This invention relates to carton for food products. It is illustrated in connection with the packaging of food products which are to be thereafter frozen in the carton, a use for which I find my new carton particularly well adapted.

In thus packaging any moisture-containing food product for storage or distribution to the consumer, it is the practice to pack the carton with the fresh moist product and then, after closing and sealing, to freeze the filled carton and its contents into a solid block by subjecting it to the action of a refrigerating medium. When the freezing is effected between parallel heat-conductive surfaces, it is important to interpose between the product and such surfaces as little as possible material having heat-insulating characteristics. Cardboard is such a material and, accordingly, my invention contemplates a carton having interlocking end-sealing portions and bottom and top panels each comprising only a single thickness of cardboard. Packed in such a carton the product may be frozen from its upper and lower surfaces with a minimum insulating effect and maximum freezing efficiency for a packed product.

It is desirable for the convenience of the consumer that in opening a package of frozen food product the carton may, without tearing, be entirely stripped away from the solid frozen block which it contains since it may happen that the contents becomes frozen to the inner surface of the carton and is, therefore, difficult to separate from its wrapping. Accordingly, I propose to provide a carton of such construction that it may be unfolded into a flat sheet leaving its frozen contents intact upon the bottom panel of the flat carton blank from which it may be readily separated and removed.

With these conditions in view, I have designed a carton which meets all commercial requirements advantageously and which may be manufactured with convenience and economy. As herein shown, the carton of my invention is constructed from an integral blank of sheet material having bottom and side panels and an attached cover member together with certain flaps and end portions. The end walls of the carton may be formed from the end portions of the bottom and side panels, so folded as not only to form complete and impervious end walls but also to provide outside tucks for receiving the cover-holding flaps. The cover member includes a top panel and a cooperating side panel. The end walls of the cover are formed from end portions of these panels so folded as to provide integral bottom, side and end walls for the carton as well as cover-holding flaps. This construction produces an improved carton particularly adapted for use with moisture-containing products and in refrigerating processes, and presenting the further advantage of requiring no adhesive or metallic fasteners for securing or sealing the packaged carton.

Another feature of the invention consists in a novel arrangement or design of the scored lines which define the cover portions in the carton blank. I have discovered that by deflecting inwardly the lines of the end portion of the cover flap the cover corners may be made to draw tightly into contact with the body of the carton when the latter is closed and secured, and thus is provided a package which is particularly tight and compact in structure and appearance.

Still other features of the invention relate to characteristics of the carton adapting it for display purposes and permitting inspection of the frozen contents without exposure thereof. For this purpose the cover of the carton may be scored so that it may be folded back and beneath the body of the carton, thereby adapting the filled carton to receive telescopically a cover having a transparent window thereon.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment, selected for purposes of illustration and shown in the accompanying drawings, in which Fig. 1 is a view in perspective of a food package in which is embodied my improved carton, the carton cover being partially broken away to disclose the contained frozen product;

Fig. 2 is a perspective view showing one end of the package with the cover end flap in open position;

Fig. 3 is a view of the package with the cover open;

Fig. 4 is a perspective view showing the carton stripped away from the frozen food block;

Fig. 5 is a fragmentary view of the package showing the end flaps open;

Fig. 6 is a perspective view of the carton in combination with a display cover as seen from the rear; and

Fig. 7 illustrates a carton of modified form, having a transparent display window in its cover.

As already intimated, one important field of use for the carton of my invention is in the packaging of quick frozen products such, for example, as fillets of fresh fish, fresh meat products, vegetables, etc. The carton is shown in the drawings as packed with asparagus tips and since, as hereinafter more fully described, the carton has been treated to render it substantially moisture and vapor proof, the product is packed directly in the carton without the use of the wrapper or liner sometimes used. When thus packed and closed, the package is ready to be quickly frozen. This operation may be conveniently effected by placing the package be
between heat-conductive plates which contact firmly with the top and bottom surfaces of the package, as in the apparatus of Birds eye Patent No. 1,773,079, the refrigerated plates serving to conduct heat rapidly from the package and convert the food therein into a solid frozen block. The improved carton of my invention is particularly adapted to this process since the product is located in direct contact with the inner walls of the carton and the top and bottom walls thereof are of single ply thickness, thereby having a minimum insulation effect. The carton also has other features, hereinafter described, which contribute to its adaptability for the purpose herein described.

The carton is constructed from sheet material, such as cardboard, and is formed and folded from a flat blank, best shown in Fig. 4. The blank for forming the carton is treated to render it substantially water and vapor proof. This treatment is preferably in the nature of an application of a cellulose lacquer coating on the inner wall and renders the carton substantially impervious to the passage of moisture from the product to the outside atmosphere. The blank, or at least its outer surface, is also preferably wax coated to render it waterproof and easily cleaned. The construction of the carton is such that no adhesive or metallic fasteners are required to hold it in place about the food and it may be readily opened and stripped away in a manner leaving the food block fully accessible. It will be readily apparent that a carton having these characteristics is particularly adapted to the formation of an improved frozen food package of the nature herein described, the treated blank rendering the carton walls impervious and the closed folds of the carton cooperating therewith to keep the food substantially free from exposure, losses by desiccation and deterioration.

The carton blank herein shown may be die cut at one operation and is shaped and scored to define a rectangular bottom panel 12 and top panel 14 of similar size and shape connected by an intermediate side panel 16. A second or front side panel 18 is connected to the other edge of the bottom panel 12 and a third or side cover panel 26 is connected to the outer edge of the cover panel 14. All of these panels are united by the full length of their longitudinal edges and defined by scored lines 32, 33, 34 and 35. All of these panels are also extended at each end to provide end and corner portions. At the ends of the bottom panel are located end portions 21 and 22 formed integrally with corner portions 20 and 22 at the ends of the side panels 16 and 18 respectively. At the ends of the top or cover panel are located end portions 23 and 24 at the ends of the side cover panel 26. The end portions 21 are extended still further to form flaps 24 and 25 and the cover end portions 23 are extended to form flaps 30.

The blank is scored to define the longitudinal edges of the panels, as already noted, and is also scored on transverse lines 36 to define the end portions and facilitate folding the blank into carton form. The corner portions 20, 22 and 23 are also scored diagonally at 38 whereby they may take an even bellows fold in forming tucks at the ends of the carton, as will be presently described.

The carton is given its shape by folding the side panels 16 and 18 and the end portions 21 into upright position, and in this operation the corner portions 20 and 22 are folded outwardly on the scored lines 38 to form doubled tucks disposed closely against the end walls of the carton. Each end is then completed and the body of the carton secured by folding the end flaps 24 downwardly over the doubled tucks 20 and 22 and then tucking the cover portion 23 upwardly beneath or behind these tucks in the position shown in Fig. 4. This way of forming an integral body having no cracks or openings in its bottom, side and end walls all rigidly and substantially supported by the interfolded portions of the end walls.

After the carton has been filled, the cover portion is closed to the position shown in Fig. 4, as follows, the top and side panels 14 and 26 are first folded into the position of Fig. 2. Each corner portion 29 is then folded inwardly along its diagonal scoring 38, the cover end portions 23 folded thereover and the holding flaps 30 tucked upwardly beneath or behind the flaps 24–25. This operation results in tightly closing the carton on all sides and securely fastening it in that condition. There is no danger of accidental disengagement of the cover and yet the carton may be readily opened to permit removal of the tinned product fully accessible by withdrawing the cover flap 30 without disturbing the structure of the carton body.

It will be apparent from Figs. 1 and 2 that the closing of the cover end portions 20 and 25 by scoring in a drawn-out position, the corner portions 20 and 22 (Fig. 2) of the side cover panel 26 is brought inwardly against the carton body to a position coinciding with the corner 44 of the end panel 28 because the score line 38 exactly bisects the corner portion 22. The diverging score lines 40 act to draw the corner 44 at each end of the panel 26 further inwardly than would be the case if the score lines 40 were parallel with the score line 35. Thus, in this construction, the side panel 26 is brought to and held in a more tightly closed position relative to the side panel 18 when the cover is closed, thereby more efficiently protecting the product, especially along the front of the carton.

I have also discovered how, by imparting a particular characteristic to the blank, the rear top corners of the carton can be more tightly closed. The cover 14 and side panel 16 are connected together along the score line 34 and in my improved carton I extend this connection outwardly at both ends of the score line at 46 to points slightly beyond the side and cover panels, whereby the adjacent edges of the side and cover end forming portions 20 and 22 are connected together to the attached side and cover panels 16 and 14. When the corner portions 20 and end portion 23 are folded to the closed position of Fig. 1, these extended and connected portions 46 serve more completely to enclose their corners of the carton than is the case when the
connection is coextensive only with the side and cover panels (see Fig. 3). Thus the carton is made tighter and the food product more efficiently protected.

The feature of my invention, illustrated in Fig. 6, consists in a display cover for and cooperating with the carton and a novel scoring of the carton cover adapting it to fold backwardly to a position permitting the application of the display cover to the open carton. As seen in Figs. 3 and 4, the carton cover is scored entirely across on a line 48 parallel with the line 34 and spaced therefrom a distance approximately equal to the width of the adjacent side panel 16. When it is desired to use one of the food packages for display purposes, the cover is opened, the end portions thereof are folded backwardly along lines 36 against the panels 14 and 26, and the entire cover is then folded backwardly against the panel 16 and beneath the carton and against its bottom panel 12, the scoring fold at 48 coinciding with the fold line 33 defining the rear lower edge of the carton. A display cover 50, comprising side and end panels and a cover panel 54 provided with a transparent window 52 of sheet cellulose or the like, may then be slipped in close-fitting relation over the side panel 14 and end portions, the arrangement and combination, shown in Fig. 6, permits the use of my improved carton for display purposes while keeping the product therein covered and protected.

In Fig. 7 I have illustrated the carton itself as constructed with a transparent window 56 of sheet cellulose or the like inserted in the cover panel, whereby the product may be inspected at all times without opening the carton. When the consumer desires to open the packages, the cover may be released by withdrawing the cover and flaps edgewise and downwardly, whereupon the cover may be lifted. If the frozen contents adhere to the walls of the carton, the body thereof may be freely stripped away from the food block by withdrawing the end flaps 25 and folding outwardly the side panels and end portions, restoring the carton to the flat form of the blank, as suggested in Fig. 4.

While I have shown and described the utility of my carton as applied to a frozen food package, my new carton has advantages that are not limited to the particular field of use. Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A carton for frozen food products, comprising a box-like body having exterior flaps, a cover attached to one edge of the body and including top, side and end panels and corner portions connected to the side and end panels, the cover being scored along the junction of the top and side panels whereby to permit the side panel to be folded against the adjacent side of the body and each of said corner portions being scored diagonally and along its edges whereby it may be folded beneath its end panel, the scorings at the junction of the end panels and said corner portions diverging outwardly away from the outer edge of the side panel thereby tending to draw the side panel close to the body of the carton when the end panels are folded against the body, and holding flaps carried by the end panels for engaging within said flaps.

2. A carton for frozen food products, comprising a body portion having folded tucks at each end, a cover having flaps adapted to be folded behind said tucks, a side cover panel, and scored corner portions thereon defined in part by a scored line which is deflected inwardly toward the fold line of the cover.

3. A carton for frozen food products, comprising a body portion having folded tucks at each end, a cover having an outer side panel set off from the cover by a scored line, and folding corner portions set off from the cover and said outer panel by scored lines diverging by more than 90° and each bisected by a diagonal scored line.

4. A carton for frozen food products, comprising a box-like body having a bottom panel, connected side panels and end portions extending outwardly beyond said panels, a cover integrally attached to the free edge of one of the side panels and having end portions at its ends, the line of attachment of the cover and side panels extending slightly beyond the ends of the side and cover panels whereby the adjacent edges of the side and cover end portions are integrally connected for a short distance and thereby caused completely to enclose the corresponding corners of the carton when the cover is closed.

5. A carton for frozen food products, comprising a box-like body having a bottom wall, side walls and a rear wall, a cover integrally attached to the top edge of the rear wall, having a side panel and adapter to be folded over and form the top wall of the carton, said cover being scored along a line parallel to its line of attachment and at a distance from said line substantially equal to the width of the rear wall whereby the cover can be folded backwardly against the rear wall to the bottom of the carton and from thence inwardly beneath the bottom wall.

6. A carton in which moisture-containing food products may be frozen, comprising a bottom panel having two side panels connected thereto, connected end portions extending outwardly and beyond each end of said panels and a flap extending outwardly beyond each bottom panel end portion, the bottom panel end portions being folded upwardly to form the end walls of the carton and the side panel end portions being scored diagonally and folded outside the end walls, each end wall flap being folded downwardly over the folded side panel end portions and its extreme end being folded inwardly and interlocked upwardly beneath the folded side panel end portions, a cover panel connected to the top edge of one of the side panels and having a cover side panel connected to its outer edge, connected end portions extending outwardly beyond each end of said cover panels and a flap extending outwardly beyond each top panel end portion, the cover panel end portions being foldable downwardly to form the end walls of the cover, the connected side panel end portions being scored diagonally to fold inwardly beneath the cover end walls, and the cover panel flaps being foldable inwardly to interlock upwardly beneath the foldable side panel end portions, the carton having a single panel thickness for its top and bottom walls and the top panel portions and their flaps serving to hold the cover closed and acting through the connected side panel end portions to hold the cover side panel drawn closely against the carton.

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