

Sept. 14, 1965

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3,206,101

SEALED END ICE CREAM CARTON

Filed Aug. 8, 1962

2 Sheets-Sheet 2

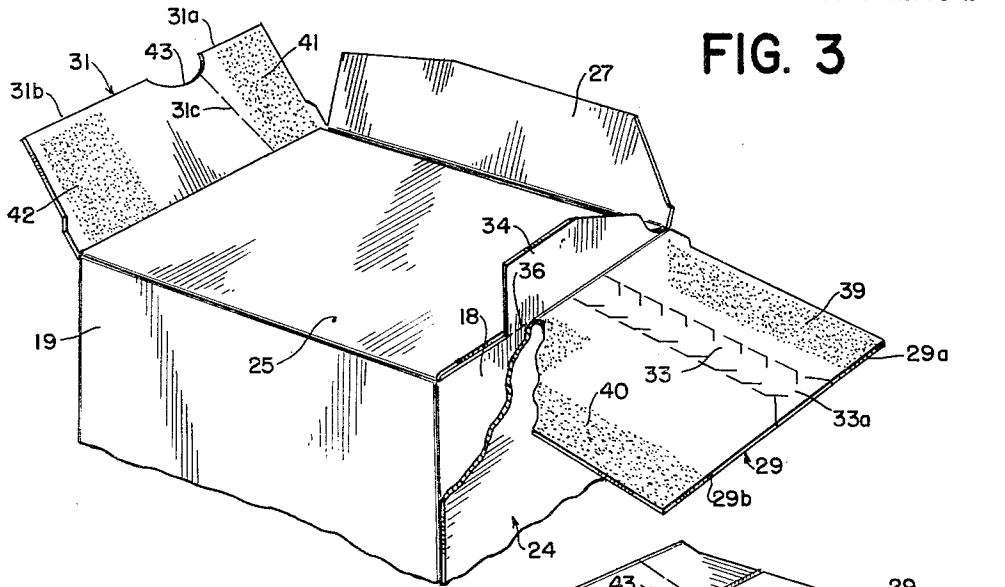


FIG. 3

FIG. 4

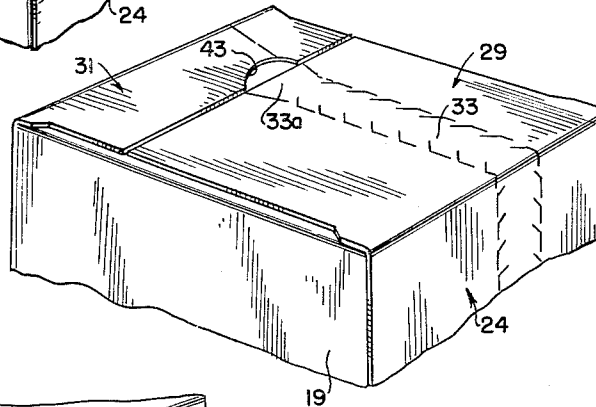
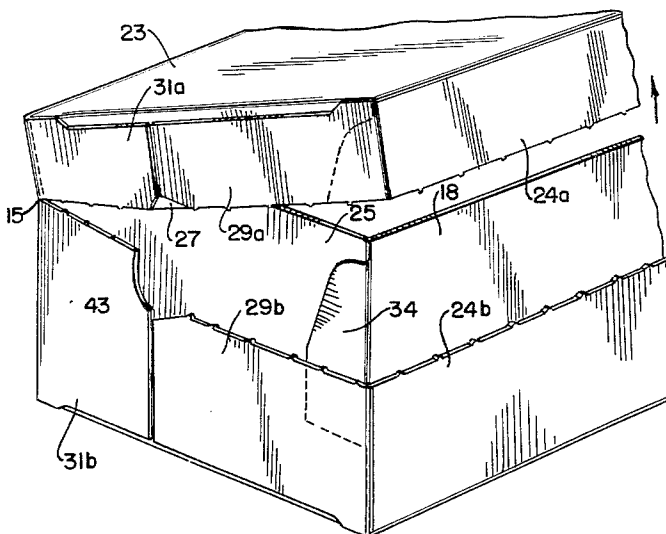


FIG. 5

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3,206,101

SEALED END ICE CREAM CARTON

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Filed Aug. 8, 1962, Ser. No. 215,602

1 Claim. (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 carton structures for ice cream and the like of the type which are sealed at the ends, after filling, and are thereafter opened and reclosed from the top.

In the packaging of ice cream, particularly, 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.

It has been considered desirable, for some time, to so design ice cream cartons that, after filling, the carton ends were permanently sealed, with access to the contents being had through the "top" of the carton. However, notwithstanding the generally acknowledged desirability of the sealed end, top opening ice cream carton, such cartons have not enjoyed substantial commercial acceptance, because of unexpected complications in the actual carton design which have resulted in the past, in the packages including significant disadvantageous features.

In accordance with the present invention, a novel and improved top opening, sealed end carton is provided, which is economical to manufacture and ideally suited, structurally, for the intended end use and which, at the same time, has an especially desirable and advantageous external appearance.

One of the specific aspects of the invention resides in the provision of a top opening, sealed end carton, including a chest-type hinged cover detachably but integrally connected to the body of the carton, which is so constructed that the external surfaces of the carton are smooth and continuous. In this respect, the carton of the invention incorporates special closing flaps which, when the carton is filled and sealed, present a substantially uninterrupted, smooth outer surface. Thus, with the improved construction of the invention, not only does the package have a substantially more pleasing outward appearance than is usual for a top-opening ice cream carton, but the packager's advertising, brand identification, etc., may be more effectively and pleasingly presented on the substantially continuous, smooth outer surfaces of the carton.

Another specific aspect of the invention resides in the provision of a novel top opening, sealed end carton having a chest-type hinged cover, and full-height front and end walls, and which includes a special, novel reinforcing construction for otherwise unsupported, upwardly projecting portions of the full-height walls. More particularly, the new carton incorporates novel reinforcing flaps, foldably connected to the opposite end edges of the carton front wall and cooperable with the end wall panels, the reinforcing tabs being so specially arranged in the combination as to remain unattached from other flaps and panels of the carton, until the carton is closed and sealed after filling. Certain broader aspects of the reinforcing flaps form the subject matter of a continuation-in-part application Serial No. 410,573, filed November 12, 1964, for Sealed End Ice Cream Carton.

Still another specific aspect of the invention resides in the provision of a reclosable carton of the general type described above, for packaging ice cream and the like, which has a chest-type cover, with depending walls, and

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which includes specifically novel cover hinge means providing improved opening and closing action for the purpose intended. Thus, the new cover and hinge arrangement provides a "self-locking" action tending to keep the cover in a reclosed position (it being understood that the carton is sealed closed, initially) while at the same time enabling the cover to be opened with ease and facility.

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

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

FIG. 2 is a plan view of the blank of FIG. 1 in a partly folded condition, illustrating the manner in which the blank is formed into a flattened tube preparatory for shipment to a packager;

FIG. 3 is an enlarged perspective view illustrating the manner of closing the carton end;

FIG. 4 is a perspective view of an end of the carton after filling, closing and sealing; and

FIG. 5 is a fragmentary perspective view of the new carton with the top opening cover in a partly open condition.

Referring now to the drawing, and initially to FIG. 1 thereof, the reference numeral 10 designates generally a blank of paperboard or other foldable sheet material, which is divided longitudinally by score lines 11, 12 and transversely by score lines 13-17 to form a plurality of flaps and panels. At the left of the blank, as viewed in FIG. 1, there is formed a front wall panel 18, to which a bottom wall panel 19 is foldably connected along the score line 13. A back wall panel 20 is foldably connected to the bottom wall along the score line 14, and the back wall panel is divided into an upper section 21 and a lower section 22 by the score line 15, the location and function of which will be described in more detail. A cover panel 23 is connected to the upper section 21 of the back wall panel along the score line 16, and a front-closing panel 24 is connected to the cover panel along the score line 17.

Foldably connected to the opposite end edges of the bottom wall panel, along the score lines 11-12, are opposed end wall panels 25, 26, the size and shape of which are such as to substantially completely close the end of the carton, as will appear. A pair of cover end flaps 27, 28 are foldably connected to the opposite end edges of the cover panel 23, also along the score lines 11, 12.

At each end edge of the front-closing panel 24, there are provided foldably connected end-closing flaps 29, 30 which, for convenience of reference, may be referred to as "front" end-closing flaps. A second pair of end-closing flaps 31, 32, identified for convenience as "back" end-closing flaps, are foldably connected to the end edges of the back wall panel 20.

In accordance with one aspect of the invention, the connected front-closing panel and front end-closing panels 24, 29, 30 are divided into upper and lower sections, identified for convenience as sections 24a, 24b, 29a, 29b, 30a and 30b respectively, by a rupturable integral connection, advantageously in the form of a continuous, zipper-like tear strip 33. Likewise, the back end-closing flaps 31, 32 are divided into upper and lower sections 31a, 31b, 32a, 32b by means of a rupturable integral connection, advantageously in the form of cut scores 31c and 32c which terminate, at their respective inner ends, in substantial alignment with the score line 15 and extend outward and somewhat downward (as related to the erected and closed carton) from their inner end termini.

In accordance with another aspect of the invention, the front wall panel 18 is provided at its opposite end edges

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with reinforcing flaps 34, 35 which are foldably connected along score lines 36, 37 respectively. Significantly, the lower (as related to the erected carton) edges 34a, 35a of the reinforcing flaps are spaced well above the bottom edge of the front wall panel, as defined by the score line 13. As will subsequently appear, the described configuration of the reinforcing flaps 34, 35 enables these flaps to remain free and unattached until the final closing and sealing of the carton.

It is conventional practice to form the blank 10 into a flattened tube, at the place of manufacture. The flattened tubes then can be shipped conveniently and in compact form to the packager who, in this instance, typically will be an ice cream packager and/or manufacturer.

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 opened end, which is thereafter closed and the entire carton is sealed. Advantageously, the sealing required at the packager's plant is performed by so-called heat sealing techniques, rather than with adhesives, since this obviates the necessity of the packager installing and maintaining adhesive applying equipment. When the more desirable heat-sealing techniques are employed, heat seal composition is applied in appropriate patterns during the original blank-manufacturing operations, as will be described.

In the formation of the blank 10 into a flattened tube, as mentioned above, the blank may be folded first along the score line 14 and thereafter along the score line 17, so that the front-closing panel 24 completely overlies the front wall panel 18. Immediately previous to the folding operation, a narrow strip 38 of conventional adhesive is applied well along the outer surface of the front wall panel 18, adjacent the lower edge score line 13 and, in any event, below the lower edges 34a, 35a of the respective reinforcing flaps 34, 35. The arrangement is such that the adhesive strip 38 may be applied rapidly and economically in a continuous manner, by a conventional adhesive applicator wheel commonly used in carton fabrication. Thus, when the front-closing panel 24 is folded over the front wall panel 18, the lower section 24b of the closing panel is adhesively secured to the lower portion of the front wall panel 18, while remaining completely free of the reinforcing flaps 34, 35.

The novel and advantageous end construction of the new carton, which is substantially identical at both ends, is illustrated in detail in FIGS. 3 and 4. Thus, referring initially to FIG. 3, the closing of the carton end is initiated by folding the end wall panel 25 at right angles to the bottom wall panel 19, the dimensions of the end wall panels 25, 26 being such as to substantially completely close off the entire end of the squared tube. After folding of the end wall panel 25, the cover end flap 27 is folded down to overlie an upper margin of the panel 25, whereupon the end-closing flaps 29, 31 are folded inward, over the end wall panel 25 and cover end flap 27.

In accordance with one significant aspect of the invention, the reinforcing flap 34 which, prior to closing and sealing of the carton, is attached only along the score line 36, is folded inward by the front end-closing flap 29, so as to overlie the upper front corner portion of the end wall panel 25 while underlying the front end-closing flap 29. And, specifically, the vertical extent of the reinforcing flap 34 is such that a substantial portion thereof underlies the lower section 29b of the flap 29, while the upper portion of the flap 34 extends upward, as close as practicable, to the upper edge of the end wall panel 25.

In accordance with the invention, the upper sections 29a, 31a of the end-closing flaps are secured to the cover end flap 27 while remaining free of all other flaps and panels of the carton. The lower flap section 31b is secured solely to the end wall panel 25, while the lower flap section 29b is secured to the lower portion of the reinforcing flap 34, as well as to the end wall panel 25.

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For this purpose, specifically limited areas of bonding composition are provided on the inside surfaces of the end-closing flaps 29, 31, the flap section 29a having an applied pattern 39 of composition arranged to engage only the outer surface of the cover end flap 27, while the lower 29b advantageously may be provided with L-shaped pattern 40 of bonding composition arranged for contact with both the end wall panel 25 and the reinforcing flap 34. Likewise, the end-closing flap 31 is provided with patterns 41, 42 of bonding composition on the upper and lower sections 31a, 31b respectively arranged to contact with cover end flap 27 and end wall panel 25 respectively.

The bonding composition applied in the patterns 39-41, as described, may comprise a suitable conventional adhesive, if desired. However, it usually is more advantageous to utilize an appropriate heat-sealable bonding composition, since the heat sealable composition may be applied by the carton manufacturer, whereas an adhesive composition for this purpose normally would have to be applied by the packager. Utilizing a heat seal bonding composition for the end closure, the packager's filling machinery conventionally is modified to include suitable heat applicators, which are pressed momentarily against the closed ends of the folded carton, to effect the heat seal bond and permanently close the carton.

It should be particularly noted that the end-closing flaps 29-31 are of such length as to be brought into abutting, non-overlapping relation in the closing of the carton, so that the end surface of the carton is substantially smooth and continuous. Likewise, the front-closing panel 24 provides a smooth and continuous front surface for the completed carton. This is a particularly advantageous practical feature of the improved carton, since it not only imparts a particularly pleasing outward appearance to the carton, but also facilitates greatly the ability of the packager to print desired brand identification, decorative or advertising designs, or other information on the exterior of the carton.

To gain access to the contents of the container, the tear strip 33 is removed, to free the upper sections 24a, 29a, 30a, which then form depending front and end walls of the container cover. The cover can then be gripped by its front edge and raised, whereupon the back end-closing flaps 31, 32 will separate along the cut scores 31c, 32c, the upper flap section 31a, 32a then forming part of the cover end walls.

In opening, the cover structure hinges about the score line 15, as indicated in FIG. 5, so that the contents of the package are accessible directly from the top of the container. It will be noted that the front wall panel 18 and end wall panels 25, 26 remain intact and attached to the lower part of the carton body, so that the opened carton has full-height front and side walls. And, in accordance with one of the aspects of the invention, the otherwise unsupported upwardly extending portions of the front and end wall panels are reinforced and closed at the corners by the novel reinforcing flaps 34, 35, specifically as illustrated in FIG. 5. (FIG. 5 shows only one end of the carton, but it will be understood that the construction is similar at the opposite end.) Thus, in the open carton, as shown in FIG. 5, the reinforcing flap 34, which is secured to the lower section 29b of the front end-closing flap is folded at right angles to the front wall 18, to impart substantial rigidity and support to the front wall, and is disposed in overlapping relation to the upper front corner area of the end wall panel 25, to support the latter panel against outward movement.

As a particular feature of the invention, the reinforcing flaps 34, 35 extend downward sufficiently so that substantial lower end portions thereof are overlapped by and secured to the lower flap sections 29b, 30b; however, the flaps terminate sufficiently above the lower edge of the carton to enable the front-closing panel to be adhesively secured along its lower edge to the front wall panel 18, using a conventional glue wheel applicator and at the same time keeping the reinforcing flaps 34, 35 free of the

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end-closing flaps until final closing and sealing of the package. The significance of keeping the flaps 34, 35 free until final closing and sealing may be understood when considering the fact that the resistance to folding of the paperboard material increases according to the third power of increases in thickness, so that significant difficulties might be expected due to bending resistance, distortions, etc., if the reinforcing flap 34 were adhesively secured to the flap section 29b prior to folding of these flaps at right angles to the panels 18 and 24.

Advantageously, the tear strip 33 is designed to be removed progressively from one end to the other, in a manner suggestive of the action of a zipper and, in the illustrated carton, the tear strip 33 is intended to be disengaged first at the end lying in the flap 29 (see FIG. 4). For this purpose, the end extremity 33a of the tear strip is enlarged and made easily engageable by the fingers, and a recess 43 is formed in the end-closing flap 31, directly opposite the end of the tear strip 33 to facilitate access to the tear strip. No corresponding recess is provided at the opposite end of the carton, so that the opposite end of the tear strip is not freely accessible and the consumer is encouraged to start removal of the tear strip at the desired end 33a. In other respects, the structure of the opposite ends of the carton advantageously is symmetrical.

As one of the specific features of the invention, a novel and improved cover arrangement is provided, which enables the carton to be easily reclosed and reopened, while at the same time providing for the cover to automatically lock itself in a closed position. Thus, in the novel cover arrangement of the invention, the carton includes a chest-type cover having depending front and end walls of predetermined depth. In a typical embodiment of a carton incorporating the various features of the invention, arranged to be opened on a side of largest area and having a capacity to receive one-half gallon of ice cream, the depending front and end walls of the cover advantageously have a depth of about 1¼ inches.

In accordance with the invention, self-locking operation of the cover is provided by so designing the cover hinge arrangement as to provide for interference between the depending cover walls and the walls of the carton body during opening of the cover. At the same time, however, it is specifically undesirable to have an excessive amount of interference, since that would not only make the cover difficult to open, but would cause particular difficulty in the reclosing of the carton. I have discovered that an optimum balance of opening and locking characteristics is achieved by locating the hinge axis of the chest-type cover (formed by the horizontal score line 15) at a level above the lower edge extremity of the cover front wall 24a but below an upper limit line located halfway between the lower edge extremity of the cover front wall and the upper edge extremity of the carton body front wall. The specified vertical location of the hinge line 15, in the back wall structure of the carton, assures that some interference will occur between the front wall of the carton body, formed by the panel 18, and the depending front wall of the cover, formed by the panel section 24a during opening movements of the cover, so that the cover, once closed, will tend to stay locked in a closed position. At the same time, the specified location of the hinge line 15 assures that the amount of interference will not be excessive, so that the user of the package will not experience difficulty in opening or reclosing the cover.

In a specific, advantageous form of the new carton, in which the depending walls of the chest-type cover have a depth of about 1¼ inches and in which the vertical walls of the carton body extend upward substantially to the top wall of the cover, when the cover is closed, the hinge line 15 is advantageously located approximately ¼ inch above the lower extremity of the cover front wall.

The carton of the invention incorporates many ad-

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vantageous features, rendering the carton commercially desirable to the packager, to the merchandiser, and to the ultimate consumer. Thus the carton incorporates a number of structural features which provide an advantageous top opening, sealed end carton having a smooth, substantially uninterrupted outer surface which is attractive to the purchaser and which enables the brand identification or other information to be presented in an advantageous and desirable manner. For use by the consumer, the package is particularly rugged and durable, resulting in large part from the advantageous provision of reinforcing flaps 34 which, by their special design and construction, can be incorporated in the carton without adding undue manufacturing expense or introducing difficulties into the closing and sealing operations to be performed by the packager.

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

I claim:

1. A top opening, telescopically reclosable sealed end carton for ice cream and other products, which comprises
 - (a) foldably connected front wall, bottom wall, back wall, top, and front closing, cover forming panels arranged to form a tube, end wall panels foldably connected to the end edges of the bottom wall to close the ends of the tube, and cover-forming end flaps foldably connected to the end edges of the top panel and extending downward over upper edge margins of the end wall panels,
 - (b) said front-closing, cover-forming panel connected foldably to the front edge of the top panel and extending downward along the outer surface of the front wall panel to form a substantially continuous outer front surface,
 - (c) a pair of front end-closing, cover-forming flaps foldably connected to the end edges of the front-closing panel and extending rearward along the outer surfaces of the end wall panels and cover-forming end flaps,
 - (d) a pair of back end-closing, cover-forming flaps foldably connected to the end edges of the back wall panel and extending forward along the outer surfaces of the end wall panels and cover end flaps,
 - (e) the front and back end-closing flaps at each end of the carton extending into abutting, non-overlapping relation and cooperating to form substantially continuous, smooth outer end surfaces,
 - (f) said front end-closing flaps and said front-closing panel having divisible upper and lower sections initially joined by a rupturable integral connection,
 - (g) said front-closing panel being secured to said front wall panel in areas restricted to said lower section of the front closing panel,
 - (h) the upper sections of said front end-closing flaps being secured to said cover-forming end flaps, and
 - (i) the lower sections of said front end closing flaps being secured to lower portions of said end wall panels,
 - (j) reinforcing flaps foldably connected to the end edges of the front wall panel along portions extending from points near the upper edge of the front wall panel to points below the upper edges of the lower sections of the front end-closing flaps,
 - (k) said reinforcing flaps lying between the front end-closing flaps and the end wall panels and being held therebetween,
 - (l) the reinforcing flaps terminating a predetermined distance above the lower edge of said front-closing panel, and

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- (m) said front-closing panel being secured to said front wall panel by a continuous adhesive strip on said front wall panel,
- (n) said adhesive strip extending across said front wall panel and defining an axis below the lower extremities of said reinforcing flaps and above the lower extremity of said front-closing panel,
- (o) said upper sections of said front end-closing flaps being divisible from said lower sections of said front end-closing flaps to form depending front and end walls for a reclosable cover,

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- (p) said cover being hingedly connected to said back wall.

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FRANKLIN T. GARRETT, *Primary Examiner.*