Dec. 16, 1969 G. L. MEYERS 3,484,036

TAMPERPROOF RECLOSABLE CARTON WITH INTERLEAVING FLAPS

Filed Jan. 10, 1968 4 Sheets-Sheet 1

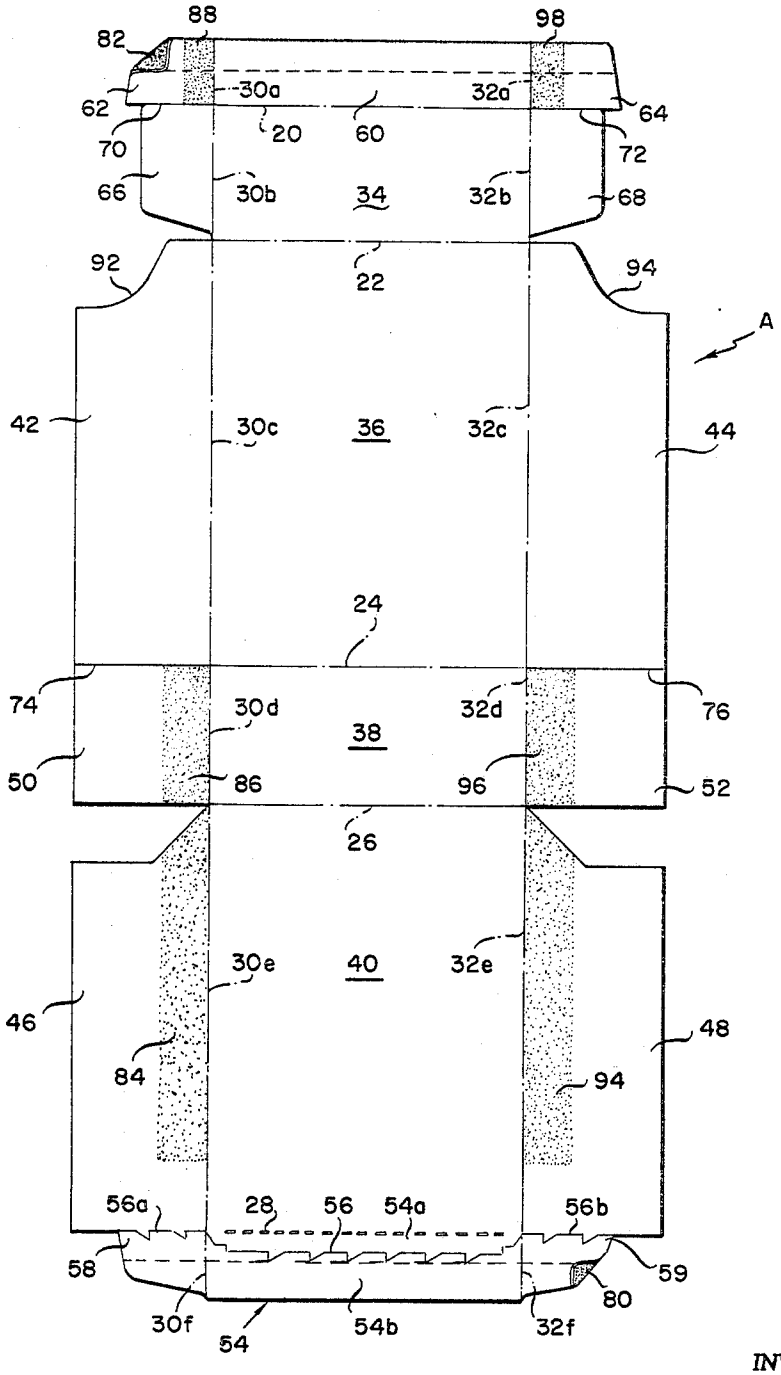


Fig. 1

INVENTOR
George L. Meyers

BY

ATTORNEY

Dec. 16, 1969 G. L. MEYERS 3,484,036

TAMPERPROOF RECLOSABLE CARTON WITH INTERLEAVING FLAPS

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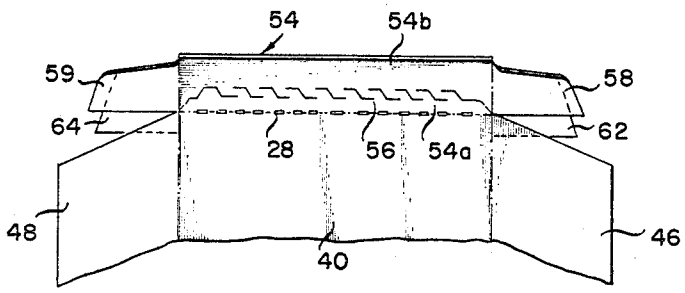


Fig. 2

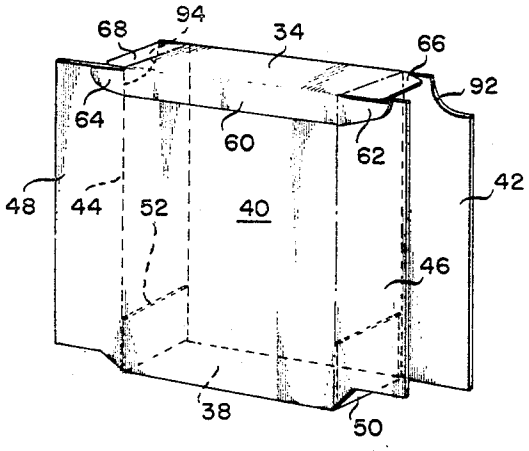


Fig. 3

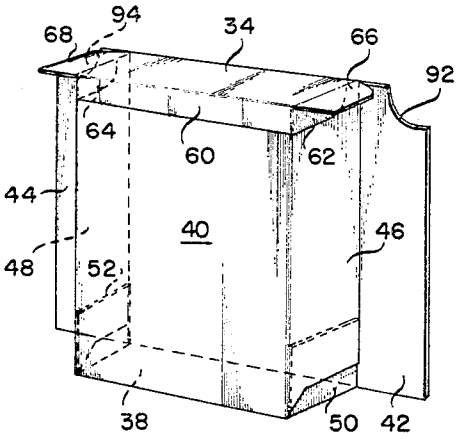


Fig. 4

Fig. 5

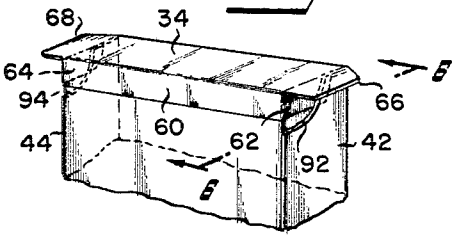


Fig. 6

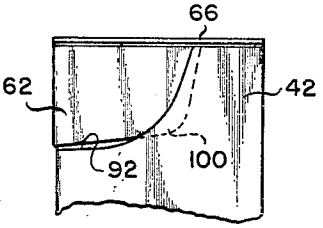
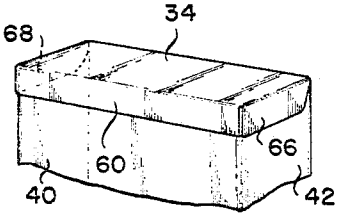


Fig. 7



INVENTOR
George L. Meyers

Patrick J. Walsh

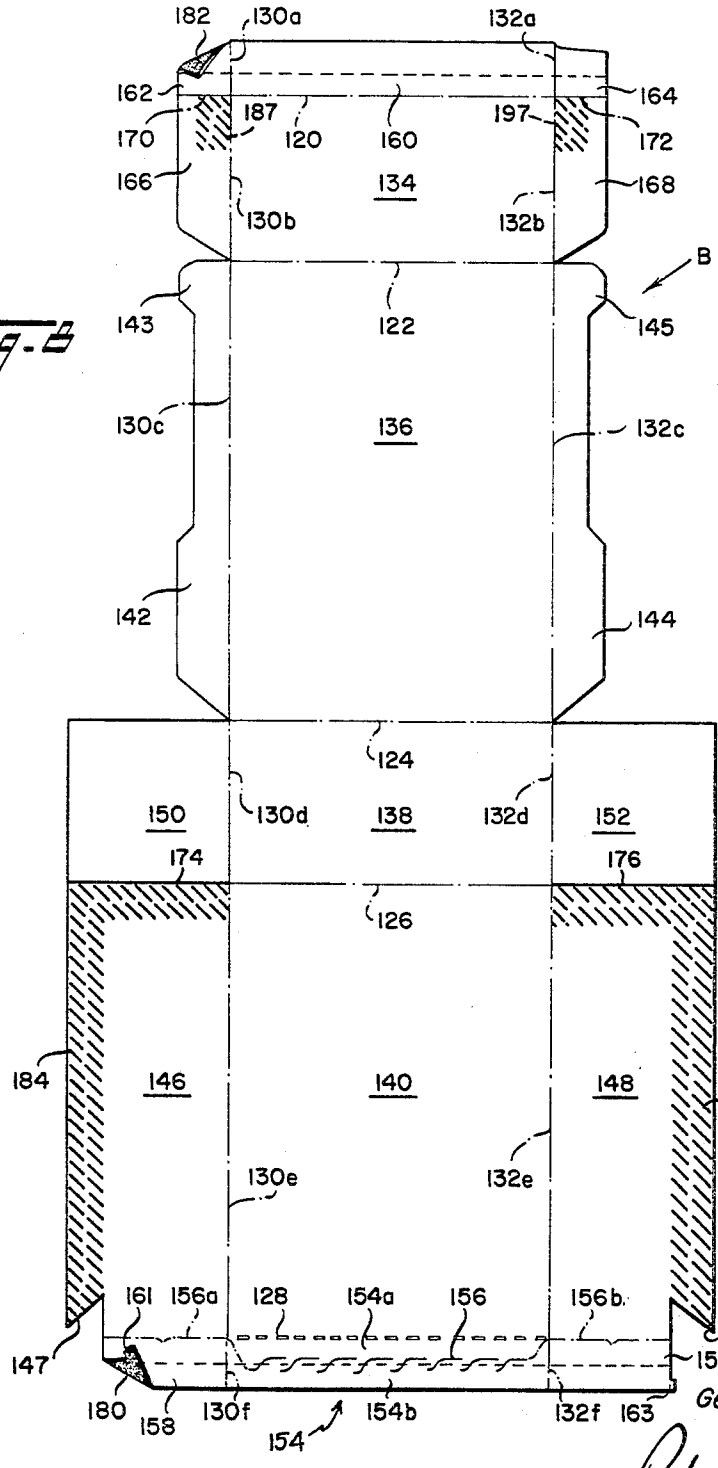
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TAMPERPROOF RECLOSABLE CARTON WITH INTERLEAVING FLAPS

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Fig. 8



INVENTOR
George L. Meyers

BY

ATTORNEY

Dec. 16, 1969 G. L. MEYERS 3,484,036

TAMPERPROOF RECLOSABLE CARTON WITH INTERLEAVING FLAPS

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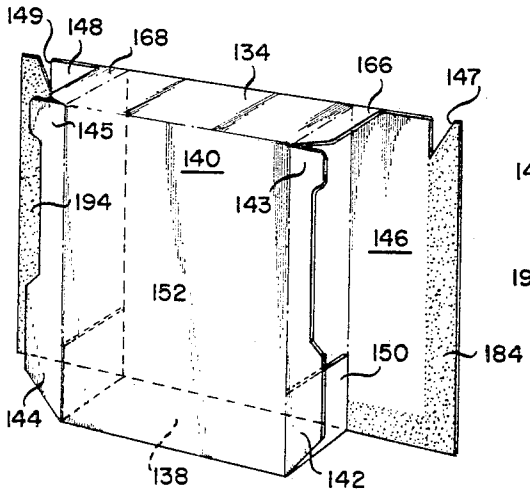


Fig. 9

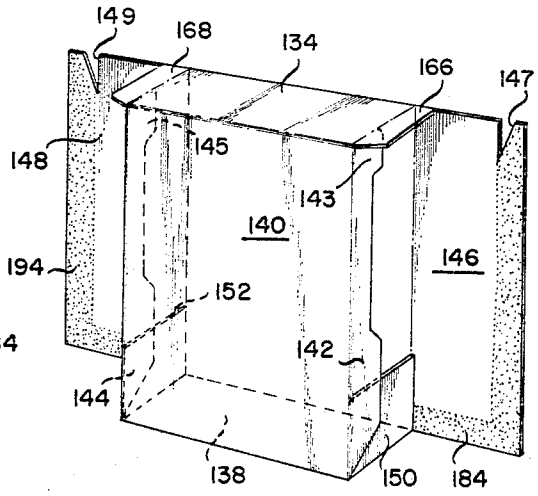


Fig. 10

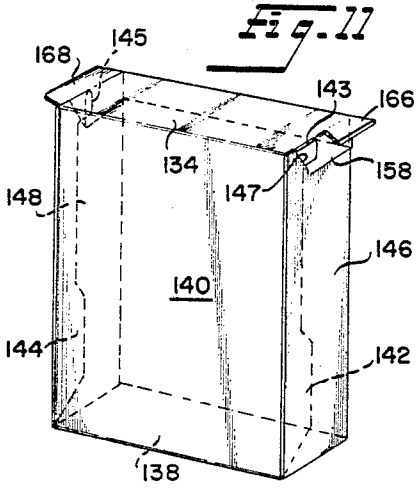


Fig. 11

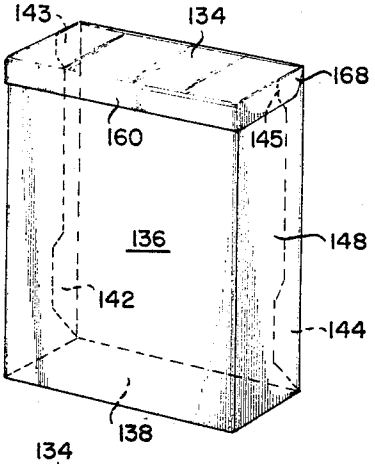


Fig. 13

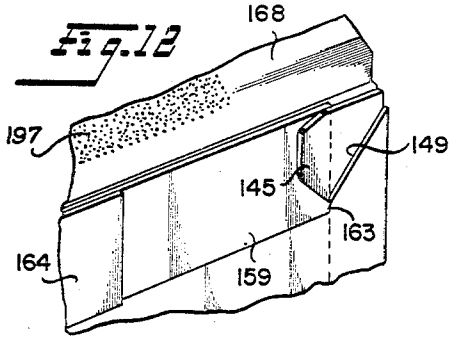


Fig. 12

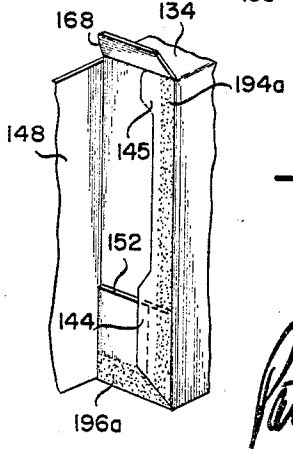


Fig. 14

INVENTOR
George L. Meyers

ATTORNEY

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3,484,036

TAMPERPROOF RECLOSABLE CARTON WITH INTERLEAVING FLAPS

George Leroy Meyers, Menasha, Wis., assignor to American Can Company, New York, N.Y., a corporation of New Jersey

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Int. Cl. B65d 5/08, 17/00, 5/54
U.S. Cl. 229—37 15 Claims

ABSTRACT OF THE DISCLOSURE

A tamperproof, reclosable carton formed from a single blank wherein side cover flaps are interleaved to prevent the ends of a tear flap from becoming "dog-eared." In one form of the invention the adhesive pattern used to maintain the carton in erected form is applied by straight line gluing. In another form, the container side flaps are provided with an interfitting tongue and groove locking arrangement.

This invention relates to a tamperproof, reclosable carton blank construction and more particularly to such a carton blank construction useful for packaging ice cream, condiments or other foods products which incorporate an improved side cover flap construction. This is an improvement of my U.S. Patent 3,191,848 entitled "Tamperproof Reclosable Carton" issued June 29, 1965.

In the aforementioned U.S. patent, there is disclosed an improved opening means for a tamperproof carton wherein the opening means lies hidden beneath a skirt construction carried by the top cover in telescoping relationship with the upper walls of the receptacle portion of the carton. While this carton has been well received within the industry, the present invention provides a further improvement in the shelf appearance of the carton and, concurrently, provides a simpler and more economical means for manufacturing the carton.

Specifically, it has been observed that in the course of shipment and stacking of the carton manufactured in accordance with my previous invention that the side cover flaps which not only cover but also protrude slightly from the side receptacle panels tend to become "dog-eared" in the course of shipment and stacking thereof which detracts from the appearance of the carton when displayed on supermarket shelves or the like. This condition arises from the rubbing of one carton on another when placed in juxtaposition with another carton or from rough and abusive handling of a single carton.

In accordance with the present invention, this potential weakness of the cartons as made previously is effectively overcome by a slight interleaving or overlapping of each side cover panel with a corresponding side panel of the receptacle. It is significant that the interleaving or overlapping must be slight because the side cover panel must be removed from beneath the side panel of the receptacle in order to effectuate the carton opening means. In other words, each side cover panel is releasably disposed beneath one of the side panels of the receptacle.

In a preferred form of the present invention not only is the side cover panel releasably disposed beneath the side panel of the receptacle but also an improved gluing procedure is provided wherein straight line gluing is possible. This results in considerable cost reduction in the manufacture of the carton.

In another form of the invention, an interfitting tongue and groove relationship is provided between each side cover panel and its associated side panel of the receptacle. In both forms of the invention an improved sealing condition is produced.

The inherent advantages and improvements of the present invention will become more readily apparent upon considering the following detailed description of the invention and by reference to the drawings, in which:

FIG. 1 is a plan view of a paperboard blank comprising a first embodiment of this invention;

FIG. 2 is a partial plan view of the blank of FIG. 1 partially folded upon itself;

FIG. 3 is a fragmentary perspective view of the squared carton of FIG. 1 partially set up;

FIG. 4 is a fragmentary perspective view of the squared carton of FIG. 3 illustrating a subsequent step in setting up the carton;

FIG. 5 is a fragmentary perspective view of the squared carton of FIG. 4 illustrating a further step in setting up the carton;

FIG. 6 is an enlarged fragmentary side elevation view taken along line **6—6** of FIG. 5;

FIG. 7 is a fragmentary perspective view of the carton blank of FIG. 1 in its completely set up condition;

FIG. 8 is a plan view of a paperboard blank comprising a second embodiment of this invention;

FIG. 9 is a perspective view of a squared carton made from the blank of FIG. 8;

FIG. 10 is a perspective view of the squared carton of FIG. 8 showing a subsequent folding step;

FIG. 11 is a perspective view, with a portion broken away, showing a folding step subsequent to that shown in FIG. 10;

FIG. 12 is an enlarged fragmentary perspective view showing an interleaving of locking flaps;

FIG. 13 is a perspective view of the carton blank of FIG. 8 in its completely set up condition; and,

FIG. 14 is a fragmentary perspective view illustrating a modified glue line pattern for the carton blank of FIG. 8.

Referring now to FIG. 1 of the drawings, there is illustrated a blank A provided with horizontal score lines at **20**, **22**, **24** and **26**. A line of perforation is indicated at **28** for a purpose to be described hereinafter. Vertical score lines which run for the entire length of the blank are indicated at **30***a*, **30***b*, **30***c*, **30***d*, **30***e*, and **30***f*, and another vertical score line parallel thereto indicated at **32***a*, **32***b*, **32***c*, **32***d*, **32***e* and **32***f*. The horizontal score lines the line of perforation **28**, and vertical score lines thereby define a top panel **34**, a rear panel **36**, a bottom panel **38**, a front panel **40** which are hingedly connected in series by means of score lines **20**, **22**, **24**, and **26**.

Hingedly connected to rear panel **36** by means of vertical score lines **30***c* and **32***c* are side panels **42** and **44**, respectively. Similarly, hingedly connected to front panel **40** by means of score lines **30***e* and **32***e* are side panels **46** and **48**. Bottom flap panels **50** and **52** are hingedly connected to bottom panel **38** by means of vertical score lines **30***d* and **32***d*.

A front opening flap is indicated generally at **54** and comprises a first locking panel **54***a* and a second locking panel **54***b* which are separated by a series of cut perforations **56**. These perforations define an easy opening score line and which is extended at **56***a* and **56***b* by means of which flap panels **58** and **59** are interconnected to side panels **46** and **48**, respectively.

A front cover panel is shown at **60** hingedly connected to top panel **34** by means of horizontal score line **20**. Hingedly connected to front cover panel **60** by means of vertical score lines **30***a* and **32***a* are side cover panels **62** and **64**, respectively. Additional side cover panels adapted to overlie side cover panels **62** and **64** are shown at **66** and **68** which are hinged to opposite portions of top panel **34** by means of vertical score lines **30***b* and **32***b*. Slit **70** separates side cover panel **62** from its additional side

cover panel **66** and slit **72** separates side cover panel **64** from additional side cover panel **68**. Additional slits at **74** and **76** separate side panels **42** and **44** from bottom flap panels **50** and **52**, respectively.

It is an important feature of the present invention that the adhesive pattern may be applied by means of straight line gluing procedures. Thus adhesive is applied at **80** and **82** in order that the carton may be foldably connected in tubular form as an initial step in the gluing operation. Adhesive **80** and **82** is applied to the second front locking panel **54***b* and to a portion of flap panels **58** and **59** at the lower portion of the blank in FIG. 1, and to a mating portion of front cover panel **60** and portions of side cover panels **62** and **64** at the top of the blank in FIG. 1.

Similarly, straight line gluing techniques may be employed in applying the adhesive at **84** and **94** to side panels **46** and **48**, at **86** and **96** to bottom flap panels **50** and **52** and at **88** and **98** to side cover panels **62** and **64**.

As has been noted, the blank is first formed into a tubular construction as illustrated in FIG. 2, with panels **54** and **60** in face-to-face relation extending outwardly of the carton tube and bonded together by the facing adhesive strips **80**, **82**. Thereafter, these bonded tear-flap panels **54** and **60** are downfolded into overlying relation to panel **40**, as seen in FIG. 3, whereby fold lines **20** and perforation line **28** are substantially coincident and are located at one corner of the resultant carton tube. Thereafter, it is squared to the position of FIG. 3 in which bottom flap panels **50** and **52** are first folded inwardly in order to continue the erection of the carton blank.

FIG. 4 illustrates the next step in the folding operation wherein side panels **46** and **48** are folded inwardly into position in overlying relationship to previously folded bottom flap panels **50** and **52**. By virtue of the fact that flap panels **58** and **59** of opening flap **54** are attached to side panels **46** and **48** by means of cut perforations **56***a*, **56***b* and further because of the fact that the second front locking panel **54***b* is adhesively secured to front cover panel **60** by means of the adhesive applied at **80** and **82**, the front cover panel **60** thereby overlies the front panel **40** and side cover panels **62** and **64** extending from panel **60** closely overlie side panels **46** and **44**, respectively.

The next step in the folding sequence is illustrated in FIGS. 5 and 6 wherein side panels **42** and **44** are folded so as to overlie side panels **46** and **48**. In so doing, an arcuate edge portion **92** defining an upper edge of panel **42** and corresponding arcuate edge portion **93** on side panel **44** partially overlie their respective side cover panels **62** and **64**. This is best illustrated in FIG. 6 with respect to the overlying of side panel **42** over side cover panel **62** in the area designated **100**. In this manner, the side cover panel **62** is maintained snugly against the underlying side panel **46** and is prevented from becoming dog-eared or the like when stacked adjacent other cartons or when subjected to rough handling. It will be observed that the additional side cover panels **66** and **68** still have not been folded into position. When this last folding occurs, the FIG. 7 fully erected position is reached in which additional side cover panel **66** is adhesively secured by means of glue **88** to side cover panel **62** and in like manner, panel **68** to panel **64**.

The opening of the carton occurs substantially as illustrated and described in my previous Patent 3,191,848 except that the interleaved and protected free ends of side cover flaps **62** and **64** must first be slipped out from under side panels **42** and **44**, respectively. Thereafter, the front cover panel **60** is lifted in order to initiate detachment of the second front locking panel **54***b* from the first front locking panel **54***a* along cut perforations **56**. The rupture quickly extends to cut perforations **56***a* and **56***b* thereby permitting pivoting about crease line **22** of the entire reclosable top structure which includes top **34**, front cover panel **60**, adhesively secured second front locking panel **64***b*, side cover panels **62** and **64**, adhesively secured flap panels **58** and **59**, and additional side cover panels **66** and **68**. The line of perforations **28** permits flexing of the front panel **40**, thereby facilitating insertion of one's finger between the bottom of front cover panel and front panel **40** in order to initiate fracture along cut perforations **56**.

In order to reclose the carton, the cover portion is lowered so that the appearance of the carton is essentially the same as prior to the opening. After reclosure the adjacent edges of the first front locking panel **54***a* and the second front locking panel **54***b* abut forming a cover lock which retains the cover firmly in closed position.

Referring now to FIG. 8, there is illustrated a modified form of blank indicated generally at B. In the FIG. 8 illustration and in subsequent folding operations thereon illustrated in FIGS. 9 through 14, parts of blank B which generally correspond to parts illustrated in the embodiment of blank A are shown to have a number **100** greater than that shown in blank A.

Thus there is illustrated horizontal score lines **120**, **122**, **124**, and **126**. A line of perforation as indicated at **128**. Vertical score lines are indicated at **130***a*, **130***b*, **130***c*, **130***d*, **130***e*, and **130***f* and a corresponding parallel vertical score line extending for the entire length of the blank as illustrated at **132***a*, **132***b*, **132***c*, **132***d*, **132***e* and **132***f*. In this manner the blank B is divided into a top panel **134**, rear panel **136**, bottom panel **138** and front panel **140**.

Side panels **142** and **144** are hingedly connected to rear panel **136** by means of vertical score lines **130***c* and **132***c*. Similarly, side panels **146** and **148** are hingedly attached to front panel **140** by means of vertical score lines **130***e* and **132***e*. Bottom flap panels **150** and **152** are hingedly connected to bottom panel **138** along vertical score lines **130***d* and **132***d*. A front opening flap is indicated generally at **154** and comprises a first front locking panel **154***a* and a second front locking panel **154***b* which are separated by means of a series of cut perforations **156**. As in the previous blank construction, the series of cut perforations **156** extend at **156***a* and **156***b* to provide the joining connection between flap panels **158** and **159** to side panels **146** and **148**, respectively. At the top of blank B there is positioned a front cover panel **160** which is hingedly connected to the top panel **34** by means of horizontal score line **120**. Hingedly connected to the front cover panel **160** are side cover panels **162** and **164** along vertical score lines **130***a* and **132***a*, respectively.

It will be observed that side panels **142** and **144** differ in contour from those illustrated in blank A in that side panels **142** and **144** are provided with tongue constructions at **143** and **145**, respectively. Similarly, side panels **146** and **148** differ from the side panels illustrated for blank A in that side panels **146** and **148** are provided with cut-out or groove constructions at **147** and **149** for purposes of receiving the tongues **143** and **145** in a manner to be discussed hereinafter. Another difference in the construction of blank B is the provision of flanges at **161** and **163** on the flap panels **158** and **159** for purposes of reinforcing the cutout or groove constructions **147** and **149** in a manner to be illustrated hereinafter.

Blank B is provided with additional side cover panels **166** and **168** hingedly connected to top panel **134** by vertical score lines **130***b* and **132***b*, respectively. The additional side cover panels **166** and **168** are separated from side cover panels **162** and **164** by means of slits **170** and **172**. Similarly, slits **174** and **176** separate bottom flap panels **150** and **152** from side panels **146** and **148**, respectively.

For purposes of forming the blank B into a tubular construction there is provided adhesive at **180** and **182** in a manner similar to that provided for blank A. The remainder of the glue pattern differs somewhat as illustrated by the adhesive application at **184** in a generally L-shaped pattern on the interior of side panels **146**. A mating glue construction is illustrated at **194** for side panel **148**.

After the blank has been formed into a tube by secur-

ing the mating adhesive applications at **180** and **182**, the bottom flap panels **150** and **152** are folded inwardly to reach the erected position indicated in FIG. 9. Thereafter, the side panels **142** and **144** are folded inwardly in timed sequence with side panels **146** and **148** so that tongue **143** in side panel **142** is interleaved with respect to side panel **146** by being inserted through the cut-out or groove **147** in side panel **146** to form the position illustrated in FIG. 11. This may be accomplished by means of suitable plows which fold the side panels **142** and **146** inwardly. Concurrently, the side panels **144** and **148** are folded inwardly so as to permit tongue **145** to be inserted through the cut-out or groove **149** thereby effectively interleaving side panels **144** and **148** in locking relationship. The flange **163** on the flap panel **159** is so positioned, as seen in FIG. 12, so as to provide support at the base of cut-out or groove **149** so that the tongue **145** does not extend by ripping the cut-out or groove **149**. Thereby, the flange **163** provides a bottom support for the tongue **145**. In similar manner, the flange **161** on flap panel **158** provides support for the tongue **143** and prevents it from tearing or ripping or otherwise extending the cut-out or groove **147** in side panel **146**.

After the interleaving of side panels **142** and **146** by means of the insertion of tongue **143** through cut-out or groove **147** the additional side cover panels **166** and **168** are folded down into sealing engagement with the aid of adhesive **197** on additional side cover panel **168** and adhesive **187** on additional side cover panel **166** thereby completing the sealed and erected carton as shown in FIG. 13.

FIG. 14 illustrates a modified form of the application of adhesive in that the adhesive is applied to side panels **144** and **142** which are connected to the rear panel **36** in place of the adhesive application at **184** and **194** to side panels **146** and **148**. A further change in the adhesive pattern is that adhesive must be applied to the bottom flap panel **152** as illustrated at **196***a*. Once again, in order to gain admittance to the sealed carton, the fingers of the user are inserted beneath the front cover panel **160** in order to break through the series of cut perforations **156**, **156***a* and **156***b*, thereby permitting the top cover and associated flaps to pivot about the top of rear panel **136** in the manner illustrated and described in the Meyers Patent 3,191,848. The line of perforations at **128** facilitates the flexing of the carton adjacent first front locking panel **154***a* in order to reclose the carton and the second front locking panel **154***b* is returned to the position substantially as shown in FIG. 13 wherein the first and second front locking panels **154***a* and **154***b* abut forming a cover lock which retains the cover firmly in closed position.

It will be apparent that the cartons of the present invention can be set up on most end loading carton equipment. The glue can be pattern applied on the customer's equipment or straight line or pattern applied hot melt which may be applied in the carton manufacturer's plant. Asthetically, the carton presents a pleasing appearance in that a parallel relationship exists between the cover panels and the main receptacle planels of the carton. The interleaving of the side panels of the carton assists or enhances in sealing the carton. By virtue of the fact that straight line gluing is possible, there results a considerable saving in the carton manufacture. Finally, because the side cover flap is interleaved with a side panel, unsightly dog ears are prevented from the carton caused by rubbing of one carton on another, or simply by rough and abusive handling.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the forms hereinbefore described being merely the preferred embodiments thereof.

What I claim is:

1. A tamperproof reclosable carton formed from a single suitably cut and scored blank having a receptacle portion and a cover portion which telescopes over the upper edges of said receptable portion

(a) said receptacle portion comprising hingedly connected front, rear, bottom and two pairs of side receptacle panels, each of said pairs of side receptacle panels comprising a front panel connected side receptacle panel and a rear panel connected side receptacle panel;

(b) said cover portion comprising a top panel hingedly connected to the upper edge of said rear panel;

(c) a front cover panel hingedly connected to said top panel;

(d) a first pair of side cover panels hingedly connected to said front cover panel;

(e) a second pair of side cover panels each of which is adhesively secured to a respective one of said first pair of side cover panels;

(f) said front cover panel and said first pair and said second pair of side cover panels forming skirt portions parallel and adjacent to the respective underlying receptacle panels;

(g) means for detachably connecting said front receptacle panel to said front cover panel;

(h) each of said first pair of side cover panels being folded into position overlying a portion of one of said second pair of side cover panels;

(l) each of said overlying first pair and each of said underlying second pair of side cover panels being folded into position overlying the front panel connected side receptacle panels; and

(j) each of said second pair of side cover panels being overlain by a portion of the rear panel connected side receptacle panels so that said first pair of side cover panels is securely held to the side receptacle panels, to resist abusive handling.

2. A tamperproof reclosable carton as defined in claim **1** including a third pair of side cover panels each of which is hingedly secured to said top panel and each of which overlays a respective one of said first pair of side cover panels.

3. A tamperproof reclosable carton as defined in claim **1** wherein said means for detachably connecting said front receptacle panel to said front cover panel comprises:

(a) a first locking panel hingedly connected to said front panel and

(b) a second locking panel detachably connected to said first locking panel and hingedly connected to said front cover panel, said first and second locking panels lying in a common plane between and parallel to the interior surface of said front cover panel and the exterior surface at said front receptacle panel.

4. A tamperproof reclosable carton as defined in claim **2** wherein said means for detachably connecting said front panel to said front cover panel comprises:

(a) a first locking panel hingedly connected to said front receptacle panel and

(b) a second locking panel detachably connected to said first locking panel and hingedly connected to said front cover panel, said first and second locking panels lying in a common place between and parallel to the interior surface of said front cover panel and the exterior surface of said front receptacle panel.

5. A tamperproof reclosable carton as defined in claim **1** wherein the front panel connected side receptacle panel has a notch therein and wherein the rear panel connected side receptacle panel has a tongue thereon adapted to be inserted through the notch for interfitting locking arrangement of the pair of side receptacle panels, said tongue overlaying a portion of said second side cover panel when inserted through said notch.

6. A tamperproof reclosable carton as defined in claim **5** wherein said means for detachably connecting said

front receptacle panel to said front cover panel comprises:

(a) a first locking panel hingedly connected to said front receptacle panel and

(b) a second locking panel detachably connected to said first locking panel and hingedly connected to said front cover panel, said first and second locking panels lying in a common plane between and parallel to the interior surface of said front cover panel and the exterior surface of said front receptacle panel.

7. A tamperproof reclosable carton formed from a single suitably cut and scored blank having a receptable portion and a cover portion which telescopes over the upper edges of said receptacle portion;

(a) said receptacle portion comprising hingedly connected front, rear, bottom and two pairs of side receptacle panels, each of said pairs of side panels comprising a front panel connected side receptacle panel and a rear panel connected side receptacle panel;

(b) said cover portion comprising a top panel hingedly connected to the upper edge of said rear panel;

(c) a front cover panel hingedly connected to said top panel;

(d) a first pair of side cover panels hingedly connected to said front cover panel; and

(e) means for detachably connecting said front receptacle panel to said front cover panel;

(f) said front cover panel and said first pair of side cover panels forming skirt portions parallel and adjacent to the respective underlying receptacle panels;

(g) each of said first pair of side cover panels being folded into position overlying the front panel connected side receptacle panels and being overlain by the rear panel connected side receptacle panels so that said first pair of side cover panels is securely held to the side receptacle panels, to resist abusive handling.

8. A tamperproof reclosable carton as defined in claim **7** including a second pair of side cover panels each of which is hingedly secured to said top panel and each of which overlays a respective one of said first pair of side cover panels.

9. A tamperproof reclosable carton as defined in claim **3** wherein said second pair of side cover panels is hingedly attached to said second locking panel.

10. A tamperproof reclosable carton as defined in claim **9** wherein each of said second pair of side cover panels is detachably connected to a respective one of said side receptacle panels and is folded therewith beneath a portion of said other side receptacle panel.

11. A tamperproof reclosable carton as defined in claim **4** wherein said second pair of side cover panels is hingedly attached to said second locking panel.

12. A tamperproof reclosable carton as defined in claim **11** wherein each of said second pair of side cover panels is detachably connected to a respective one of said side receptacle panels and is folded therewith beneath a portion of said other side receptacle panel.

13. A tamperproof reclosable carton as defined in claim **5** including a third pair of side cover panels each of which is hingedly secured to said top panel and each of which overlays a respective one of said first pair of side cover panels.

14. A tamperproof reclosable carton as defined in claim **6** wherein said second pair of cover panels is hingedly attached to said second locking panel.

15. A tamperproof reclosable carton as defined in claim **14** wherein each of said second pair of side cover panels is detachably connected to a respective one of said side receptacle panels and is folded therewith beneath a portion of said other side receptacle panel.

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