Nov. 12, 1968 K. T. BUTTERY 3,410,476

RECLOSEABLE CARTON HAVING IMPROVED TEAR STRIP

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Fig. 1

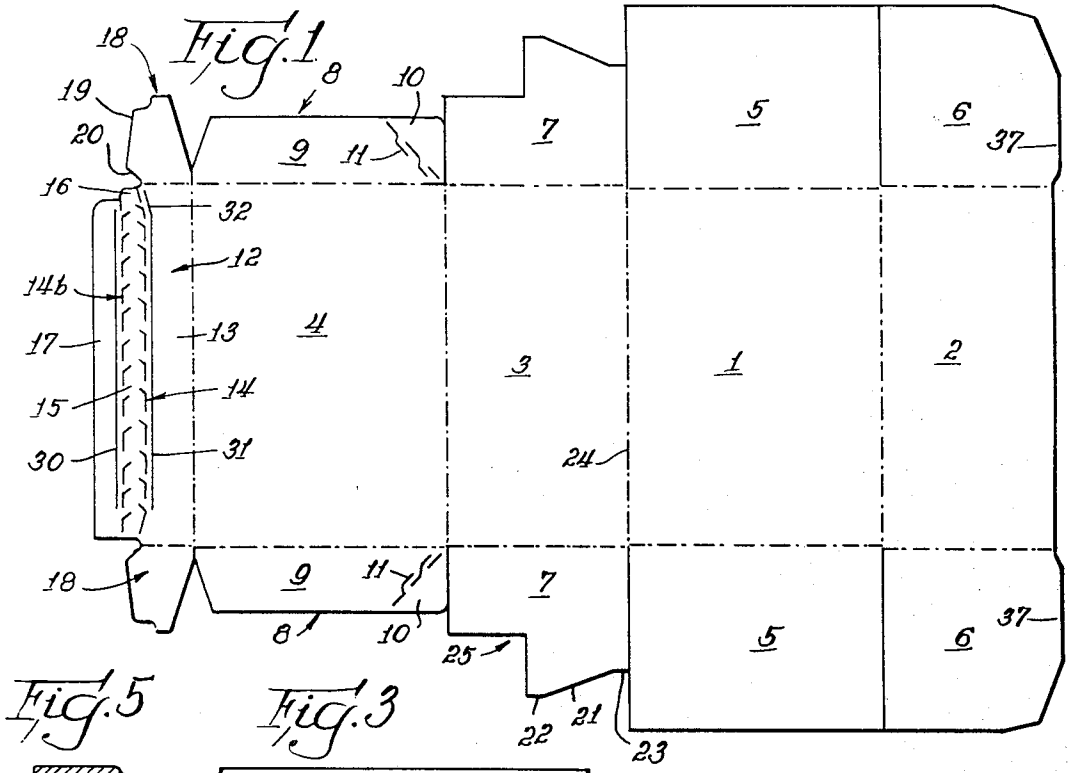


Fig. 5

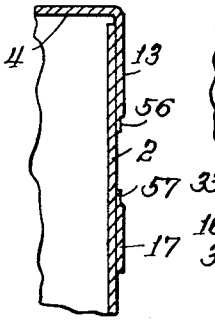


Fig. 3

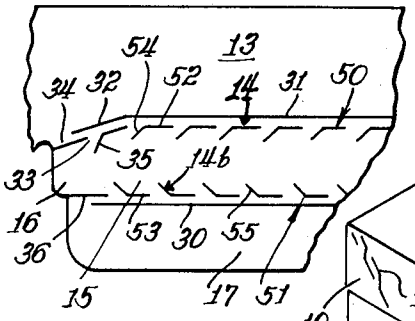


Fig. 4

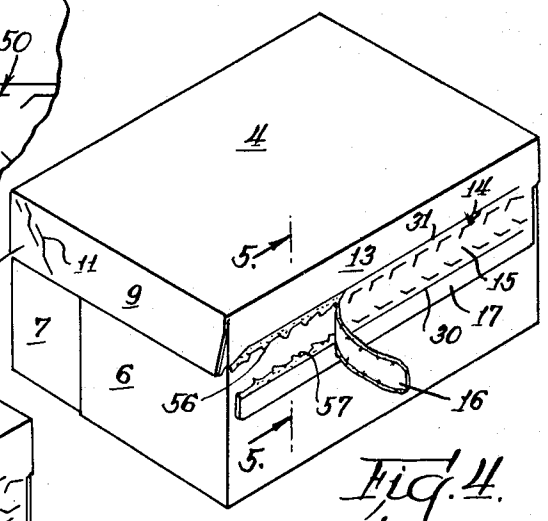
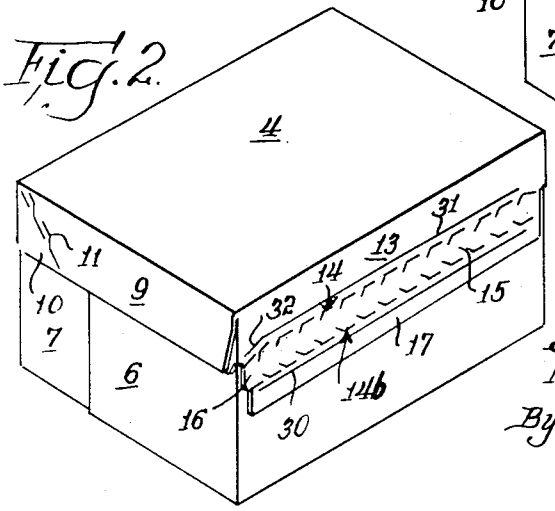


Fig. 2



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Fig. 6.

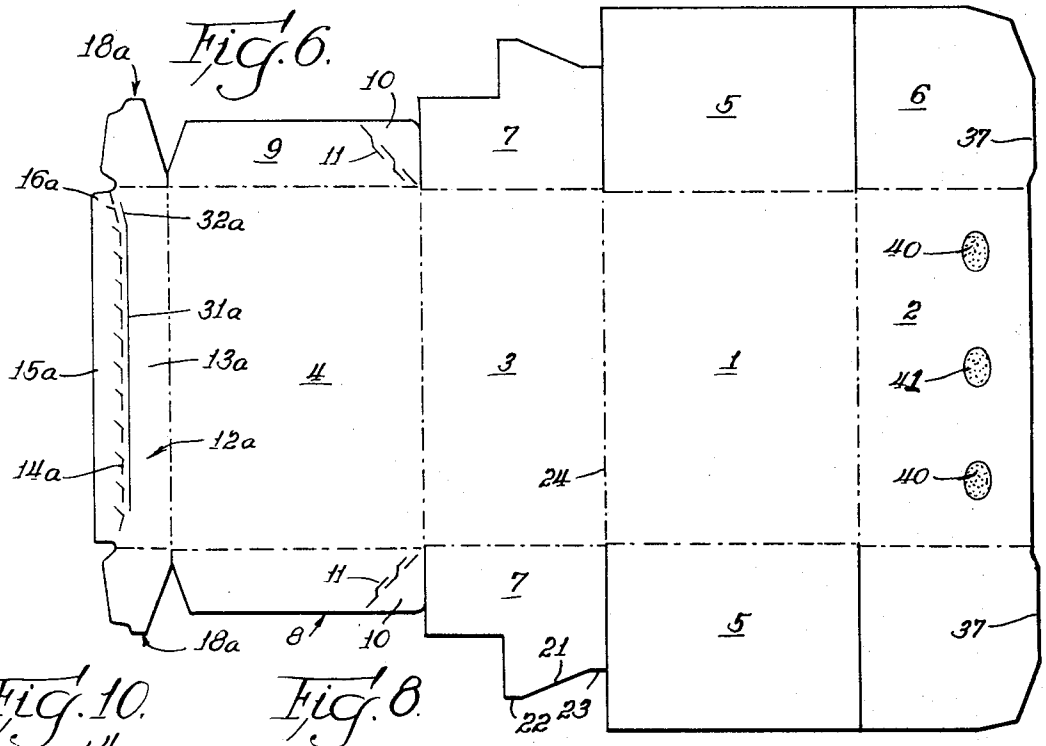


Fig. 10.

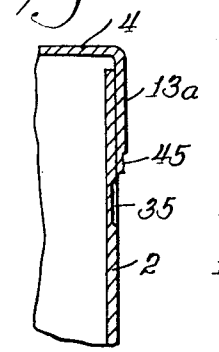
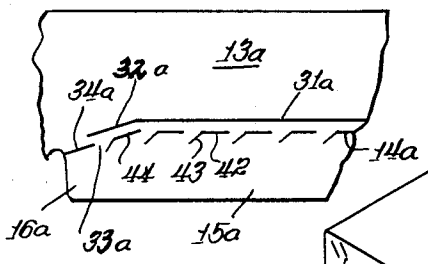


Fig. 8.



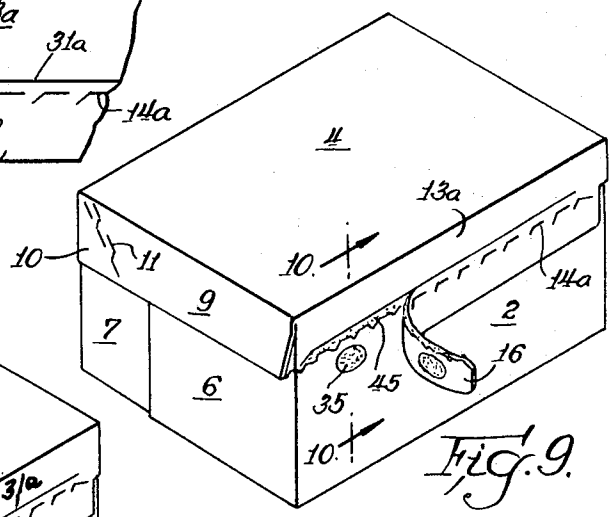
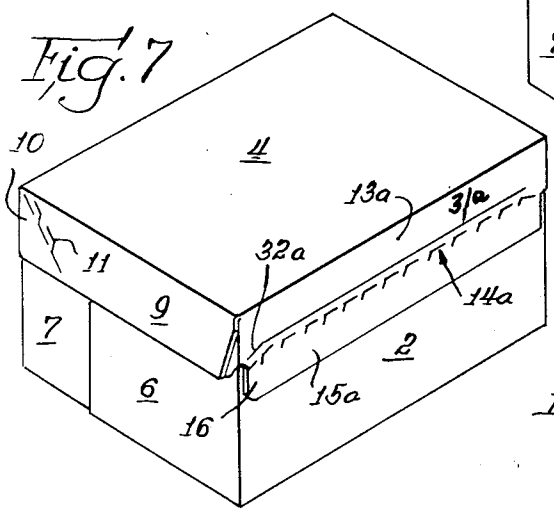


Fig. 9.

Fig. 7.



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RECLOSEABLE CARTON HAVING IMPROVED TEAR STRIP

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Filed May 11, 1966, Ser. No. 549,340
10 Claims. (Cl. 229—51)

ABSTRACT OF THE DISCLOSURE

A carton including bottom, front, rear, and end wall panels, a cover, a tear strip having a tapered tab at one end provided in the cover defined by at least one severance line, and a cut score line spaced apart from the severance line to control tearing as the tear strip is removed.

The present invention relates to cartons, and is more particularly concerned with cartons which may be readily and inexpensively erected from integral cut and scored blanks, and which cartons are provided with a removable tear strip structure affixing the cover front wall panel to the front wall of the carton proper.

Cartons having a so-called "flip top" cover hingedly connected to the edge of the rear panel, which may be erected with the cover in sealed condition and which may be readily opened by the removal of a tear strip, have become exceedingly popular as containers for food items such as ice cream. Once the tear strip is removed, the cover may be opened for access to some or all of the contents, and may be reclosed for further storage until the contents have been completely consumed. Cartons of the type described which have been available in the prior art, although satisfactory in use, have the disadvantage that they are difficult to construct and seal on automatic machinery.

Prior art cartons are generally provided with a cover front wall panel detachably affixed to the front wall of the carton by one of a number of different tear strip structures. The tear strip may be formed by means of two parallel spaced-apart severance lines connected to an adhesive strip which is in turn adhesively affixed to the front wall of the carton. Alternatively, a combined tear strip and adhesive strip may be used which is detachably connected to the cover front wall and adhesively affixed to the carton front wall, usually at isolated adhesive areas. In either embodiment, the severance line or lines defining the tear strip are so designed that they will cleanly separate along the severance line without extending into the cover wall proper, and thereby without defacing the cover front wall panel. In practice, it has been found almost impossible to assure that the severance line will always tear cleanly along its intended path.

It is an object of the present invention to provide a carton which may be formed from an integral cut and scored blank. It is a further object to provide a top-opening carton which may be sealed by means of a detachable adhesive strip affixing the cover to the front wall of the carton. It is another object to provide such a carton which may be readily reclosed when desired to store unconsumed contents. It is a still further object to provide a carton of the type described which can be readily erected and subsequently sealed by means of relatively simple and inexpensive machinery. It is a primary object of the invention to provide a carton of the type described having a tear strip for detachably securing the cover of the carton to the front wall of the carton proper, which tear strip structure is provided with means to prevent abnormal or anomalous tearing of the front wall of the carton cover when the tear strip is removed. The accomplishment of the foregoing and additional objects will become more fully apparent hereinafter.

The invention in its preferred embodiment is illustrated by the accompanying drawings in which:

FIG. 1 is a plan view of a blank cut and scored for assembling a carton according to the invention.

FIG. 2 is a perspective view of the erected and sealed carton.

FIG. 3 is a fragmentary elevational view showing one end of the tear strip structure in detail.

FIG. 4 is a perspective view of the carton of FIG. 2 showing the tear strip partially removed.

FIG. 5 is a fragmentary cross-sectional view taken at the line 5—5 of FIG. 4.

FIG. 6 is a plan view of a blank cut and scored for assembling a carton according to an alternative embodiment.

FIG. 7 is a perspective view of the sealed carton of FIG. 6.

FIG. 8 is a fragmentary elevational view showing one end of the tear strip assembly of the carton of FIG. 7.

FIG. 9 is a perspective view of the carton of FIG. 7 showing the tear strip partially removed; and

FIG. 10 is a fragmentary cross-sectional view taken at the line 10—10 of FIG. 9.

According to the invention, a carton is provided which is so designed that it accomplishes the objects and provides the advantages stated and described above, and which more particularly is formed from an integral blank having panels including a bottom member, a front wall member, a rear wall member, and end wall members. A cover is provided which is hingedly connected to the upper edge of the rear wall member. The cover is provided with cover flaps comprising cover end wall panels and a cover front wall panel. The cover front wall panel is detachably affixed to the front wall member of the carton by means of a tear strip structure. The tear strip is defined at least at one side by a severance line comprising a plurality of linearly positioned spaced-apart slits extending substantially through the thickness of the paperboard. Additionally each slit has at least one portion which is not colinear with the remainder of the slit and the severance line generally. In the preferred embodiment each slit is V-shaped, having a colinear leg and another leg positioned at an obtuse angle with respect to the colinear leg and arranged to diverge to its joinder with the colinear leg in the direction of tear. Each severance line of the tear strip is provided with a continuous cut score line spaced apart from the severance line and extending substantially the entire length thereof. The cut score extends only partially through the thickness of the paperboard. As a result of the cut score structure, when the tear strip is grasped and removed, any abnormal tearing stops at the cut score line and does not continue into the cover front wall panel proper. Consequently, defacing of the cover front wall panel is prevented.

Reference is now made to the accompanying drawings for a better understanding of the invention, wherein all of the parts are numbered, and wherein the same numbers refer to the same parts throughout.

In a preferred form the carton of the invention is constructed from an integral blank, as illustrated in FIG. 1 and comprises a bottom member 1, a front wall member 2, and a rear wall member 3 hingedly connected to the bottom member 1. A cover 4 is hingedly connected to the rear wall member 3. The bottom 1 is provided at its ends with inner end wall flaps 5 hingedly connected thereto, the front wall member 2 is provided at its ends with front wall outer end flaps 6 hingedly connected thereto, and the rear wall member 3 is provided with rear wall outer end flaps 7 hingedly connected thereto.

The cover 4 is provided with end flaps 8 comprising cover end wall panels 9 having panels 10 connected to the panels 9 at severance or fracture lines 11, and adhesively affixed to the rear wall outer end flap 7. The cover 4 is also provided at its forward edge with a cover flap 12 comprising a cover front wall panel 13, and severance or fracture lines 14 and 14*b* defining a detachable tear strip 15 having a tab or graspable portion 16 at least at one end thereof. An adhesive panel 17 is adhesively affixed to the front wall member. As can be seen in the drawings, the cover front wall panel 13 is made shorter than the cover end wall panels 9 in order to effect a saving in paperboard material. The cover front wall panel 13 is provided at its ends with end flaps 18, for being affixed to the cover end wall panels 9. The cover front wall end flaps 18 are so cut as to provide an overhang or extension 19 extending in the erected carton below the severance line 14 defining the edge of the cover front wall panel 13. In the carton blank, this extension 19 extends longitudinally beyond the said severance line. The inner corner of the overhang 19 is provided with an obliquely recessed edge 20.

In a preferred embodiment, the lower portions of the terminal edges of the rear wall outer end flaps are each preferably provided with an oblique recession 21 receding from the forwardmost terminal edge 22 toward the bottom edge of the flap 7 to a vertical edge 23 having the same length as the edge 22. The forward edge 22 should be positioned a sufficient distance from the bottom edge of the flap, or from an imaginary line representing an extension of the score line 24, so that the edge 22 clears the adhesive area applied to (or activated on) the flaps 6 when the flaps 6 and 7 are folded together. A corner recess 25 is also provided in the upper terminal corner of the rear outer end wall flap 7 to facilitate nesting of adjacent blanks when they are cut from the paperboard stock. The oblique receding edge 21, which should preferably be straight, has a further function in that it permits the oblique edge of an adjacent blank to nest closely therewith, accomplishing a material saving in raw material.

In the broader aspects of the invention, the recess or cutout 25 may be omitted, thus increasing the vertical dimension of the forward edge 22 of flap 7 or of the oblique recession 21. Although such embodiment does not have the complete blank nesting ability of the embodiment described and illustrated in the drawings, it still retains the advantages that the front edge 22 of the rear wall outer end flap 7 clears the adhesive area of the front wall outer end flap 6, and that it permits the flap 6 to be directly adhered to the inner end wall 5 over a significant segment of its length.

According to the invention, and as shown in detail in FIG. 3, continuous cut scores 30 and 31 are placed parallel to and spaced-apart from the slits forming the severance lines 14. As used herein, the term "cut score" denotes a continuous cut applied to a paperboard panel which penetrates the surface of the panel but only extends partly through the thickness of the paperboard material from which the panel is made. The cut scores are continuous linearly, but, since they extend only partly through the thickness of the paperboard, they do not adversely affect the strength of the paperboard at the tear strip. The cut score 31 has a portion 32 extending over the tapering or oblique edge of the tear strip 15 defining the tab 16. The cut score portion 32 should extend at least beyond the first bridge 33 defined by the end of the slit 34 forming one side of the tab 16 and the first V-slit 35 of the severance line 14. The presence of the bridge or bond 33 is required to strengthen the structure generally and to hold the flap 18 closely against the front outer end wall 6 when erecting the carton on a machine. The cut score 32 is required to permit the bond or bridge 33 to tear properly without either rupturing the tear strip or fraying out into the cover front wall panel 13. The cut score 30 is placed beside and spaced apart from the severance line 14*b* and serves the same function with respect to this severance line as does the cut score 31 with respect to the severance line 14. The cut score 30 should extend far enough in the direction of the tab 16 so that it at least partially overlaps in spaced-apart relationship the slit 36 defining the lower edge of the tab 16. As a result of the cut score structure, the tear strip is always properly removed without defacing the cover front wall panel or rupturing the tear strip prematurely.

As a further improvement, as shown in FIG. 1, the front wall outer end flaps 6 are provided with slight protuberances 37 which engage the cover top panel 4 with considerable force, thereby providing a good seal for the forward end portion of the carton where it engages the cover.

In assembling the carton, the carton blank may be folded at the score line between the bottom 1 and rear wall member 3. The cover front wall panel 13 is then folded over and the adhesive panel 17 affixed to the outer surface of the front wall member 2, forming a folded tube. Alternatively, the front wall member 2 may be folded over at the score line connecting it with the bottom 1, and the adhesive panel 17 may then be glued to the outer surface of the front wall member 2 in the same manner. In either form the carton so folded occupies very little space, and may be shipped to the packager in this form for filling and sealing.

To erect the carton further for filling, the folded carton is squared up, as on a conventional squaring machine. One end is then closed by first folding in the inner end wall flap 5. The rear wall outer end flap 7 and the front wall outer end flap 6 are then folded in, the front wall outer end flap overlapping the rear wall outer end flap. The contour provided by the recessed edge 21 permits the terminal edge 22 of the rear wall outer end flap 7 to clear the adhesive or activated area on the inner surface of the outer wall end flap 6. The cover front wall panel end flap 18 is then folded over, followed finally by the folding over of the cover end wall panel 9. The greater length of the flap 18 permits it to be engaged and folded over by the plow of the folding apparatus before the panel 9 (of lesser width) is engaged. Heat is applied to activate the adhesive, causing the front wall outer end flap 6 to become adhesively affixed to the rear wall outer end flap 7 and also to the inner end wall flap 5. Alternatively, a conventional glue is applied and permitted to set by drying. The adhesive panel 10 becomes adhesively affixed to the rear wall outer end flap 7 and cover front wall panel end flap 18 becomes affixed to cover end wall panel 9. The carton may then be filled through the end remaining open. The open end may subsequently be closed and sealed in the same manner, to form a completely sealed carton as shown in FIG. 2. Alternatively, the first carton end may be closed and/or tacked, as with glue, but not sealed, and then both carton ends sealed concurrently or simultaneously after filling of the carton.

The severance lines 14 and 14*b*, as shown in greater detail in FIG. 3, are comprised of V-shaped slits 50 and 51 each having one leg 52 and 53, respectively, colinearly arranged with corresponding legs of other slits, and another leg 54 and 55, respectively, obliquely arranged with respect to the colinear legs in such configuration that the oblique legs diverge in the direction of tear of the tear strip. As a result of the cooperation between the severance lines 14 and 14*b* and the cut scores 30, 31, and 32, the tear strip 15 may be readily and cleanly removed by grasping the tab 16 and pulling off the entire tear strip, thereby freeing the cover for opening. As the tear strip is torn, as can be seen in greater detail in FIGS. 4 and 5, the surface of the paperboard is stripped to the cut scores 30, 31, and 32, leaving saw tooth patterns 56 and 57 composed of lower layers of the paperboard. However, surface tearing stops cleanly at the cut score lines. As a result of the tear strip and cut score con-

figuration, the tear strip may be more readily removed and clean separation of the tear strip at the cut scores is assured.

A modified embodiment of the invention is shown in FIGS. 6–10. In this embodiment the basic structure is the same as that shown in FIGS. 1–5. However, here a combination tear strip and adhesive panel **15***a* is utilized and is connected to the cover front wall panel **13***a* at a severance line **14***a*. Instead of being adhesively affixed to the front wall mmeber **2** throughout its entire area, the adhesive strip **15***a* is affixed to the front wall member only at isolated adhesive areas **40**, as for example in the form of circles, ovals, tear drops, diamonds, or rectangles, provided either on the surface of the adhesive panel, as shown in FIG. 6, or on corresponding areas provided on the surface of the adhesive panel. If desired, when the adhesive is applied to the adhesive strip **15***a*, a glue resist coating or glue resist ink, or both, may be advantageously applied intermediate the adhesive areas to prevent adhesion intermediate the intended adhesive areas. Cut scores **41** are provided on the front surface of the front wall member **2** surrounding the intended areas of adhesion.

The adhesive strip **15***a*, as shown in greater detail in FIG. 8, is defined by a plurality of slits defining the severance line **14***a*, each slit comprising a leg **42** colinear with legs of the other slits, and another leg **43** which is not colinear. A cut score **31***a* is placed parallel to and spaced apart from the colinear legs **42**. A cut score extension **32***a* is placed parallel to the last V-shaped slit **44** whose leg is oblique with respect to the colinear legs of the remaining slits and which, together with slit **34***a*, defines a tapered edge of the tab **16***a*.

The carton of FIGS. 6–10 is erected, filled and sealed in the same manner as described with respect to the first embodiment. The carton is subsequently opened by grasping the tab **16***a* and tearing off the tear strip **15***a*. This results in the surface of the tear strip being torn as far as the cut scores **31***a* and **32***a*, and the bottom portion defining a saw-tooth pattern **45**, as shown in FIGS. 9 and 10. Additionally surface portions **35** are removed from the front wall mmeber **2**. The surface portion removed may be confined to a limited area by providing a cut score defining the areas in the original carton blank.

The present invention offers several advantages in that a tear strip is provided which may be much more readily removed from a carton to permit the cover to be opened. This ease of removal is provided by cooperation between the particularly contoured V-slits in cooperation with the cut scores. Additionally, the presence of the cut scores prevents unsightly tearing of either the cover of the carton or the adhesive strip affixed to the front panel. It provides practically the only completely foolproof, always operative, non-defacing tear strip construction available in the market place today.

Plastic (such as polyethylene) coated or wax coated paperboard, or laminated paperboard with openings for extrusion sealing, may also be employed for the cartons and carton blanks according to the invention.

It is to be understood that the invention is not limited to the exact details of construction, operation, or exact materials or embodiments shown and described, as obvious modifications and equivalents will be apparent to one skilled in the art, and the invention is therefore to be limited only by the scope of the appended claims.

I claim:

1. A carton cut and scored to provide a bottom member, a front wall member hingedly connected to one edge of said bottom member, a rear wall member hingedly connected to the other edge of said bottom member, end wall panels connected to said members, and a cover hingedly connected to the upper edge of said rear wall member provided with cover flaps comprising cover end wall panels and a cover front wall panel, and adhesive means detachably affixing said cover front wall panel to said front wall member, said adhesive means including a team strip detachably connected to said cover front wall panel at a severance line comprising a plurality of discontinuous slits extending substantially through the thickness of said panel, each slit having a portion thereof not colinear with the other slits, a portion of said severance line at the end thereof being divergent from the direction of the remainder of said severance line to define a tapered tab at the end of said tear strip, and a continuous cut score provided in said panel spaced apart from said slits, extending substantially along the entire length of said severance line, and being cut only partially through the thickness of said panel, said cut score having a portion following the divergent portion of said severance line in spaced-apart relationship and overlapping at least a portion of the last of the discontinuous slits defining the end of said tapered tab, whereby when said tapered tab and the remainder of said tear strip are detached along said severance line, tearing of said cover front wall panel is limited to the line defined by said cut score.

2. A carton according to claim **1** wherein each of said slits is V-shaped and comprises a leg colinear with corresponding legs of associated slits and a leg oblique with respect to said colinear slits, said oblique legs being directed outwardly with respect to said tear strip and forwardly in the direction of tear.

3. A carton according to claim **2** wherein said tear strip is defined by a pair of spaced-apart substantially parallel severance lines and is provided with an adhesive strip connected thereto at the lower of said severance lines adhesively affixed to said front wall member, and wherein a cut score is provided in parallel spaced-apart relationship to and outside each of said severance lines.

4. A carton according to claim **2** wherein said tear strip is adhesively affixed to said front wall member at isolated areas of adhesion.

5. A carton according to claim **1** wherein said front wall panel is provided with outer end flaps, and wherein the upper edges of said outer end flaps extend beyond the edge of said front wall member, thereby providing an improved seal between said front wall member outer end flaps and said cover.

6. An integral blank for forming a carton cut and scored to provide a bottom member, a front wall member hingedly connected to one edge of said bottom member, a rear wall member hingedly connected to the other edge of said bottom member, end wall panels connected to said members, and a cover hingedly connected to the upper edge of said rear wall member provided with cover flaps comprising cover end wall panels and a cover front wall panel, and adhesive means adapted for detachably affixing said cover front wall panel to said front wall member, said adhesive means including a tear strip detachably connected to said cover front wall panel at a severance line comprising a plurality of discontinuous slits extending substantially through the thickness of said panel, each slit having a portion thereof not colinear with the other slits, a portion of said severance line at the end thereof being divergent from the direction of the remainder of said severance line to define a tapered tab at the end of said tear strip, and a continuous cut score provided in said panel spaced apart from said slits, extending substantially along the entire length of said severance line and being cut only partially through the thickness of said panel, said cut score having a portion following the divergent portion of said severance line in spaced-apart relationship and overlapping at least a portion of the last of the discontinuous slits defining the end of said tapered tab, whereby when said tapered tab and the remainder of said tear strip are detached along said severance line, tearing of said cover front wall panel is limited to the line defined by said cut score.

7. An integral blank according to claim 6 wherein each of said slits is V-shaped and comprises a leg colinear with corresponding legs of associated slits and a leg oblique with respect to said colinear slits, said oblique legs being directed outwardly with respect to said tear strip and forwardly in the direction of tear.

8. An integral blank according to claim 7 wherein said tear strip is defined by a pair of spaced-apart substantially parallel severance lines and is provided with an adhesive strip connected thereto at the lower of said severance lines adapted to be adhesively affixed to said front wall member, and wherein a cut score is provided in parallel spaced-apart relationship to and outside each of said severance lines.

9. An integral blank according to claim 7 wherein said tear strip is adhesively affixed to said front wall member at isolated areas of adhesion.

10. An integral blank according to claim 6 wherein

said front wall panel is provided with outer end flaps, and wherein the upper edges of said outer end flaps extend beyond the edge of said front wall member, thereby providing an improved seal between said front wall member outer end flaps and said cover.

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