July 27, 1965 R. M. HOLMES 3,197,114

TOP OPENING ICE CREAM CARTON

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FIG. 1

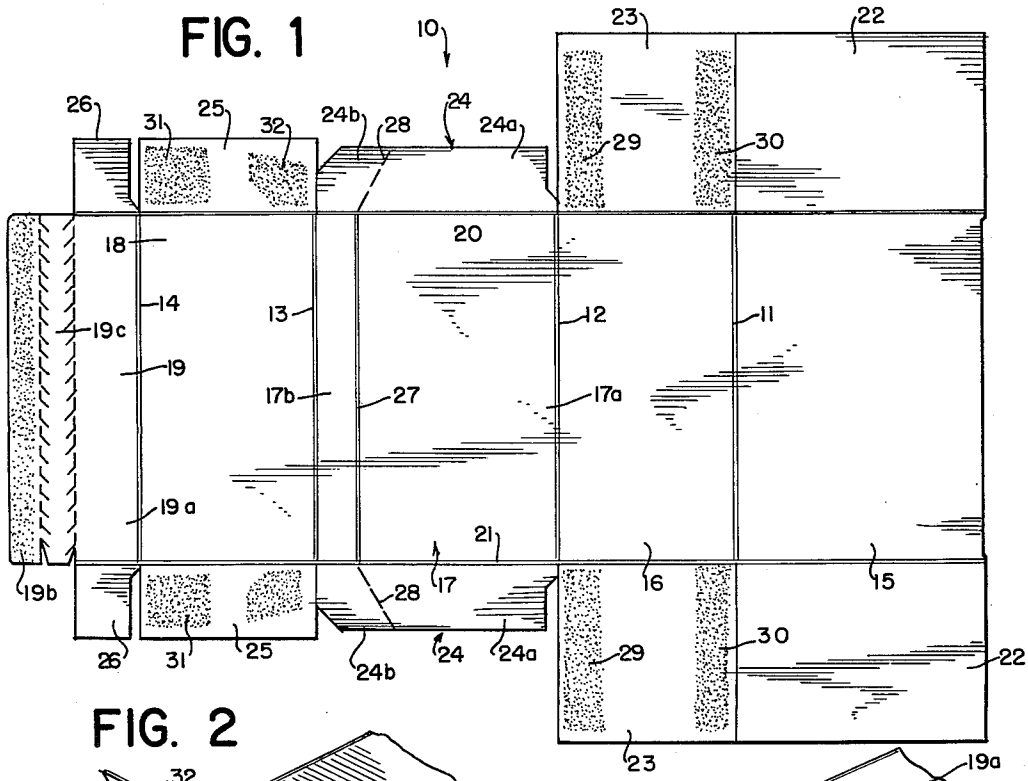


FIG. 2

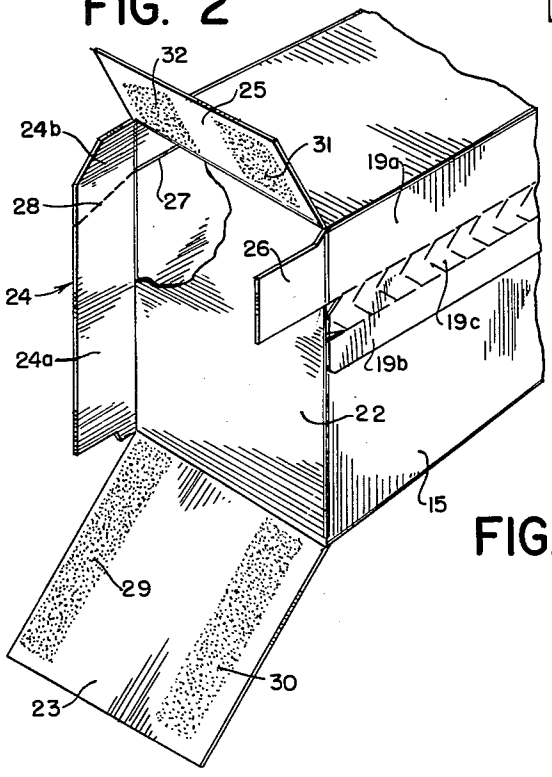
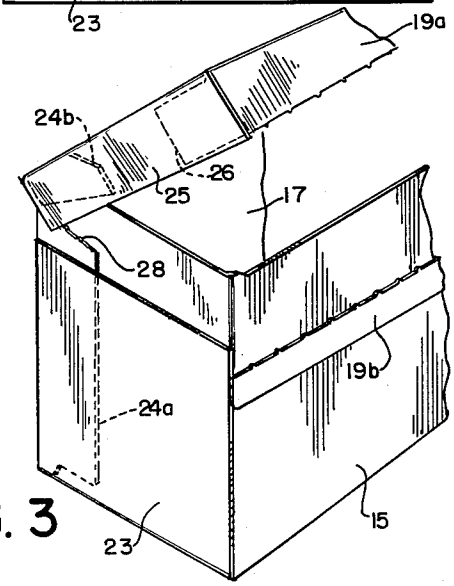


FIG. 3



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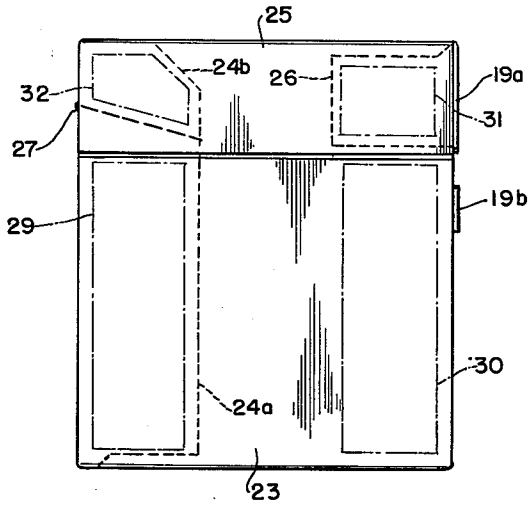

FIG. 4

FIG. 5

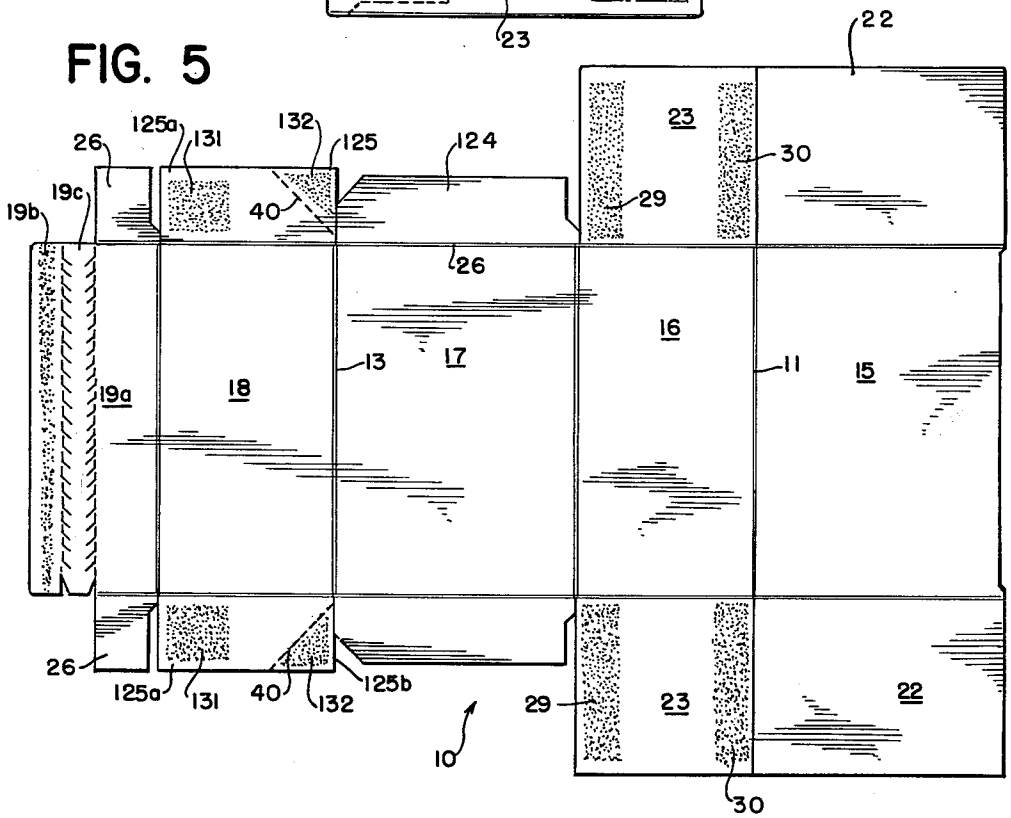

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FIG. 6

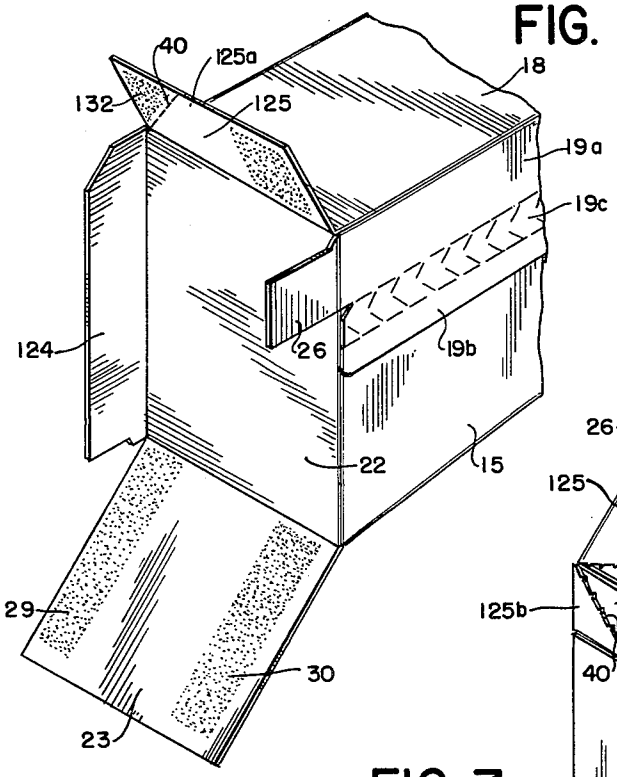
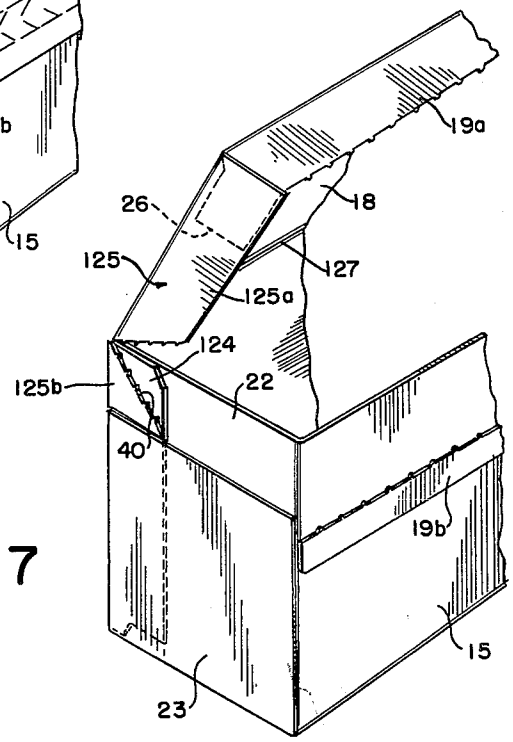


FIG. 7



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3,197,114

TOP OPENING ICE CREAM CARTON

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Filed Sept. 27, 1962, Ser. No. 226,627
5 Claims. (Cl. 229—51)

The present invention relates to paperboard cartons or containers for various products, including, specifically, ice cream. In particular, the invention is directed to specific and substantial improvements in cartons for ice cream and the like, the cartons being of the type which are sealed at the ends after filling, thereafter being opened and reclosed from the top. The present invention is related to the invention of my prior, copending application Ser. No. 215,602, filed August 8, 1962, for "Sealed End Ice Cream Carton," and the present application constitutes a continuation in part of said prior application.

In the packaging of ice cream in particular, it is conventional to fill the containers from one end, and it has been common in the past to make ice cream cartons of end-opening construction, so that the contents of the package were accessible to the consumer through the carton end. Although it has been considered desirable to so construct ice cream cartons that, after sealing, the carton ends were permanently sealed, with access to the contents being had through the "top" of the carton, substantial unexpected complications in the actual carton design have arisen, which have prevented widespread use of such cartons in the past. In my above-mentioned, copending application, certain novel carton construction features are described and claimed, which provide a sealed end, top opening carton of substantial commercial desirability, and, in accordance with the present invention, certain specifically novel modifications are provided, which further extend the desirability and usefulness of the carton.

In accordance with commercial practices, consumer acceptances, etc., a particularly popular type of ice cream carton is the half-gallon size, rectangular carton measuring approximately 3⅝ inches by 5 inches on the ends and having a length of about 6⅞ inches, and the invention of the present application, as well as the invention of my copending application, is directed specifically to cartons of this general type. It will be understood, however, that the operative principles of the invention have broader application, particularly as regards the actual carton dimensions and capacity.

Whereas the carton specifically illustrated and described in my above-mentioned copending application is so arranged that the broad side of the rectangular carton forms the reclosable top, the carton structure of the present invention and application is so arranged that the narrow side of the carton forms the reclosable top. At the same time, the construction of the carton enables it to be handled and filled with conventional filling machinery.

More specifically, the carton of the present invention incorporates a novel sealed end construction including front and back end flaps and top and bottom end-closing flaps, the latter being arranged to be folded into substantially abutting, non-overlapping relation to present a smooth, uniform outer surface. The top end-closing flap, forming the end wall of the reclosable cover, is detachably connected to the back end flap in a novel manner, enabling the cover readily to be freed from the body of the container for opening.

In one specifically advantageous form of the invention, the detachable connection between the top end-closing flap and the back end flap comprises a separable upper section of the back end flap, which is secured to the inner

surface of and hidden by the top en-closing flap. The arrangement is particularly advantageous with respect to its uniform and pleasing outward appearance, even after opening of the carton. In a second advantageous form of the invention, the detachable connection is provided by a separable rear corner section of the top end-closing flap, which is secured to the back end flap and remains attached thereto when the cover is opened.

For a better understanding of the above and other specific advantageous features of the invention, reference should be made to the following detailed description and to the accompanying drawing in which;

FIG. 1 is a plan view of a blank used in forming a first advantageous form of carton incorporating the features of the invention;

FIG. 2 is a fragmentary perspective view of a carton made of the blank of FIG. 1 illustrating the carton prior to closing and sealing of its end structure;

FIG. 3 is a fragmentary perspective view of the carton of FIG. 2, after closing and sealing of the end and with the cover in an open position;

FIG. 4 is an end elevational view showing the carton of FIG. 2 in sealed and closed condition;

FIG. 5 is a fragmentary plan view of a blank, similar generally to the blank of FIG. 1, but differing in the areas encompassed by the illustration, for making a second advantageous form of the new carton;

FIG. 6 is a fragmentary, perspective view of a carton made from the blank of FIG. 5, the carton being illustrated prior to closing and sealing of the end structure; and

FIG. 7 is a fragmentary, perspective view of the carton of FIG. 5 after closing and sealing of the ends and with the cover open.

Referring now to the drawing, and initially to FIG. 1 thereof, the reference numeral **10** designates generally a blank formed of paperboard and scored transversely along lines **11–14** to form, in right-to-left sequence a front wall panel **15**, a bottom wall panel **16**, a back wall panel **17**, a cover panel **18** and a front-closing panel **19**. The opposite end edges of the respective panels are formed by parallel, longitudinal score lines **20**, **21**, such that the various panels are of generally rectangular configuration. In an advantageous form of carton, suitable for holding one-half gallon of ice cream, the front and back wall panels will have a height dimension of approximately 4¾ inches and a length dimension of 6¾ inches, while the top and bottom walls advantageously have a width of about 3½ inches and a length of about 6¾ inches. The front wall panel **19**, which advantageously is divided into an upper section **19***a* and a lower section **19***b*, by means of a transverse tear strip **19***c* can have a variety of height dimensions, but it is advantageous that the height dimension of the upper portion **19***a* be about 1¼ inches and not substantially in excess thereof.

As illustrated in FIG. 1, a pair of flaps **22**, hereinafter referred to as front end flaps, are foldably connected to the end edges of the front wall panel **15**, the flaps **22** advantageously being of rectangular configuration and having a "length" approximately equal to the width of the bottom and cover panels **16**, **18**. A second pair of flaps **23**, hereinafter referred to as bottom end-closing flaps, are foldably connected to the opposite end edges of the bottom wall panel **16**, the flaps having a predetermined free length advantageously equal to the free length of the front end flaps **22**. A third pair of flaps **24**, hereinafter referred to as the back end flaps, are foldably connected to the opposite end edges of the back wall panel **17** and have relatively short free length advantageously of about 1¼ inches. A fourth pair of flaps **25**, hereinafter referred to as top end-closing flaps, are foldably connected to the opposite end edges of the cover

panel 18. The flaps 25 have a free length which closely approximates but does not exceed the difference between the carton height and the length of the bottom end-closing flaps 23; typically this will be 1 5/16 to 1 3/8 inches, in a half-gallon size carton. A fifth pair of flaps 26, hereinafter referred to as securing flaps, are foldably connected to the opposite end edges of the upper section 19*a* of the front closing panel.

In accordance with one aspect of the invention, the back wall panel 17 is divided by a transverse score line 27 into a lower portion 17*a* and an upper portion 17*b*. Likewise, the back end flaps 24 are diveded by cut scores 28 into lower sections 24*a* and separable upper sections 24*b*. As illustrated in FIG. 1, the cut scores 28 are disposed at an angle to the transverse score line 27 such that, in the erected carton to be described, the cut scores extend from the free forward edges of the back end flaps 24 in an upward and rearward direction into intersecting relation to the score line 27.

In conjunction with the making of the blank 10, it is advantageous to apply a thermoplastic, heat sealable composition to preselected areas of certain flaps, to provide for proper closing and sealing of the carton in subsequent operations to be performed at a packager's place of business. Specifically, the bottom end-closing flaps 23 advantageously are provided with spaced strips 29, 30 of thermoplastic composition, extending along the opposite, "vertical" edges of the flap substantially from the bottom edges to the top edges thereof. In addition, heat seal composition is applied to the separate areas 31, 32 of the top end-closing flaps 25, generally rectangular areas 31 being applied in the forward portions of the flaps 25 and specially shaped areas 32 being provided in the back areas of the flaps 25 such that, in the erected and closed carton, the areas 32 overlie only the separable upper sections 25*b* of the back end flaps 24.

In the manufacturer's plant, glue or other suitable adhesive is applied to the lower section 19*b* of the front closing panel, and the blank is thereafter folded, first along the score line 11 and then along the score line 13, until the adhesively coated panel section 19*b* is brought into contact with and secured to the front wall panel 15. The blank is then in the form of a flattended tube, which is convenient and compact for shipping to the packager who, in this instance, typically will be an ice cream packager and/or manufacurer.

At the packager's plant the tube is squared, one end is closed, and the contents (e.g., ice cream) are introduced through the other, still open end, which is thereafter closed, and the entire carton is sealed.

In accordance with the invention, a carton end is closed by first folding the front end flap 22 at right angles to the front wall panel 15, the size and shape of the front end flap 22 being such as to substantially completely close off the theretofore open end of the erected tube. Thereafter, the back end flap 24 is folded forward at right angles to the back wall panel 17, into overlying relation to a marginal portion of the front end flap 22. Advantageously, the securing flap 26 is folded along with the front end flap 22, and overlies the upper front corner portion of the end flap, but is not secured thereto.

With the flaps 22, 24 and 26 folded as above described, but unattached to each other or to other parts of the carton, the top and bottom end-closing flaps 23, 25 are folded over the carton end, into substantially abutting but non-overlapping relation, and heat is applied to the carton end in such a way as to bond the end-closing flaps 23, 25 to the underlying flaps in the specific areas engaged by the predetermined areas of heat seal composition 29, 32. Thus, the bottom end closing flap 23 is bonded to the lower portion 24*a* of the back end flap, along the vertical heat seal strip 29, and to the front end flap 22, along the vertical heat seal strip 30. Likewise, the top end-closing flap 25 is bonded to securing flap 26 between heat seal area 31 and to the separable upper section 24*b* of the back end flap between heat seal area 32, it being understood that the respective heat seal areas 31 and 32 are of such size and shape as to bond to the flap 26 and flap section 24*b* while remaining free of the front end flap 22 and of the bottom section 24*a* of the back end flap.

The carton thus closed and sealed subsequently may be opened by removing the tear strip 19*c*, to detach the panel section 19*a*, forming the depending front wall of the cover, from the adhesively secured lower panel section 19*b*. The cover may then be swung upward about the hinge axis formed by the score line 27, substantially as indicated in FIG. 3. Since the upper sections 24*b* of the back end flaps are secured to the end walls of the cover, formed by the top end-closing flaps 25, the sections 24*b* are separated along the cut scores 28 during opening of the cover, the cut scores being so designed as to accommodate such separation reliably and without difficulty.

The once-opened carton may be reclosed and reopened as often as necessary. Advantageously, a predetermined amount of interference is provided between the cover and the carton body, slightly impeding opening and closing movements, so that the cover tends to be self-locking when reclosed.

As indicated particularly in FIG. 4, the end surface of the carton, formed by the end-closing flaps 23, 25, is substantially smooth and uniform, providing a desirable surface for presenting advertising, decorative designs, etc. This is achieved by arranging the end-closing flaps to fold into substantially abutting, but non-overlapping relation.

As a practical matter, the length of the bottom end-closing flaps 23 is limited substantially to the width of the carton, since to extend the length farther would involve significant waste of paperboard. This will be understood by reference to FIG. 1, in which the flaps 23 extend upward, even with the edges of the front end flaps 22, the "length" of the latter being substantially equal to the width of the carton. The length of the bottom end-closing flaps being thus limited, it is necessary to extend the top end-closing flaps downward a distance sufficient to establish the desired substantial abutting, non-overlapping relation. In a half-gallon carton of standard dimensions, this involves extending the top end-closing flaps 25 about 1 5/16 to 1 3/8 inches. And, since it is desirable to limit the downward extension of the front-closing panel section 19*a* (forming the front wall of the cover) to 1 1/4 inches, the cover end wall desirably projects slightly below the cover front wall, as shown best in FIGS. 3 and 4.

In the above-described form of the new carton, a desired, detachable connection is established between the flaps 24 and 25 by providing a separable upper section 24*b* of the back end flap and arranging for the end-closing flap 25 to be bonded to the flap 24 only in the area of the separable upper section 24*b* thereof. In addition, the separable upper section 24*b* is concealed behind the end-closing flap 25 in an advantageous manner by locating the forward and lower extremity of the cut score 28 above the lower edge of the end-closing flap 25.

Referring now to FIGS. 5–7, there is shown a second advantageous form of the new reclosable carton incorporating a generally similar but specifically different end construction. Since many of the panels and flaps of the carton of FIGS. 5–7 are substantially identical to those of the carton of FIGS. 1–4, duplicate descriptions will be omitted, and corresponding reference numerals will be utilized where appropriate, to indicate corresponding elements.

Referring first to FIG. 5, the paperboard blank used in making the alternate form of carton differs from the blank of FIG. 1 in that the back end flaps 124 are integral throughout, rather than being divided into separable upper and lower portions. The top end-closing flap 125 of the FIG. 5 blank, on the other hand, is divided by a diagonal cut score 40 into separable front and rear flap sections 125*a*, 125*b* respectively, the front flap section 125*a* being provided near its front edge with a rectangular area

131 of heat seal composition and the rear flap sections 125*b* being provided with a triangular heat seal area 132.

The carton of FIGS. 5–6 is erected and closed in the same manner as the carton of FIGS. 1–4, except that the sealing of the upper rear portions of the carton ends is limited to the triangular area 132, of the alternate carton form, rather than the somewhat trapezoidal area 32 of the first described carton form. The arrangement is such that the bottom end-closing flap 23 is bonded to the back and front end flaps 124, 22 respectively, the front portion 125*a* of the top end-closing flap is bonded to the securing flap 26, and the separable back section 125*b* of the top end-closing flap is bonded to the upper portion of the back end flap 124. The closed and sealed end of the carton of FIGS. 5–7 is substantially identical to that of the carton of FIGS. 1–4 except for the presence of the cut score 40, which extends from the lower edge extremity of the top end-closing flap 125 upward and rearward, generally toward but somewhat below a hinge axis 127, which is advantageously formed at the upper edge extremity of the back wall 17, rather than below the upper edge as in the carton of FIGS. 1–4.

The carton of FIGS. 5–7 is opened by removing the tear strip 19c and raising the cover about the hinge axis 127. In opening the cover, the top end-closing flap 125 separates along the cut score 40, with the small flap section 125*b* remaining attached to the back end flap 124.

In either of the illustrated forms of the invention, a novel and improved reclosable ice cream carton is provided in which the reclosable cover closes a "narrow" side of the carton, so that access is had to the contents with the carton in an "upright" position. Both illustrated forms of the new carton include a novel sealed end construction, in which cooperating top and bottom end-closing flaps are brought into substantially abutting, non-overlapping relation, to provide a smooth, continuous outer surface particularly suitable for presenting advertising, brand identification, etc., all while keeping the end structure of the carton such as to enable filling of the carton to be carried out by conventional automatic filling machinery.

It should be understood, however, that the specific forms of the invention herein illustrated and described are intended to be representative only, as certain changes may be made therein without departing from the clear teachings of the disclosure. Accordingly, reference should be made to the following appended claims in determining the full scope of the invention.

1. A top opening telescopically reclosable, end fillable carton for ice cream and other products, which comprises
(a) foldably connected front wall, bottom wall, back wall and top wall panels arranged to form a tube,
(b) a pair of front end wall flaps foldably connected to the opposite end edges of the front wall panel and of a size and shape substantially to close the ends of said tube,
(c) a pair of back end wall flaps of less than full carton width foldably connected to the opposite end edges of the back wall panel and folded to overlie marginal portions only of said front end wall flaps,
(d) a front-closing panel foldably connected to the front edge of said top wall panel and extending downward in overlying relation to said front wall panel,
(e) said front-closing panel having separable upper and lower portions and being secured to said front wall panel by its lower portion,
(f) a pair of securing flaps foldably connected to the opposite end edges of the upper portion of said front-closing panel and overlying outer surface portions of said front end flaps,
(g) a pair of top end-closing flaps foldably connected to and extending downward from the opposite end edges of the top wall panel,
(h) said top end-closing flaps overlying the outer surfaces of and being attached to said securing flaps and to upper end margins of said back end flaps, and
(i) a pair of bottom end-closing flaps foldably connected to the opposite end edges of the bottom panel and extending upward therefrom into abutting, non-overlapping relation with the upper end-closing flaps,
(j) said bottom end-closing flaps overlying and being secured to lower portions of said front and back end flaps,
(k) said top wall panel, the upper portion of said front-closing panel, said securing flaps, and said top end-closing flaps defining a telescopically reclosable cover connected on a predetermined hinge axis in the back wall panel of the carton,
(l) said top end-closing panels and said upper marginal portions of said back end flaps being secured by rupturable fastening means disposed interiorly of the normally exposed exterior carton surfaces and being concealed before opening and after reclosing of said carton,
(m) said fastening means being rupturable upon opening movement of said top panel, whereby severance of said upper and lower portions of said front-closing panel and rupture of said fastening means forms a telescopically, reclosable cover.

2. The carton of claim 1, in which
(a) said rupturable fastening means comprises a separable section formed at each end of the carton in said back end flap and secured to said top end-closing flap,
(b) said separable section at each end being formed by a cut score in said flap extending for substantially the full width of said flap from an edge of said flap in a rearward and upward direction,
(c) said separable sections constituting the only substantial connection between said top end-closing flaps and said back end flaps.

3. The carton of claim 2, in which
(a) said hinge axis is located below the upper edge of said back wall panel and above the lower edges of said top end-closing flaps,
(b) said cut scores extend from the front edges of said back end flaps in a rearward and upward direction substantially into intersecting relation with said hinge axis,
(c) said separable sections being secured to the inner surfaces of said top end-closing flaps and being retained therewith upon hinged opening of said cover.

4. The carton of claim 3, in which
(a) the forward ends of said cut scores lie above the lower edges of said top end-closing flaps.

5. The carton of claim 1, in which,
(a) the vertical dimensions of said bottom end-closing flaps are substantially equal to the horizontal dimensions of said front end flaps, and
(b) the vertical dimensions of said top end-closing flaps are slightly in excess of the vertical dimensions of the upper portions of said front closing panel.

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