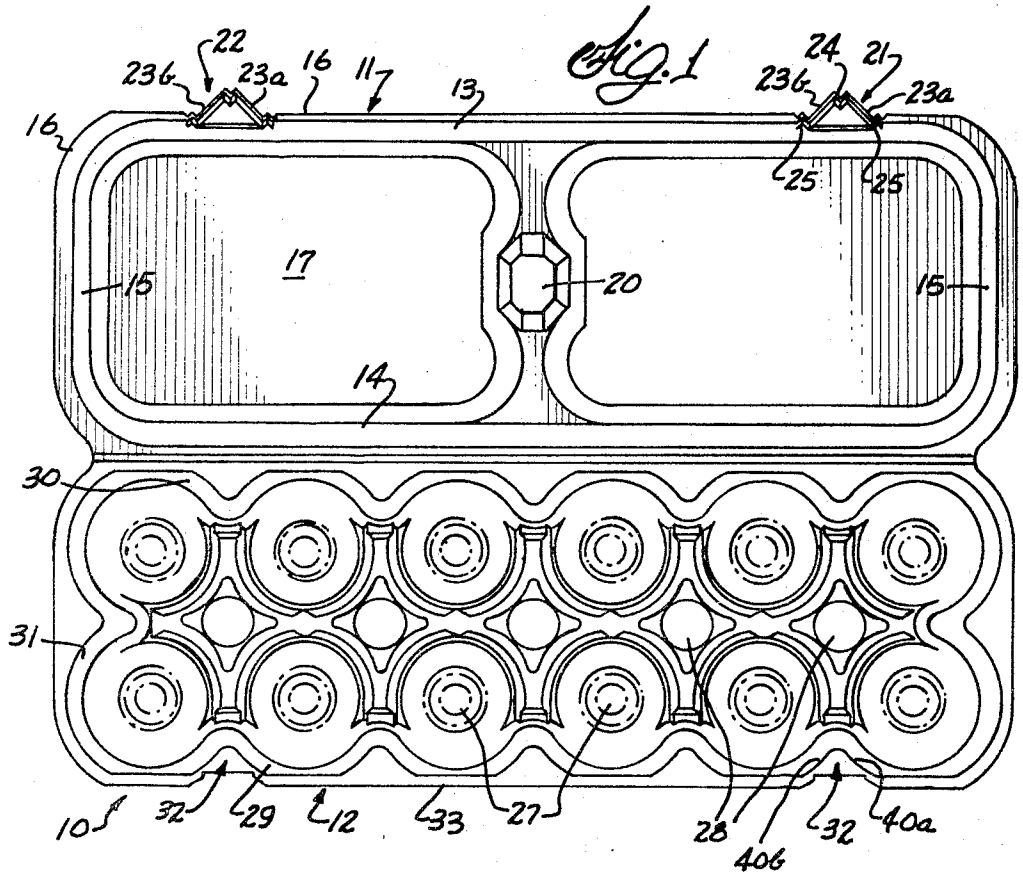
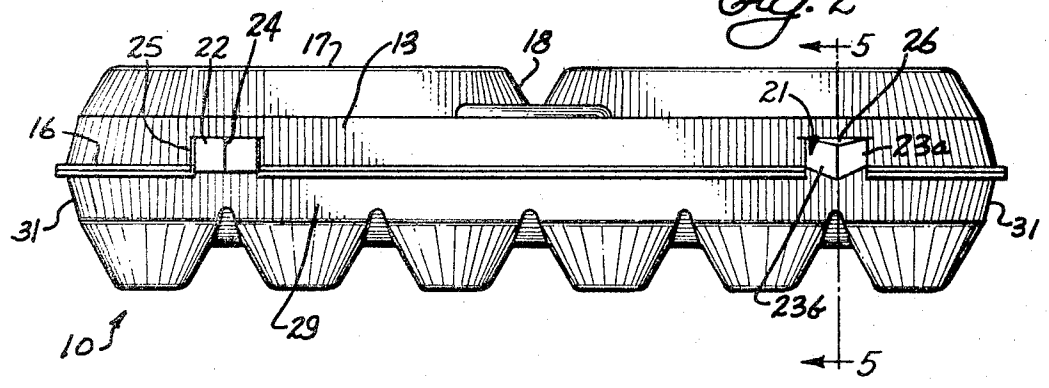


Fig. 2



INVENTOR.
Clifford H. Bessett
BY Pendleton, Neuman, Seibold & Williams
Attorneys

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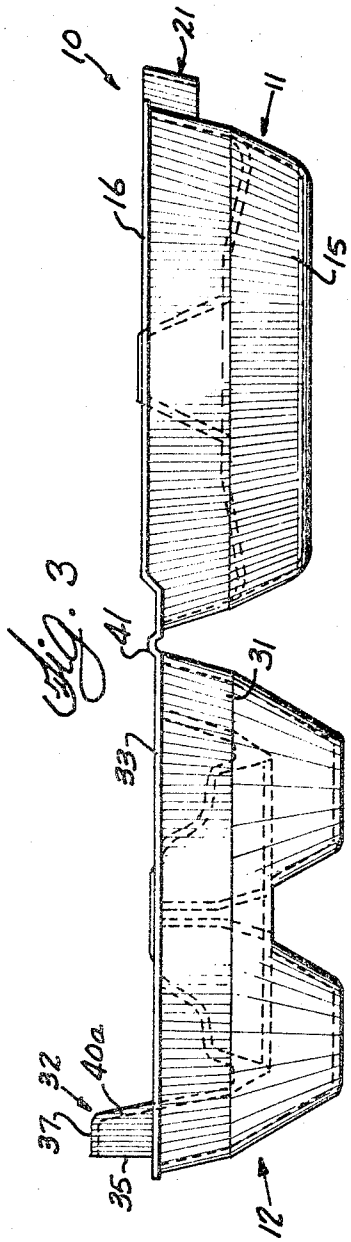


Fig. 3

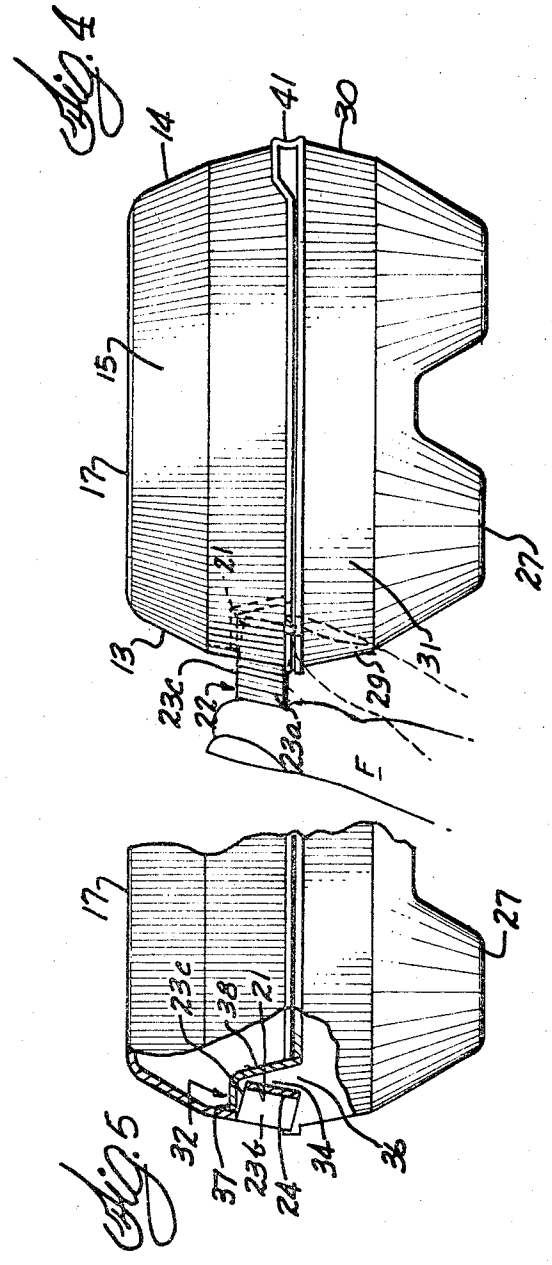


Fig. 4

Fig. 5

INVENTOR.
Clifford H. Bessett
BY Pendleton, Neuman, Seibold & Williams
Attorneys

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3,430,838

CARTON CONSTRUCTION

Clifford H. Bessett, South Holland, Ill., assignor to Packaging Corporation of America, Evanston, Ill., a corporation of Delaware

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U.S. Cl. 229—2.5 7 Claims
Int. Cl. B65d 1/00, 81/00, 85/00

ABSTRACT OF THE DISCLOSURE

A carton construction is provided which includes a bottom section and a cover section, the latter being movable into overlying relation with respect thereto. The bottom section has a front wall which is provided with a stationary upwardly extending protuberance. The protuberance includes a pocket having an open outwardly facing front side and a bridge portion forming a closed top side. The cover section is provided with a depending front wall which extends adjacent to and in front of the pocket front side, when the cover section is in its overlying position. Formed in the cover front wall and in registration with the pocket front side is a yieldable male element. The element is capable of being pushed inwardly or pulled outwardly upon the application of a predetermined external force. The element, when pushed inwardly, extends into the pocket and interlockingly engages the bridge portion and thus retains the cover section in its overlying relation with respect to the bottom section.

Background of the invention

The carton construction to be hereinafter described is an improvement over the carton construction disclosed in my copending application Ser. No. 665,842 filled Sept. 6, 1967, now Patent No. 3,391,845. In various prior art structures, a locking flange is provided which is hingedly connected to the front wall of the bottom or tray section of the carton. By reason of this locking flange, care must be exercised during closing of the carton to properly locate the flange with respect to the front wall of the cover section of the carton. In some prior structures the flange must be pivoted prior to cover section being moved to its closed position so that the flange will be positioned behind the front wall of the cover section and in other instances the cover section must be moved to its closed position prior to the flange being pivoted so as to overlie the front wall of the cover section. In either case, closing of the carton requires two pivotal motions performed in a predetermined timed sequence from opposite sides of the bottom section of the carton. One pivotal motion effects moving of the cover section to its closed position and the other pivotal motion effects upward positioning of the flange. By reason of this fact, therefore, the manual closing of such a carton may become an awkward manipulation requiring above average dexterity, or where the closing thereof is effected by automatic equipment, the structure of such equipment might be complex and costly, and/or the proper functioning thereof difficult to maintain.

Furthermore, in certain of the prior carton locks wherein the hinged locking flange of the tray section must be disposed behind the front wall of the closed cover section, the security of the lock will vary to some extent depending upon the location of the articles accommodated within the tray section. In addition, the manipulation of the locking flange behind the cover section front wall during closing or opening of certain prior cartons subjects the contents of the carton to possible damage particularly where such contents are fragile articles like eggs. Also where a hinged locking flange is utilized, the

flange is oftentimes susceptible to accidental movement whereby the carton cover might become unlocked unexpectantly.

Summary of the invention

Thus, it is an object of this invention to provide a carton which avoids the aforenoted shortcomings associated with the various prior art structures.

It is a further object of this invention to provide a carton which may be readily formed in a single molding operation.

It is a further object of this invention to provide a carton wherein all of the component parts comprising the lock are recessed from the exterior surface of the closed carton when the lock is in its locking position.

It is a still further object of this invention to provide a carton and lock therefor wherein the security of the lock in nowise relies upon the contents of the carton.

It is a still further object of this invention to provide a carton and lock therefor wherein manipulation of the lock to either a lock or an unlock position does not contact or disturb the contents of the carton.

Further and additional objects of the invention will appear from the description, accompanying drawings and appended claims.

In accordance with one embodiment of the invention a carton is provided which comprises a bottom section and a cover section movable into an overlying registered relation with respect thereto. The bottom section has formed in the front wall thereof a stationary upwardly extending protuberance which is provided with a pocket having an outwardly facing open front side. In addition, the pocket has an open downwardly facing lower side and a bridge portion which closes the upper side thereof. The front wall of the cover section carries a yieldable lock which is located in alignment with the pocket open front side when the cover section is in its overlying relation with respect to the bottom section. The yieldable lock includes a pair of foldably connected complemental members which are hingedly connected to spaced portions of the cover section front wall. The complemental members, upon a predetermined external force being exerted thereupon, are caused to flex and pass between the spaced portions of the front wall and resiliently project either outwardly or inwardly thereof depending upon the direction of the external force. The resiliency of the complemental members causes the same to remain in one of the said projecting positions. When the complemental members project inwardly, they extend into the pocket and lockingly engage the bridge portion of the protuberance. The complemental members, when in their locking position, are accessible through the open lower side of the pocket so that an external force may be applied thereto causing the complemental members to be moved to their outwardly projecting position permitting the cover section to be opened.

For a more complete understanding of the invention, reference should be made to the drawings wherein:

FIG. 1 is a top plan view of the improved carton shown in its fully opened condition;

FIG. 2 is a front elevational view of the improved carton with the cover section in overlying relation with respect to the bottom section and showing the right-hand lock in a locked position and the left-hand lock in an unlocked position;

FIG. 3 is a right end elevational view of the carton shown in FIG. 1;

FIG. 4 is a right end elevational view of the carton of FIG. 2 in locked condition and showing in fragmentary form the manner of manually effecting locking and unlocking of the carton; and

FIG. 5 is a sectional view taken along line 5—5 in FIG. 2 and showing the lock in its lock position.

Description

Referring now to the drawings and more particularly to FIG. 1, one form of the improved carton **10** is shown. While the carton **10** is illustrated as a molded pulp 2 x 6 egg carton, it is to be understood of course that the invention is not intended to be limited thereto. A 2 x 6 egg carton was selected only for the purpose of facilitating understanding of the invention in question.

The illustrated carton **10**, except for certain important structural features to be hereinafter enumerated and described, resembles generally the configuration of the cover and tray sections **11** and **12**, respectively, disclosed in Lambert U.S. Patent 2,978,162. The cover section **11** includes a front wall **13**, a rear wall **14**, and two end walls **15** which are interconnected to one another and delimit an open side which is adapted to overlie and register with the open top side of the bottom or tray section **12** when the cover section **11** is in its closed position as seen in FIGS. 2 and 4. To facilitate proper positioning of the cover section in its closed position with respect to the bottom section **12**, the lower edges of the front and end walls **13** and **15** terminate in a laterally and outwardly extending flange **16**. The flange **16** also provides added stiffness to the cover walls.

While the top panel **17** of the illustrated cover section **11** includes a transverse recess **18** and a centrally disposed depending post **20**, such structural features are not essential in practicing the herein disclosed invention. In place thereof, if desired, the entire top panel may be planar throughout.

Formed in the depending front wall **13** of the cover section **11** is a pair of yieldable locks **21** and **22**. Each lock is of like construction and comprises a pair of complemental members **23***a* and *b* which are interconnected to one another at their outer edges by a foldline **24**. The opposite edges of the members are connected to spaced portions of the front wall **13** by foldlines **25**. The foldlines **25** of each lock define two sides of an opening **26** formed in the front wall **13** through which the members **23***a* and *b* are caused to pass when a predetermined external force is applied to the edges of the members interconnected by foldline **24**. As seen in FIG. 4, when the carton **10** is to be locked or unlocked manually, the external force is readily applied by the tip of a finger F. Because of the shape of members **23***a* and *b* and the inherent resilience of the material from which carton **10** is made (e.g., molded paper pulp) the members **23***a* and *b* will remain in their inwardly or outwardly projected position until the predetermined external force is applied in the manner shown in FIG. 4 to reverse their projected position. How members **23***a* and *b* effect interlocking of the cover and tray sections will be described more fully hereinafter.

Tray or bottom section **12**, as illustrated, comprises a plurality of cells **27** which are arranged in two parallel rows of six cells each. The rows of cells are separated by a plurality of spaced upwardly projecting hollow posts **28**. Certain cells **27** have portions thereof which form a front wall **29**, a rear wall **30**, and a pair of end walls **31**. The walls cooperate with one another to delimit an open top side, which permits the tray section **12** to be readily loaded or unloaded, when the cover section **11** is in its open position as shown in FIGS. 1 and 3. One row of cells is adjacent to and substantially coextensive with the front wall **29**.

Formed in the front wall **29** are a pair of stationary upwardly extending protuberances **32**. As noted in FIG. 3, each protuberance **32** projects a substantial distance above an outwardly and laterally extending flange **33**, formed at the upper edges of the front, rear and end walls **29**, **30** and **31**, respectively. As seen in FIGURE 1, the protuberances **32** are aligned with respect to the front row of cells so that each protuberance is positioned between adjacent cells in the row. By reason of this fact, therefore, neither protuberance will interfere with the disposition of an egg in either of the adjacent cells.

Each protuberance is provided with a pocket **34** which is defined by an open, outwardly facing front side **35**, an open, downwardly facing lower side **36**, a bridge portion **37** forming a closed upper side, and a closed rear side **38**. The rear side **38** comprises two angularly disposed wall sections **40***a* and *b*, both of which are mere extensions of portions of the walls forming the adjacent cells **27**. The number of protuberances **32** formed in the front wall of the tray section may be varied from that shown without departing from the scope of the invention. Furthermore, while the rear walls **14** and **30** of the cover and tray sections are illustrated as being hingedly connected to one another by foldline **41**, it is nevertheless within the scope of this invention for the cover section **11** to be wholly separate from tray section **12**. In this latter construction, not shown, protuberances are formed on both the front and rear walls of the tray section and yieldable locks are also formed on both the front and rear walls of the cover section. With this construction, the locks on the cover rear wall cooperate with the corresponding protuberances on the tray rear wall in the same manner that the locks on the cover front wall coact with the protuberances on the tray front wall. Such coaction will be hereinafter described.

As seen in FIG. 5, the yieldable lock **21**, when projecting inwardly relative to the cover front wall, extends into the adjacent pocket **34**. When in such position, it will be observed that the upper edges **23***c* of the complemental members **23***a* and *b* are disposed immediately beneath the bridge portion **37** of the pocket **34**. Thus, any attempt to open the cover section **11** when the locks are in the positions, as shown in FIG. 5, will be resisted by the bridge portion of each protuberance pocket **34**. Because of the angular or outwardly flaring disposition of the cover front wall, the axes of the foldlines **25** of the members **23***a* and *b* are also angularly disposed so that when the lock projects inwardly it will project downwardly a slight amount as well. By reason of this slight downward inclination of the inwardly projecting lock, the manual application of an external force by a finger tip to push the lock to an outwardly projecting position is facilitated. To apply this latter external force, the finger tip is inserted upwardly through the open lower side of the pocket **34**, see the disposition of finger F in dotted lines in FIG. 4. Because of the tapered conical configuration of the underside of the adjacent cells in the tray section, the open lower side of the pocket is readily accessible.

While the carton **10** is illustrated as including two spaced upwardly extending protuberances **32** which cooperate with yieldable locks **21** and **22** to effect locking of the cover in its closed position, the invention is not intended to be limited to the illustrated embodiment. For example, if desired, a protuberance may be formed along the tray section front wall between each pair of cells or selected pairs of cells forming the front row of cells. In this latter modification, not shown, these additional protuberances would not cooperate with any yieldable locks, but instead would function to reenforce the cover section front wall. Furthermore, if desired, all or a predetermined number of the protuberances, regardless of whether or not they cooperate with yieldable locks, may extend upwardly a sufficient amount so as to engage the underside of the cover section top panel **17** and thereby reenforce same. The protuberance and yieldable lock combination may also be readily incorporated in a 3 x 4 style egg carton, or in various other style closeable cartons having cellular or non-cellular cover and tray sections.

Thus, it will be seen that an improved carton and lock therefor have been provided in which the lock in nowise relies upon the contents of the carton to maintain the lock in a locking position, or in nowise disturbs or damages the contents of the carton when the lock is manip-

ulated to either a locking or unlocking position. Furthermore, when the improved lock is in its locking position, no portion thereof projects outwardly from the exterior of the carton.

I claim:

1. A carton comprising a bottom section provided with interconnected front, rear and end walls cooperating with one another to delimit an open top side, one of said walls being provided with a stationary upwardly extending protuberance having a pocket formed therein, said pocket having an open outwardly facing front side, an open downwardly facing lower side, and an upper side closed by a bridge portion, and a cover section provided with interconnected front, rear and end walls cooperating with one another to delimit an open bottom side, said cover section being movable into overlying registered relation with respect to said bottom section whereby one wall of said cover section is disposed adjacent to and exteriorly of the open front side of said protuberance pocket, said cover section one wall being provided with a lock for releasably retaining said cover section in said overlying relation, said lock including a yieldable male element disposed in aligned relation with respect to said pocket, said element comprising a pair of foldably connected complemental members hingedly connected to spaced portions of said cover section one wall, said complemental members, upon a predetermined external force being exerted thereupon, flex and pass between the spaced portions of said cover section one wall and resiliently project either outwardly or inwardly of said cover section one wall depending upon the direction of the exerted force and remain in said selected projected position; said complemental members, only when projecting inwardly, extending into said pocket through said open front side and interlocking engaging said bridge portion, said complemental members, when in said inwardly projecting position, being accessible through said pocket open lower side.

2. The carton of claim 1 wherein said cover and bottom sections have the rear walls thereof hingedly connected to one another.

3. The carton of claim 2 wherein said bottom section is provided with a plurality of article-accommodating cells arranged in a row extending along and disposed adjacent to said front wall, the upwardly extending protuberance being formed in said bottom section front wall and located between and outside of adjacent cells in said row.

4. The carton of claim 2 wherein said bottom section front wall is provided with a pair of spaced stationary upwardly extending protuberances, each of which is located outside of and between adjacent cells in said row.

5. The carton of claim 3 wherein said protuberance tinuations of portions of the walls forming said adjacent tinuous of portions of the walls forming said adjacent cells.

6. The carton of claim 5 wherein the upper edge of the front wall of the bottom section terminates in an outwardly projecting flange and said flange is interrupted by said protuberance.

7. The carton of claim 6 wherein said carton is of one piece molded pulp construction.

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U.S. Cl. X.R.

229—15, 44, 45

DAVID M. BOCKENEK, *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,430,838 March 4, 1969

Clifford H. Bessett

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 36, "filled" should read -- filed --. Column 6, lines 16 and 17, "tinuations of portions of the walls forming said adjacent tinuous" should read -- includes rear sides formed by upwardly extending continuations

Signed and sealed this 24th day of March 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents