Sept. 14, 1965 G. E. STRUBLE 3,206,096

CARTON AND BLANK FOR PRODUCING THE SAME

Filed July 30, 1964 2 Sheets-Sheet 1

Fig.1

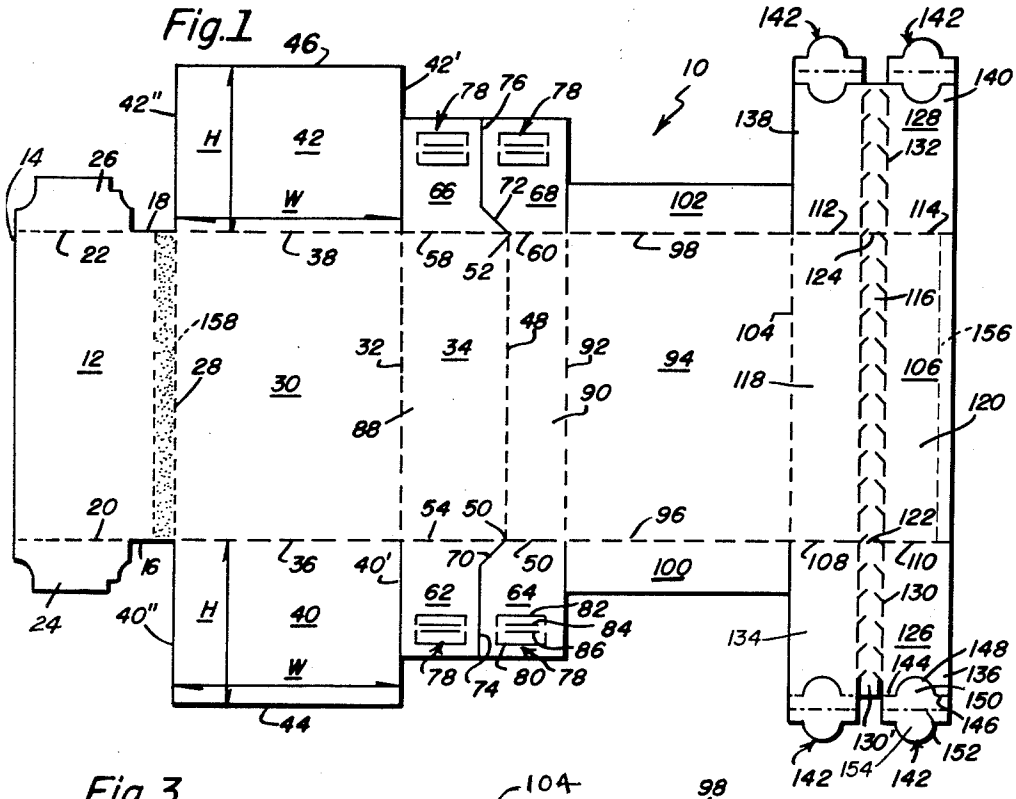
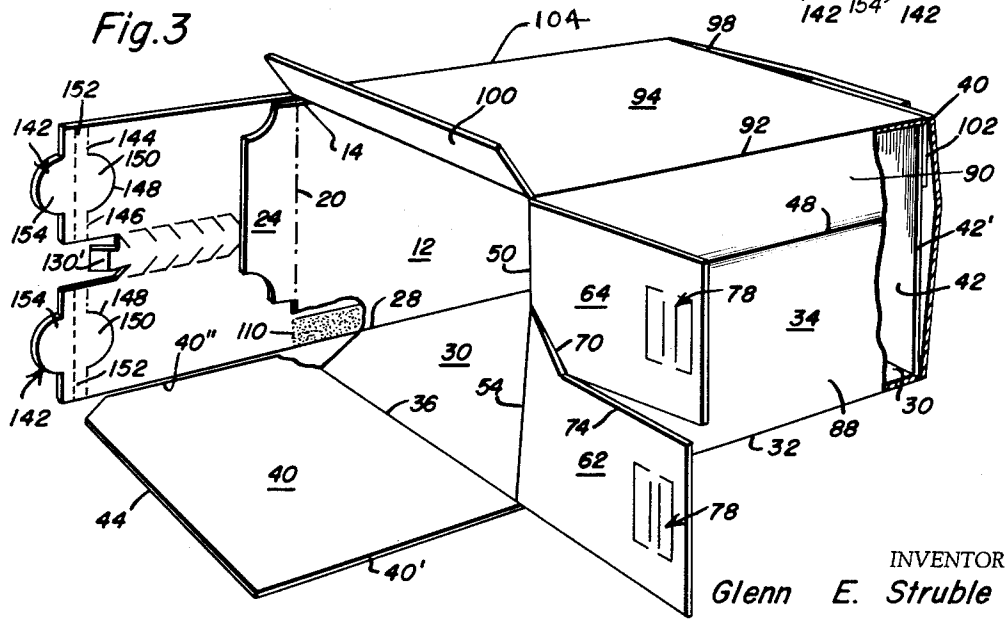


Fig.3



INVENTOR
Glenn E. Struble

BY

ATTORNEY

Sept. 14, 1965 G. E. STRUBLE 3,206,096

CARTON AND BLANK FOR PRODUCING THE SAME

Filed July 30, 1964 2 Sheets-Sheet 2

Fig.6

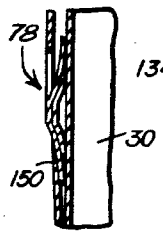
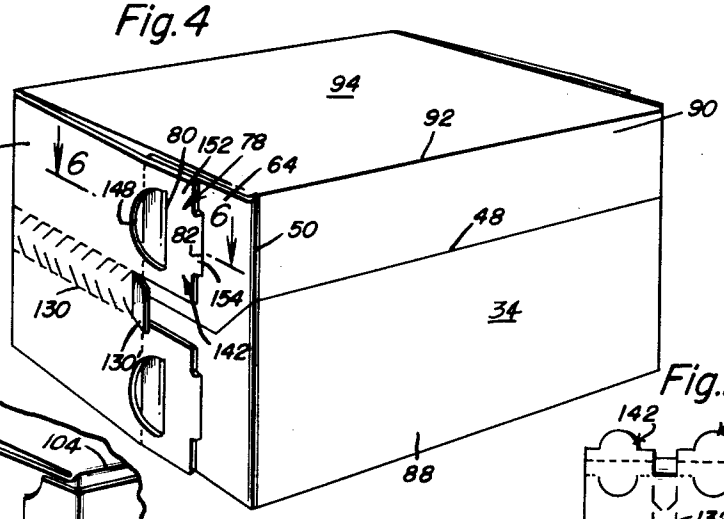


Fig.4



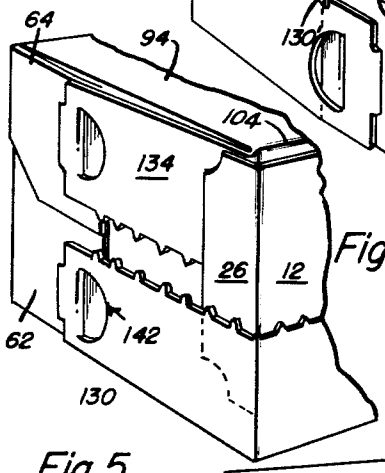


Fig. 7

Fig.2

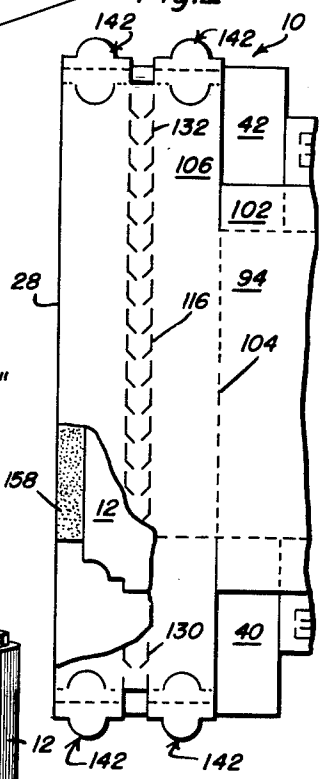
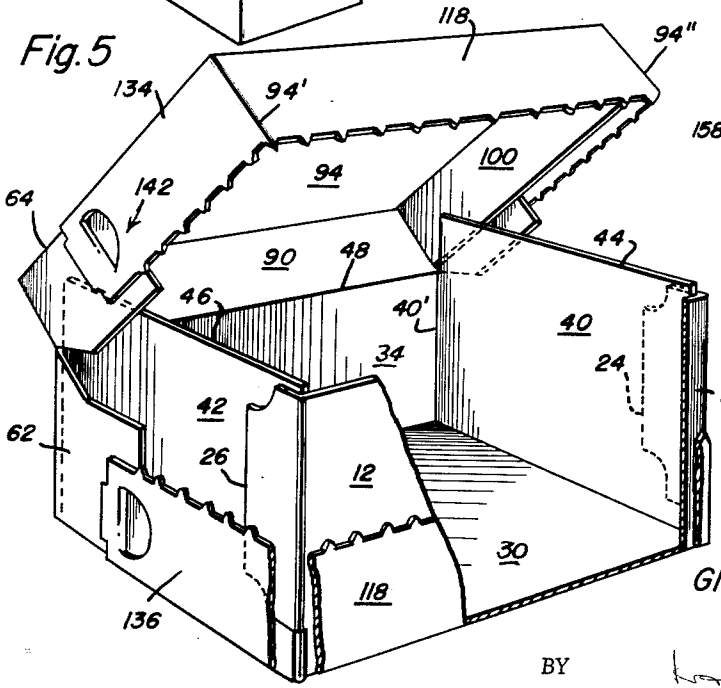


Fig.5



INVENTOR

Glenn E. Struble

BY

ATTORNEY

United States Patent Office 3,206,096 Patented Sept. 14, 1965

3,206,096

CARTON AND BLANK FOR PRODUCING THE SAME

Glenn E. Struble, Hamilton, Ohio, assignor to Diamond International Corporation, a corporation of Delaware

Filed July 30, 1964, Ser. No. 386,245
5 Claims. (Cl. 229—16)

This invention relates to a reclosable carton produced from a single blank element, and more specifically to a carton and blank particularly adapted for packing ice cream or the like and having a reclosable cover or lid.

The carton and blank of the present invention are generally related to the type of carton disclosed in U.S. Letters Patent to Inman et al. No. 2,099,166 or Frieders No. 246,484, each showing mechanical means for locking the ends of the cartons.

Primary objects of the present invention are to provide a well-shaped carton which retains its shape after having been packed; to provide a carton which is tightly sealable and reclosable; to provide a carton which utilizes relatively little gluing or adhesive to facilitate the production and erection on conventional equipment; to provide a carton which is substantially squared and oriented when erected and filled, and includes means facilitating ready reclosure of the same.

Other and more specific objects and the nature and advantages of the present invention will become apparent from the following description taken in conjunction with the accompanying drawings forming a part thereof, in which:

FIG. 1 is a plan view of the novel blank of the invention;

FIG. 2 is a plan view of the blank of FIG. 1 folded into an assembled condition, portions being broken away for purposes of clarity;

FIG. 3 is an enlarged perspective view of the partially erected carton showing one end closed, portions being broken away for purposes of clarity;

FIG. 4 is an enlarged perspective view of the closed carton;

FIG. 5 is an enlarged perspective view of the open carton;

FIG. 6 is a fragmentary section taken substantially on the plane of line 6—6 of FIG. 4 through the mechanical lock and showing by phantom lines how the lock is closed; and

FIG. 7 is a fragmentary perspective view of the reclosed carton, i.e., reclosure from the condition shown in FIG. 5.

Referring to the drawings in detail, and first considering FIG. 1, a blank produced from paperboard or the like is indicated generally at **10** and comprises a material conventionally used for packaging ice cream. The blank **10** comprises, reading from left to right a rectangular front wall panel **12** having a height equal to the carton height, a free top margin **14** and opposed side margins **16** and **18**. The margins **16** and **18** have hingedly connected thereto on fold lines **20** and **22**, respectively, sealing flaps **24** and **26**, respectively. Hingedly connected to a bottom fold line **28** is a rectangular bottom panel **30** having foldably connected to the opposite bottom margin at **32** a rectangular rear wall panel **34**. The bottom panel **30** includes at opposite side margins **36** and **38** inner closure flaps **40** and **42**, respectively, which have a height H substantially equal to the overall height of the erected carton, and which have an upper transverse free marginal edge **44** and **46**, respectively, which function to square or orient the cooperating parts of the carton when it is erected.

The rear wall panel has extending the length thereof a fold line **48** providing means by which the lid is hinged to the receptacle portion of the carton, as will be apparent when considering the erected carton. The fold line **48**

has extending below and above the opposite terminal ends **50** and **52** thereof side marginal fold lines **54**, **56** and **58**, **60** having hingedly connected thereto respective lower and upper lock tabs or panel segments **62**, **64** and **66**, **68**. Adjacent margins of the lock tabs **62**, **64** and **66**, **68** are defined by angular die cuts **70** and **72**, respectively, extending from terminal ends **50** and **52** of the fold line **48** and continuing intermediately of the flaps **62**, **64** and **66**, **68** in colinear die cuts **74**, **76** parallel to the upper and lower margins of the respective lock tabs.

The lock tabs **62**, **64** and **66**, **68** have respectively formed therein by means of suitable die cuts female, lock-slots indicated generally at **78**. The female lock-slots on the respective lock tabs are identical and only one will be described in detail.

The female lock-slot structure **78** comprises a pair of opposed, vertically extending U-shaped cuts **80** and **82** extending transversely through the respective lock tabs and disposed inwardly of the terminal ends of the U-shaped cuts are a pair of parallel cuts **84** and **86** which also extend transversely through the respective lock tabs.

The margins **74** and **76** and the lock tabs **62**, **68** are offset with respect to the fold line **48** substantially the same width as a tear strip which will subsequently be described in detail. The fold line **48** forms in the rear wall panel **34** a bottom or receptacle panel segment **88** and a lid panel segment **90**. Hingedly connected to the upper edge **92** of the rear wall panel **34** is a rectangular lid panel **94** having the same dimensions as bottom wall panel **30**. Hingedly connected to side marginal folds **96** and **98** of lid panel **94** are rectangular, inner sealing flaps **100** and **102**, respectively. Hingedly connected to the forward margin **104** of the top panel **94** is a rectangular front closure panel **106** which includes side marginal fold lines **108**, **110** and **112**, **114** separated by an intermediate portion of a tear strip **116** which extends the length of the panel **106**. The tear strip **106** defines an upper rectangular lid segment **118** and a lower front wall segment **120**. Terminal ends of the tear strip **116** are defined by segmental fold lines **122**, **124** disposed between fold lines **108**, **110** and **112**, **114**, respectively.

Hingedly connected to opposite sides of the closure panel **106** on the fold lines **108**, **122**, **110** and **112**, **124** and **114** are side closure flaps **126** and **128**, respectively. The flaps **126** and **128** respectively include therethrough and extending to the terminal ends thereof, tear strip portions **130** and **132** forming therein male lock panel segments **134**, **136** and **138**, **140**, respectively, each including at the terminal end thereof a male lock tab indicated generally at **142**.

The male lock tabs **142** are each identical and only one will be described in detail. The lock tabs **142** are hingedly connected by means of vertically extending, fragmentary fold lines **144** and **146** of the terminal ends of the respective lock tabs **134–140**, and the hinge lines **144**, **146** are spaced from each other by a U-shaped die cut **148** forming a first or lock element **150**. A vertically extending fold line **152** hingedly connects the first lock element **150** to a second similarly conformed lock element **154**.

Assembly of the blank

Referring to FIGS. 1 and 2, the inner front wall panel **12** is folded on fold line **28** into overlying relationship with respect to the bottom panel **30**. The panels **106** and **94** will be maintained in coplanar relationship and folded simultaneously at fold line **92** into overlying relationship with respect to the panels **34** and **30** as well as the panel **12** which had previously been folded onto panel **30**. The panels **106** and **12** will be adhesively secured in the areas **156** and **158**; it being noted that area **158** is the side opposite that shown in FIG. 1.

When the parts are oriented in this manner, a tube having a rectangular cross section will be formed.

Erection of the carton

The carton is erected by initially disposing panels or walls **30**, **94** and **12**, **106** and **34** in spaced parallel relationship as seen in FIG. 3. The tube formed as seen in FIG. 3 will be erected on suitable apparatus, not shown, and the carton will generally be end-loaded. Still referring to FIG. 3, the closure flap **42** will be initially folded at fold line **38** normal to the bottom wall panel **30**. The die cut side margins **42'**, **42''** of the panel **42** together with the top margin **44** will serve to square-up the carton.

It will be noted that the width W of the flaps **40** and **42** are substantially the width of the erected carton and the height H of the flaps **40** and **42** is equal to the height of the erected carton. Further, the free margin **14** of panel **12** will be disposed beneath fold line **104** to aid in forming a tight carton.

Next, the flap **102** is folded at fold line **98** over the edge **46** of the flap **42**. This fold will not only square the carton up but will form a seal to deter the flow of the relatively viscous ice cream.

Next, the sealing flap **26** is folded along the edge **42'** of the flap **42** and deters the flow of ice cream past the free edge of the downwardly folded flap **102**.

Next, the female lock tabs **66** and **68** are folded at the rear edge **42'** of the flap **42** and finally the male lock panel segments **138** and **140** are folded about the edge **42''** toward the female lock slot structure **78**. It will be noted that the side edges **42'**, **44'** respectively engage the fold lines **58**, **60**, and **22**, **112**, **124** and **114** to square-up the carton and form a tight seal at the marginal edges of the inner flap **42**.

Likewise, when the end of the carton is closed about the inner closure flap **40**, the edges **44**, **40'** and **40''** will not only square up that end of the carton but will provide seals for flaps adjacent thereto and folded in overlying relation with respect to the inner flap **40**.

As most clearly seen, for example, in the upper portion of the end wall of FIG. 4 and in FIG. 6, and particularly referring to the female lock slot **78** and male lock tabs **142**, the tab **150** is bent about fold line **152** and inserted into slot **82**, then tab **154** is bent about the fold line **152** and inserted into the slot **80**.

Although a specific mechanical means has been disclosed for the purpose of locking the ends of the carton, other comparable mechanical lock means may be utilized. However, the expedient of mechanical lock means spaced on opposite sides of the tear strip portions **130** and **132** provides a stable base from which the tear strip may be torn, as will be described in detail with respect to the manner in which the sealed carton is opened.

The specific mechanical lock is of the general character disclosed in detail in U.S. Patent to Pergande No. 2,060,240, and reference may be had to this expired patent for purposes of obtaining a more specific description of the general manner in which the typical mechanical lock of the character involved operates.

After the assembly **78** and **142** has been interengaged at one end, the carton is end-loaded on conventional filling apparatus and the other end flaps are closed to form end closure assamblies at the carton ends. The carton will now assume the condtion shown in FIG. 4 and it will be noted that the tear strip portion **130** includes a finger-engagable tab **130'** which may be readily grasped.

In order to open the carton, i.e., remove the tear strip which extends about three sides of the lid of the carton, the finger-engagable tab **130'** is grasped and pulled outdardly and upwardly to separate the lid panel or wall **94** and portions **100**, **64**, **134** and **102**, **68**, **138** and portion **118** at the respective sides and forward edge thereof to form a peripherally flanged lid; see, for example, FIG. 5.

The rear wall **34**, bottom panel **30**, forward wall panel **12** and portion **118**, together with the inner flaps **40**, **42** and seal tabs **24**, **26** and portions **62**, **136** and **66**, **140** form an ice cream-receiving receptacle, as clearly seen in FIG. 5.

It will be noted that the lid will be readily hinged completely out of the way on hinge line **48** to provide complete and adequate access to the entire contents of the novel carton. When removing a portion of the contents, i.e., ice cream from the carton, the carton is open at its largest dimension, i.e., the top, and thus minimizing contact with the carton contents.

After a portion of the carton contents has been removed, the carton may be readily reclosed and for this purpose, the corners **94'**, **94''** of the lid will be received within the corner folds formed at the ends of panel **12** and sealing tabs **24** and **26**, for example.

It will be noted that when the carton is reclosed, the inner marginal edges **70**, **74** and **72**, **76** of the respective female lock tabs **62**, **64** and **66**, **68** will abuttingly engage to orient the carton in a reclosed condition. Further, in addition to guiding the lid into a reclosed position, i.e., with respect to the angular corner folds, i.e., behind the angular folds of sealing tabs **24**, **26** with respect to the ends of the panel **12**; the corners **94'**, **94''** will be frictionally engaged behind these angular folds to retain the reclosed carton in a closed condition.

Thus, there has been disclosed a novel carton and blank which is readily manufactured, assembled, erected, opened and reclosed, and which fully conforms with the objects of the invention heretofore set forth.

It will be obvious to those skilled in the art that various changes may be made without departing from the scope of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A reclosable carton comprising rectangularly disposed front, bottom, rear and lid panels,

said lid panel including a closure panel depending from a forward edge thereof and extending along the length of said front panel and secured thereat;

said panels including closure flaps forming end assemblies at opposite ends of said carton;

said closure flaps and closure panel depending from the forward edge of said lid including a continuous tear strip intermediately thereof and free from underlying portions of said carton and spaced below the side and front margins of said lid panel, said closure panel including segmental closure panel segments extending longitudinally from opposite ends thereof and disposed on opposite sides of said continuous tear strip, said segmental closure panel segments including terminal lock portions spaced on opposite sides of said segmental tear strip, said rear panel including a longitudinally extending, intermediate hinge line, said rear panel including at opposite ends thereof longitudinally extending lock panel segments spaced from each other by an intermediate free margin, said last-mentioned lock panel segments including cooperating lock portions detachably engageable with said lock portions at the terminal ends of the lock panel segments at opposite ends of said closure panel segments.

2. The structure as claimed in claim **1**, in which said carton comprises a lower receptacle portion including said bottom panel, front wall panel, sealing flaps at the opposite ends of said front wall panel, a lower panel segment formed by said intermediate fold line in said rear wall panel, and a lower pair of detachably engaged lock panel segments extending from said front and rear wall panels to the ends of said carton, said carton including a hinged lid comprising said lid panel, bordered by a peripheral depending flange connected to said intermediate fold line in said rear wall panel.

3. A blank for producing a reclosable hinged-lid carton comprising a one-piece, elongated planar element including in order:

rectangular front, bottom, rear, lid and front closure panels connected on mutually parallel fold lines,

said bottom and lid panels including opposite side margins having hingedly connected thereto inner closure flaps,

said rear panel including at opposite sides pairs of segmental fold lines,

said rear panel including an intermediate hinge line extending between opposite sides of said rear panel and terminating at adjacent ends of said segmental fold lines at the side margins thereof, said rear panel having hingedly connected thereto and extending laterally therefrom pairs of segmental lock panel segments independently, hingedly connected to said segmental fold lines,

said lock panel segments including mechanical lock portions adjacent terminal ends thereof,

said front closure panel including side marginal fold lines having hingedly connected thereto laterally extending lock panels, said front closure panel and lock panels having extending intermediately thereof and to the terminal ends of said lock panels a continuous tear strip,

said tear strip defining in said lock panels pairs of lock panel segments,

said last mentioned lock panel segments including at terminal ends thereof cooperating lock portions for detachably engaging the lock portions adjacent the terminal ends of the lock panel segments hingedly connected to said rear wall.

4. A blank as claimed in claim 3, in which said inner closure flaps hingedly connected to said bottom wall are rectangular and have an area substantially equal to that of the carton formed from said blank.

5. The structure as claimed in claim 3, in which said front wall panel includes segmental side marginal fold lines having hingedly connected thereto sealing flaps for overlying the terminal edge of the inner closure flaps hingedly connected to said lid panel.

References Cited by the Examiner

UNITED STATES PATENTS

2,060,240	11/36	Pergande	229—39
3,018,942	1/62	Arneson	229—51
3,111,255	11/63	Skowronski	229—51
3,131,851	5/64	Pace	229—51
3,165,254	1/65	Moore	229—51

JOSEPH R. LECLAIR, *Primary Examiner.*

FRANKLIN T. GARRETT, *Examiner.*