Nov. 11, 1947. R. GUYER 2,430,610

CARTON

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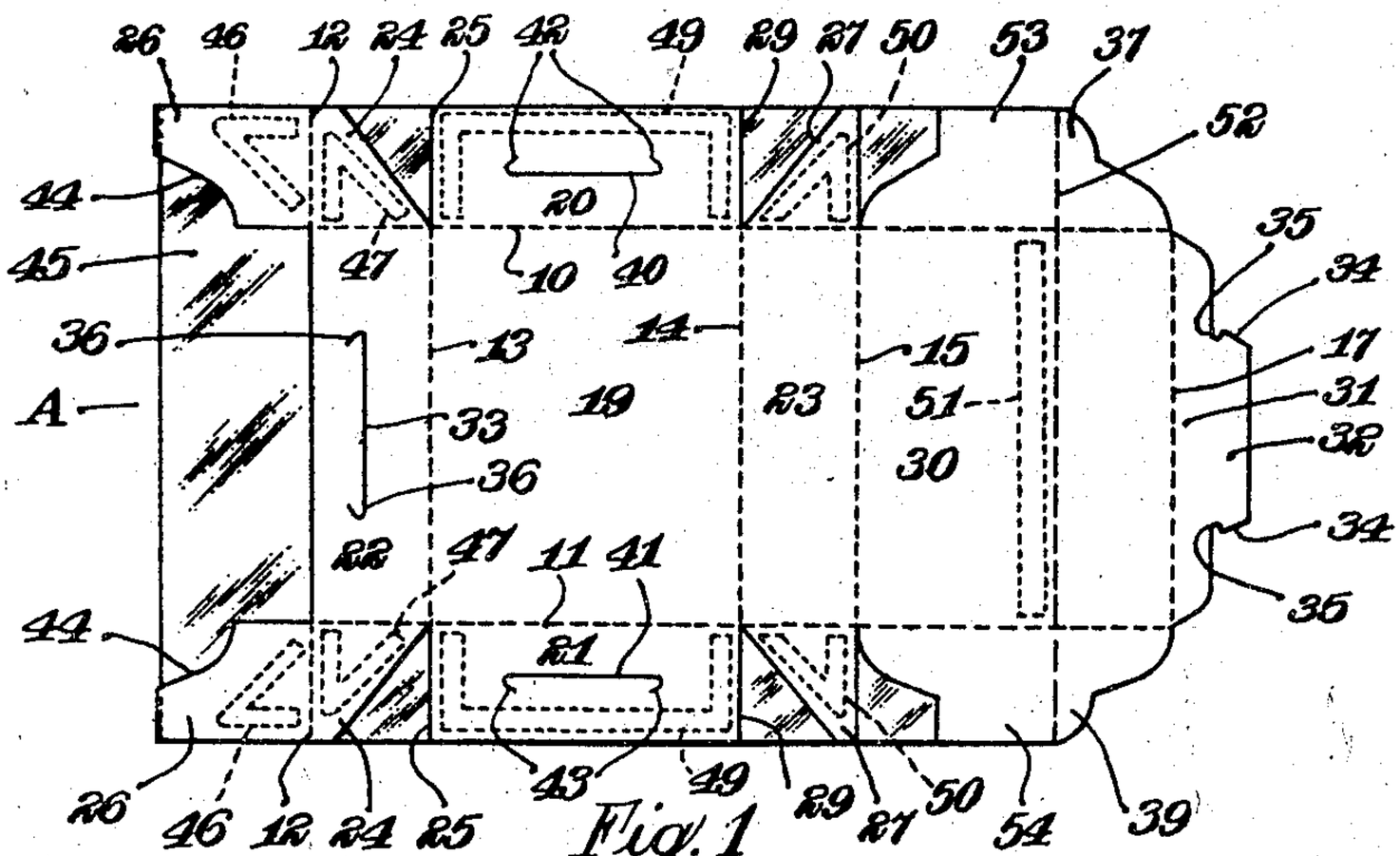

Fig. 1

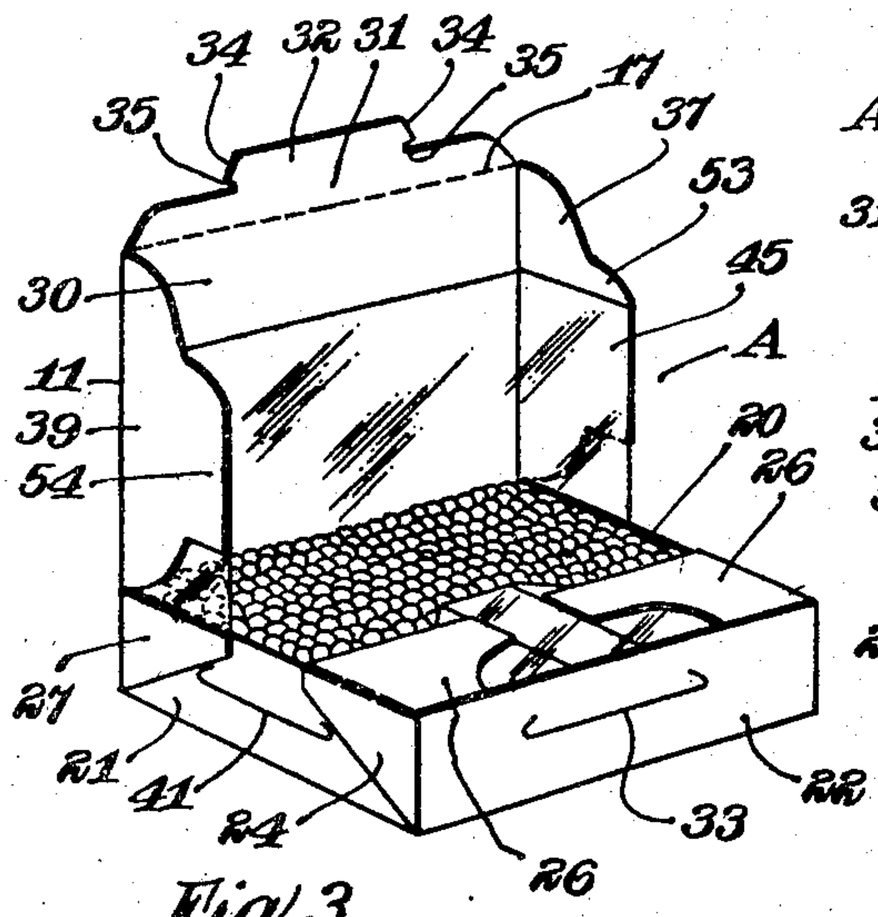

Fig. 3

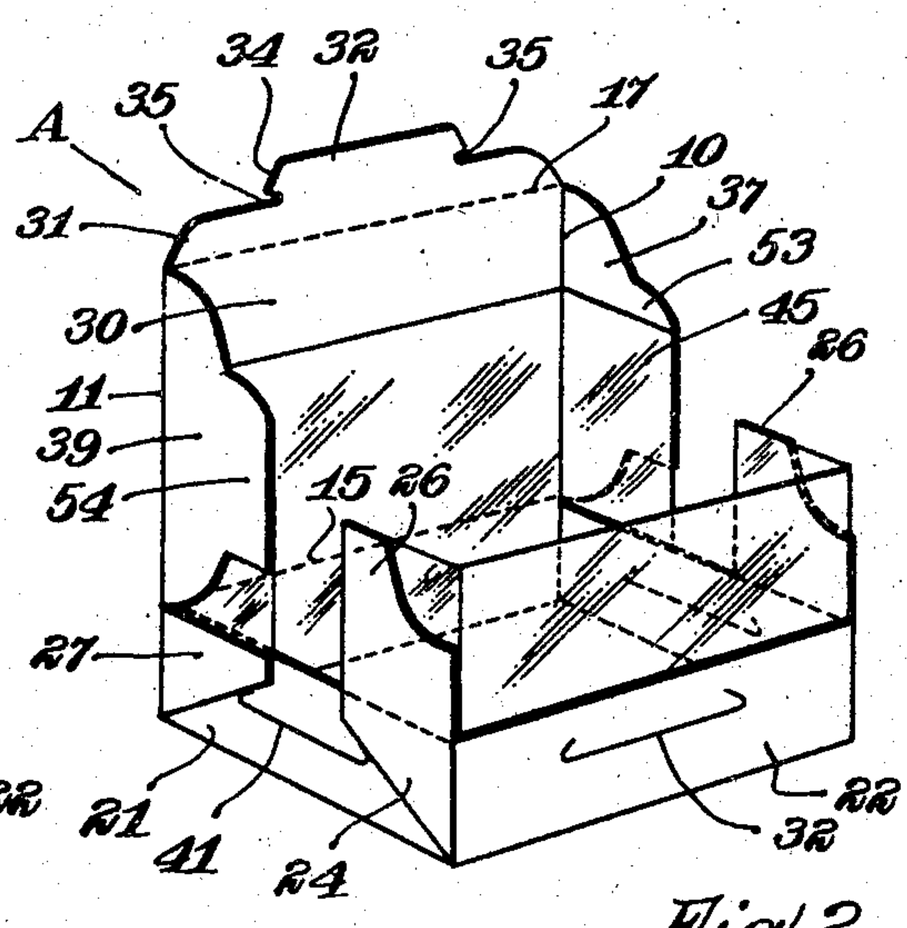

Fig. 2

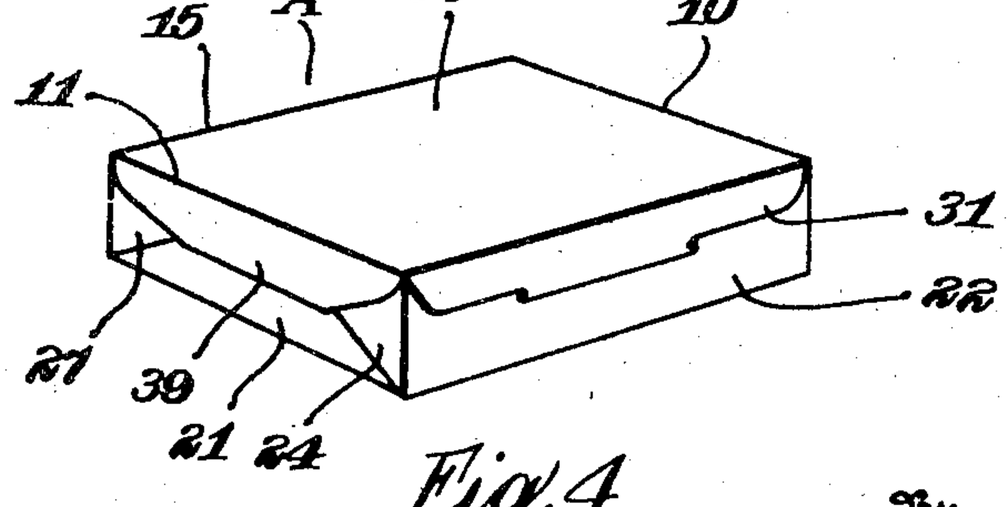

Fig. 4

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CARTON

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10 Claims. (Cl. 229—14)

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My invention relates to an improvement in cartons, and relates more specifically to a type of carton particularly adaptable for use in packing frozen foods and the like.

Certain characteristics are desirable in the packaging of frozen foods or the like. In the first place, the carton must be moisture tight so that the moisture of the materials being frozen does not leak through the package before the products are frozen. It is also desirable that the package be easily closed in a short period of time and remain tightly closed until the contents are to be used. Furthermore, it is desirable that the packages be formed at low cost so as not to add materially to the cost of the product. The package should also be neat and attractive so as to assist the sale of the products.

It is the object of the present invention to provide a carton which meets all of the essential requirements for a package of this type. The carton is provided with a liner secured thereto at certain predetermined places. When folded, this liner forms a bag or tray capable of holding moisture. The material forming the liner is preferably moistureproof and greaseproof to accomplish the desired result.

A feature of the present invention lies in the fact that the bag may be formed from flat condition to formed position by means of a plunger and a suitable die. The carton blank with its liner adhered thereto is placed on top of a folding die and a plunger which is of the same general shape and area as the bottom of the carton presses down against the bottom of the carton. The folding die then folds the opposed ends of the blank upwardly, folds the front and rear walls of the carton upwardly, and folds end flaps on the front and rear walls to overlie the opposed side walls of the carton. Simultaneously the liner folds to provide a diagonal crease at the corners of the box, thereby providing a tray capable of holding moisture.

A feature of the present invention lies in the fact that the liner is simultaneously folded along diagonal crease lines and the side walls and flaps of the carton are folded into a tray shape. By securing specific areas of the liner to the carton blank, the desired fold is attained.

A further feature of the present invention lies in the provision of a carton blank having a liner attached thereto designed to form a liquid tight tray, and in combining the liner to within the outer confines of the carton blank. Various carton blanks have previously been formed with liners of wax paper, Cellophane, or the like at-

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tached thereto but in most of the constructions with which I am familiar, portions of the Cellophane extend beyond the edges of the carton blank. As a result in shipping the cartons in flat formation means must be provided to hold the carton blanks with the attached liners spaced from the walls of the container in order to prevent wrinkling or tearing of the projecting portions of the liner. Obviously where the liner is formed of Cellophane, wax paper, or the like, considerable injury to the liner could result during shipment or handling of the blanks. However, by combining the liner to within the confines of the blank I obviate all of this former difficulty and I am able to ship the blanks in the usual type of container.

A feature of the present invention lies in the provision of folding flaps connected to the end flaps hingedly secured to each end of the front wall. The end flaps on the front and rear walls of the carton act to form the diagonal folds in the liner during the formation of the carton. The folding flaps assist in folding the liner down over the contents of the package just before the hinged cover is closed. The liner is formed of thin material and is somewhat more difficult to handle in folding operations than the material of which the carton blanks are formed. Therefore it is desirable to fold the lining material with the carton material wherever possible.

A further feature of the present invention lies in the provision of tongues on the hinged cover which engage in slots in the carton walls. These tongues engage between the liner and the inner surface of the carton and are therefore held in proper position.

A further feature of the present invention lies in the provision of a container which may be easily opened up into flat formation when it is desired to use the contents of the package. Certain food products when frozen form a solid block which is often difficult to remove from a carton. The present type of carton, however, may be folded into flat formation, immediately when the cover is opened, allowing the contents of the package to be readily removed.

These and other objects and novel features of my invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of my specification:

Figure 1 is a diagrammatic view of the carton blank showing the liner attached thereto.

Figure 2 is a perspective view of the carton in folded condition ready to receive the contents.

Figure 3 is a perspective view of the carton in partially closed position.

Figure 4 is a perspective view of the carton in closed position.

The box or carton A is formed as best illustrated in Figure 1 of the drawings. The blank is creased along parallel fold lines 10 and 11 extending longitudinally of the blank and is creased transversely along fold lines 12, 13, 14, 15, 16 and 17. This creasing divides the blank into a series of panels which will be described in detail. The bottom panel of the carton is designated by the numeral 19. This bottom 19 is connected to the side wall panel 20 and the similar side wall panel 21 along the parallel fold lines 10 and 11. The bottom 19 is also connected along parallel fold lines 13 and 14 to the front wall panel 22 and the rear wall panel 23.

The front wall panel 22 is connected along the fold lines 10 and 11 to substantially triangular end flaps 24 which are spaced from the side wall panels 20 and 21 by substantially triangular notches 25. The flaps 24 are connected along the fold line 12 to projecting flaps 26 in the manner illustrated.

The rear wall panel 23 is connected along the fold lines 10 and 11 to substantially triangular flaps 27 which are spaced from the side walls 20 and 21 by substantially triangular notches 29.

The top panel 30 is connected to the rear wall 23 along the fold line 15 and is connected to a closing flap 31 along the fold line 17. The flap 31 is provided with a projecting tongue 32 designed for engagement in a slot 33 in the front wall panel 22. This tongue 32 is partially divided by diverging lines 34 which are separated from the main body of the flap 31 by notches 35. The tongue 32 engages in through the slot 33, the notches 35 engaging the hook-shaped ends 36 of the slot and thus providing a lock for the cover panel 30.

The top or cover panel 30 is connected along the fold lines 10 and 11 to side flaps 37 and 39 designed to engage in slots 40 and 41 in the side panels 20 and 21. The slots 40 and 41 are provided with angularly extending ends 42 and 43 respectively, so as to simplify the insertion of the flaps into the slots. In order that maximum economy may be attained the flaps 26 are preferably notched as illustrated at 44 so that the end of the next adjacent blank may dovetail with the blank illustrated. As will be obvious from an examination of Figure 1 of the drawings, the flap 31 and its integral tongue 32 may extend between the flaps 26 of the next adjacent carton, providing a minimum of waste between adjacent cartons.

After the blank has been formed, as best illustrated in Figure 1 of the drawings, a lining sheet of material which is preferably water proof is secured to one surface thereof. Figure 1 shows a sheet 45 of regenerated cellulose, or the like, which is secured to the undersurface of the blank illustrated. This attachment is attained by securing selected areas of Cellophane to corresponding areas of the blank by means of a suitable adhesive. The areas of adhesive attaching the blank to the Cellophane sheet are indicated in dotted outline in Figure 1 of the drawings. Two substantially V-shaped areas of adhesive 46 connect the end of the Cellophane sheet to the flaps 26. A second pair of opposed V-shaped adhesive areas 47 secure the sheet 45 to the flaps 24. Opposed substantially U-shaped adhesive areas 49 are provided on the side flaps 20 and 21, as illustrated, these areas adhering the liner to the flap about the marginal unconnected edges of the side panels.

V-shaped adhesive areas 50 are provided on the flaps 27 to connect these flaps to the sheet 45. An end strip 51 of adhesive also secures the marginal edge 52 of the sheet 45 to the cover panel 30.

When the sheet 45 has been attached in the manner specified, the box may be formed by means of a suitable folding die and plunger device. The blank A is placed over the folding die and a plunger engages against the liner covering the bottom panel 19. The folding die is shaped to fold the side panels 20 and 21 upwardly to a position at right angles to the base and to fold the front and back panels 22 and 23 respectively also at right angles to the base as illustrated in Figure 2. The folding die also simultaneously folds the flaps 24 and the flaps 26 carried thereby in right angular relation to the front panel to which they are attached. The flaps 27 are also folded to overlie the side walls 20 and 21 as also illustrated in Figure 2.

It will be noted that as the blank is folded the liner sheet 45 is diagonally folded to extend outwardly of the side panels 20 and 21 and between portions of these side panels 20 and 21 and the triangular flaps 24 and 27 overlying the same. Thus a tray is formed having diagonally creased corners and which is moisture tight. Thus the box may be filled with material containing considerable moisture without danger of the moisture leaking from the box or being absorbed into the stock. When the box is in the position illustrated in Figure 2, it is preferably held in place by the folding die, or by some retaining means used in conjunction therewith so that the various parts of the box may be held in proper relationship.

After the carton has been filled the projecting portion of the liner sheet 45 between the flaps 26 is folded down to overlie the contents of the carton and the flaps 26 are folded down above the folded portions of the liner. When in this position the carton appears as illustrated in Figure 3 of the drawings. The cover or top panel 30 is then folded down along the fold line 15, the projecting gears 53 and 54 on the closing flaps 37 and 39 extending through the slots 40 and 41 in the side panels 20 and 21. These ears 53 and 54, on the closing flaps 37 and 39, are thus locked between the liner sheet 45 and the inner surface of the panels 20 and 21, thus being retained in place by the pressure of the contents, pressing the liner outwardly against the carton side walls and also by the locking tongue 32 of the front flap 31. This tongue 32 is inserted through the slot 33 in the front panel 22, being held between the liner sheet 45 and the inner surface of this front panel 22. When in this position the liquids within the container still do not contact any raw edges of the carton blank in spite of the fact that certain of these raw edges have been inserted in slots in the blank. Furthermore, these liquid contents can not well spill from the tray formed by the liner. It is true that if the carton is inverted the liquid will find a way out of the carton through the various seams in the liner. The present cartons, however, are designed to accommodate frozen foods and as a result may readily remain in upright position as illustrated in Figure 4 until the liquid therein has been completely frozen.

From the foregoing description it will be seen

that my carton is extremely simple in form and can be inexpensively constructed. The lining sheet 45 is within the confines of the blank so that the blanks may be readily shipped in common types of containers in flat form without danger of the relatively fragile lining sheet being damaged. This is a considerable advantage over the blanks formerly constructed in which the liner projected beyond the edges of the stiffer carton material.

Another feature of the present carton construction will be seen in the fact that after the top is released the package may be readily stripped from the contents. The contents are usually removed while still in a frozen or partially frozen state, making it desirable to open the entire package up in removing the wrapper from the contents. After the freezing operation it will be found that the cover may be opened without the carton falling apart due to the fact that the dampness usually accompanying the packaging of the contents tends to mold the package into closed form.

In accordance with the patent statutes, I have described the principles of construction and operation of my carton, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A carton blank including a paper board blank having a thin, flexible liner sheet connected thereto, said paper board blank including front and rear walls and a bottom panel foldably connected together along parallel transverse fold lines, side wall flaps and end flaps foldably connected to said bottom panel and said front and rear walls respectively along parallel fold lines, projecting flaps foldably connected to opposed end flaps on said front wall, and means securing one end of said liner to said projecting flaps to extend therebetween and to fold therewith.

2. A carton blank comprising a paper board blank and a thin, flexible liner sheet, said paper board blank being divided to form a front wall panel, a bottom panel and a rear wall panel along parallel transverse score lines, a pair of side wall flaps foldably connected to said bottom panel along parallel fold lines, end flaps foldably connected to said front and rear wall panels and adapted to overlie portions of said side wall panels when said carton is formed, projecting flaps foldably connected to said end flaps connected to said front panel to project beyond the remainder of the blank, one end of said liner being secured to said projecting flaps to be protected thereby and to fold therewith, the corresponding corners of the liner being within the confines of said flaps.

3. A carton blank comprising a front wall panel, a bottom panel, a rear wall panel, and a top panel foldably connected together along parallel fold lines, side wall panels foldably connected to said bottom panel along parallel fold lines, end flaps foldably connected to said front panel and foldable to overlie portions of said side wall panels, projecting flaps on said end flaps projecting beyond said front wall panel, a substantially rectangular thin, flexible liner sheet secured at spaced points to said paper board blank, said liner sheet being of a size to extend substantially the width of the paper board blank from the free edge of one side wall panel to the free edge of the opposite side wall panel, and extending in length from adjacent the end of said projecting flaps to a point on said top panel spaced from the fold line connecting said top panel to said rear panel, and means connecting said liner sheet to said projecting flaps and to said top panel to fold therewith.

4. A carton blank comprising a front wall panel, a bottom panel, a rear wall panel, and a top panel foldably connected together along parallel fold lines, side wall panels foldably connected to said bottom panel along parallel fold lines, end flaps foldably connected to said front panel and foldable to overlie portions of said side wall panels, projecting flaps on said end flaps projecting beyond said front wall panel, a thin, flexible liner sheet secured to said paper board blank, said liner sheet being of a size to extend substantially the width of the paper board blank from the free edge of one side wall panel to the free edge of the opposite side wall panel, and extending in length from adjacent the end of said projecting flaps to a point on said top panel spaced from the fold line connecting said top panel to said rear panel, means connecting said liner to said projecting flaps and said top panel to fold therewith, and side flaps foldably connected to said top panel to protect the end of said liner sheet secured to said top panel, said side flaps extending substantially to the side edges of said liner sheet.

5. A carton including a base panel, side panels foldably connected thereto along substantially parallel fold lines, opposed panels foldably connected along the remaining sides of said base panel, both of said opposed panels having end flaps connected thereto along parallel fold lines, projecting flaps connected to the end flaps of one of said opposed panels, said projecting flaps being connected to their respective end flaps along aligned fold lines, a top panel hingedly connected to the other of said opposed panels, locking flaps hingedly secured along three sides of said top panel, slots in said side panels and in said one opposed panel into which portions of said locking flaps may extend, and a liner of substantially rectangular shape extending from the free edge of one side panel to the free edge of the opposite side panel and extending from the free edges of said projecting flaps to partially overlie said cover panel.

6. A cartoon blank comprising a front panel, a base panel, a rear panel, and a top panel connected along substantially parallel fold lines, a pair of second parallel fold lines intersecting the first mentioned fold lines to define the ends of said panels, end panels connected to said base panel along said second fold lines, end flaps connected to said front and rear panels along said second fold lines, and end tabs connected to said top panel along said second fold lines, projecting flaps lying outwardly of said second fold lines secured to said end flaps on said front panel along substantially aligned fold lines to project beyond said front panels at one end of said blank, a front tab on said top panel projecting from the other end of said blank, said front tab lying between said second fold lines, and a relatively fragile liner of generally rectangular shape having the corners at one end thereof secured to said projecting flaps, and having its other end secured to said top panel.

7. A carton comprising a bottom panel, front and rear wall panels secured thereto, side panels extending upwardly therefrom, end flaps connected to the side edges of said front and rear walls along vertical fold lines and overlying portions of said side panels, a thin flexible liner secured to said end flaps within triangular areas

of connection, said triangular areas being bounded by the fold lines connecting the end flaps to their respective walls, the upper end flap edges, and diagonals from the lower ends of the fold lines connecting the end flaps to their respective walls to the upper end flap edges, the liner extending over the inner surface of said bottom panel, side panels, and front and rear panels, and said liner including a double diagonally folded corner portion between each said end flap and the side wall which it overlies.

8. A carton comprising a bottom panel, front and rear wall panels secured thereto, side panels extending upwardly therefrom, end flaps connected to the side edges of said front and rear walls along vertical fold lines and overlying portions of said side panels, a thin flexible liner secured to said end flaps within triangular areas of connection, said triangular areas being bounded by the fold lines connecting the end flaps to their respective walls, the upper end flap edges, and diagonals from the lower ends of the fold lines connecting the end flaps to their respective walls to the upper end flap edges, the liner extending over the inner surface of said bottom panel, side panels, and front and rear panels, and said liner including a double diagonally folded corner portion between each side end flap and the side wall which it overlies, a top panel hingedly secured to said rear panel, said liner extending at least partially beneath said top panel and secured thereto.

9. A carton comprising a bottom panel, front and rear wall panels secured thereto, side panels extending upwardly therefrom, end flaps connected to the side edges of said front and rear walls along vertical fold lines and overlying portions of said side panels, a thin flexible liner secured to said end flaps within triangular areas of connection, said triangular areas being bounded by the fold lines connecting the end flaps to their respective walls, the upper end flap edges, and diagonals from the lower ends of the fold lines connecting the end flaps to their respective walls to the upper end flap edges, the liner extending over the inner surface of said

bottom panel, side panels, and front and rear panels, and said liner including a double diagonally folded corner portion between each said end flap and the side wall which it overlies, a top panel hingedly secured to said rear panel, locking flaps on said top panel overlying portions of said side panels, and slits in said side panels through which portions of said locking flaps extend, the portions of said locking flaps extending through said slits lying between said side panels and said liner.

10. A carton comprising a substantially rectangular base panel, a front panel and a back panel connected to opposed edges thereof, a top panel foldably connected to said back panel, end panels connected to said base panel, end flaps connected to said front and rear panels and overlying said end panels, end tabs connected to said top panel, and a one piece liner extending inwardly of said front, rear and end panels, and overlying said base panel, said liner having at each corner thereof a diagonally folded triangular gusset fold positioned between the end wall and the end flaps in direct contact therewith, said end flaps terminating in spaced relationship, the end panels having slots therein between said end flaps to accommodate the end tabs of said top panel.

REYNOLDS GUYER.

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