

Nov. 22, 1955

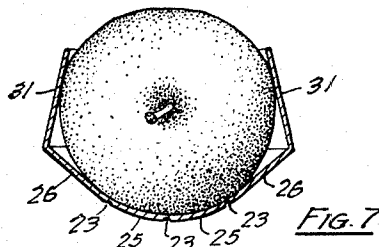
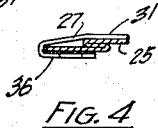
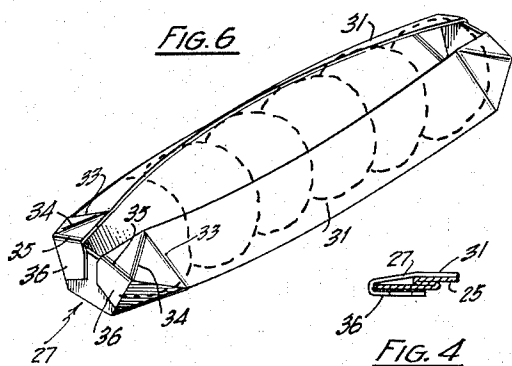
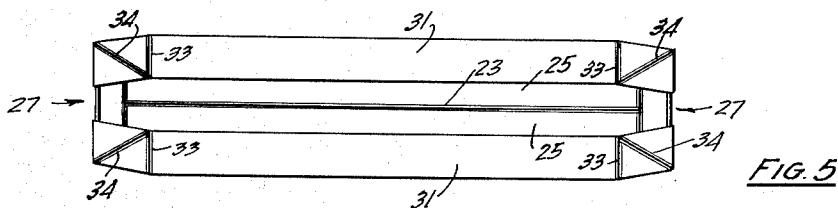
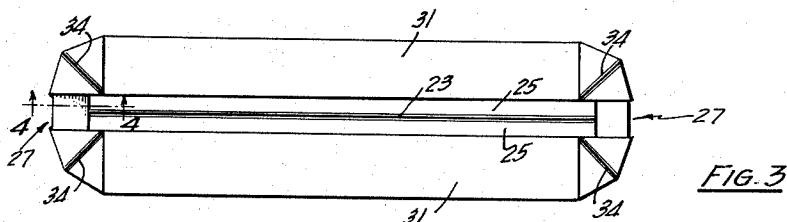
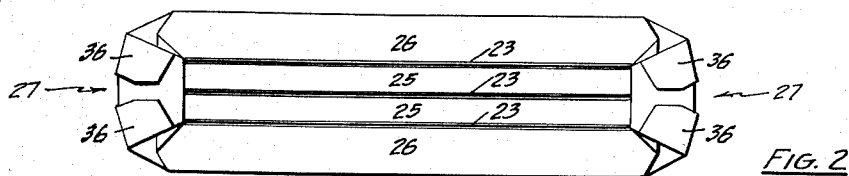
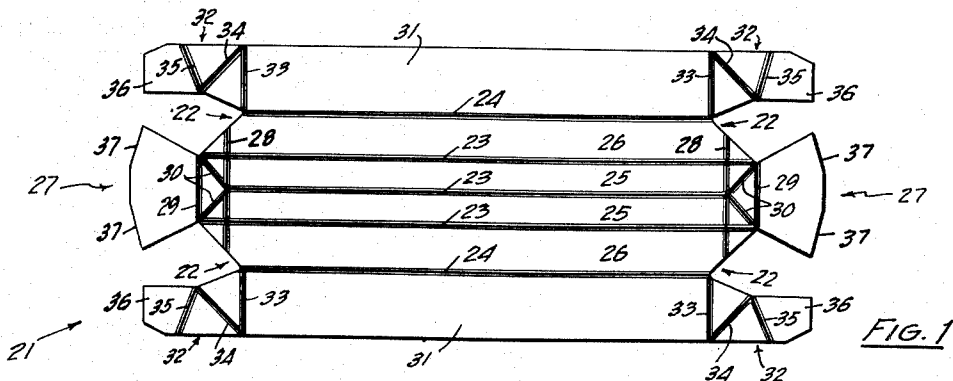
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2,724,541

COLLAPSIBLE CARTON AND FRUIT PACK

Filed Oct. 28, 1949

3 Sheets-Sheet 1



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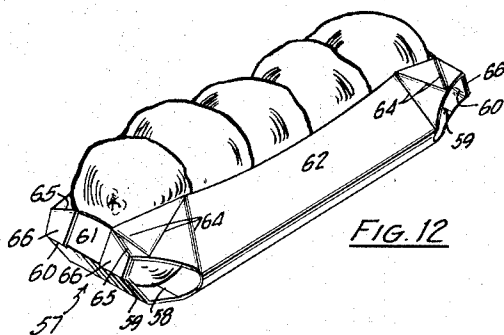
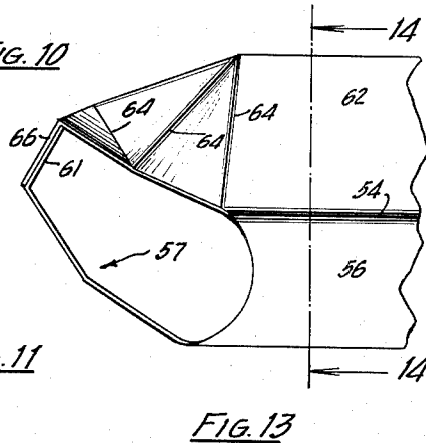
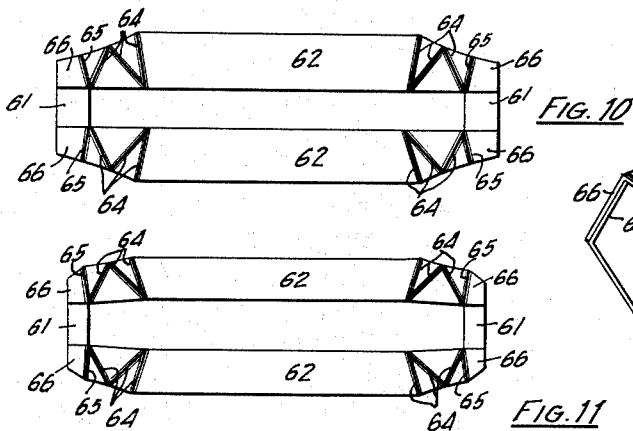
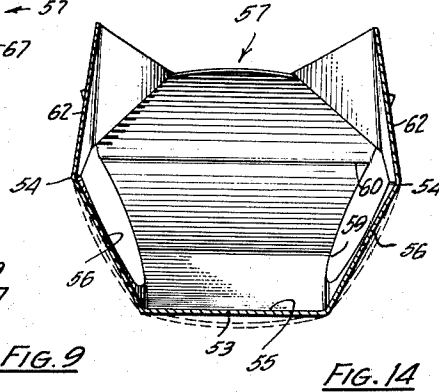
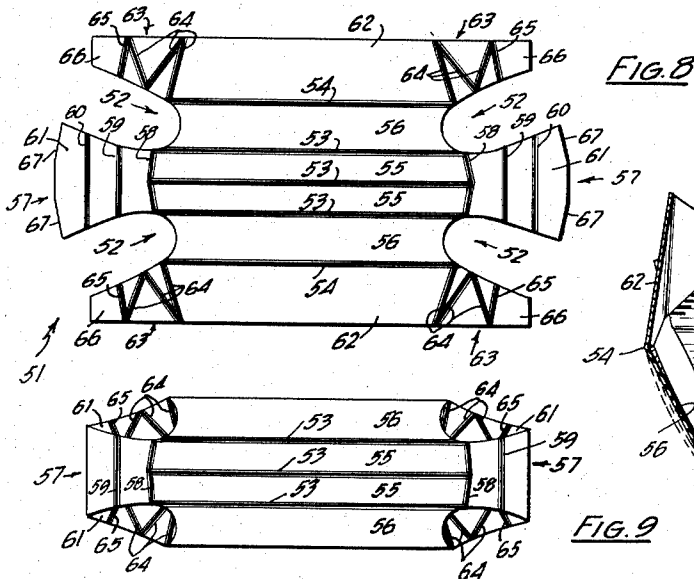
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COLLAPSIBLE CARTON AND FRUIT PACK

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3 Sheets-Sheet 2



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1

2,724,541

COLLAPSIBLE CARTON AND FRUIT PACK

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Application October 28, 1949, Serial No. 124,106

4 Claims. (Cl. 229—30)

This invention relates to improvements in cartons for packing articles of fruit, such as apples, tomatoes, tangerines and the like, for the purpose of shipping them from the grower to the retailer and ultimate consumer in such a manner that bruising and stem puncturing will be prevented, the cartons being inexpensively made in collapsible form from a blank of paperboard material which can readily be set up to receive and retain such articles to provide an attractive fruit package, and the provision of such a carton and package is a principal object of the invention.

Articles of fruit having a stem and calyx, such as, for example, apples, are conventionally packed and shipped in various ways. They are either loosely placed at random in barrels, boxes or cartons with the top layers usually arranged in rows, stem to calyx, or in smaller individual cartons or boxes, similarly arranged, which are then placed in larger standard size cartons or boxes for group shipment. However, even the last arrangement does not prevent twisting or turning during shipment, which consequently results in bruising and stem puncture with the result that some of the fruit is often rendered unattractive, unsalable or otherwise undesirable for consumer use. Efforts have been made to correct such faults by individually wrapping the apples in tissue or other paper, or separating the several layers by sheet material, such as corrugated board, but this is expensive and necessitates individual handling and attention, both when packing and unpacking such articles.

Molded pulp cartons have also been suggested and tried for packing individual rows of such fruit and then packing a plurality of such cartons in larger standard size boxes or cases. While such cartons make for ready packing and unpacking and provide attractive display packages, they are expensive and materially increase shipping and sales costs.

Generally, it is an object of the invention to overcome the foregoing difficulties and disadvantages and to provide a collapsible shipping carton which is inexpensive to manufacture, readily set up automatically to provide a trough or elongated tube-like structure to receive such articles of fruit therein in an aligned row in stem to calyx relation and to maintain such fruit in packaged position within said carton.

More specifically, it is an object of the invention to provide a collapsible carton from a cut and scored blank of flexible paperboard material folded and secured together to provide a trough having a rounded bottom and side walls, end walls and spaced top closure walls adapted to be spread apart to receive a plurality of apples within the trough and to return to a position partially overlying the apples to retain them in packaged position, the rounded bottom and side walls forming a central panel, the end walls comprising irregularly-shaped portions extending outwardly from opposite ends of the panel and folded inwardly towards each other, the top closure walls comprising panels connected to opposite sides of the central panel and folded inwardly towards

2

each other over the central panel, and extension members projecting outwardly from the ends of the side panels, over the irregularly-shaped folded portions and being adhesively secured thereto, so that the carton, when compressed from opposite sides, automatically will open to article-receiving position from collapsed condition.

Yet more specifically, it is an object of the invention to provide such a carton which will hold a plurality of apples in a single row in stem to calyx position, the carton being formed from a flat blank of flexible material of a width in excess of one-half the circumference of the apples and having a plurality of laterally-spaced, longitudinally-extending, parallel score lines therein which will facilitate the flexure of the blank from a substantially flat structure having the opposed longitudinal marginal portions thereof overfolded upon the portion of the blank therebetween forming the bottom of the carton with the longitudinally-extending edges of the blank in spaced relation, into an elongated tube-like structure adapted closely to engage and to extend more than half way around the apples, the portion of the blank between the marginal overfolded portions being provided adjacent each end thereof with a first transversely-extending score line, and having a tab adapted to form a closure for the end of the tube-like structure connected thereto along a second transversely-extending score line, the marginal portions being provided at the ends with tabs extending over and adhesively secured to the first mentioned tabs, the carton being normally maintained in a collapsed condition by having the end-closure-forming tabs folded under the bottom portion along the score lines.

A further object of the invention is the provision of a fruit package comprising a plurality of longitudinally-aligned rounded articles of fruit having a stem and calyx and arranged in stem to calyx relation in a carton constituting a cut and scored blank of paperboard material folded and secured together to provide a trough having a rounded bottom and rounded side walls comprising a central panel, end walls comprising irregularly-shaped portions extending upwardly from opposite ends of the panel, and closure panels connected to opposite sides of the central panel and folded inwardly towards each other partially over the articles of fruit and the central panel, and extension members projecting from the side panels and being adhesively connected to the irregularly-shaped portions.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises an article of manufacture possessing the features, properties and the relation of elements which will be exemplified in the article hereinafter described and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

Fig. 1 is a plan view of a preferred form of a cut and scored blank adapted to be folded and secured into a collapsible carton embodying the invention;

Fig. 2 is a plan view of the bottom of the blank shown in Fig. 1 after the same has been folded and secured together in collapsible carton formation;

Fig. 3 is a plan view of the top, or front, of the carton shown in Fig. 2;

Fig. 4 is a detail view of an end portion of the collapsible carton shown in Fig. 3 taken along the lines 4—4 thereof and looking in the direction of the arrows;

Fig. 5 is a plan view of the collapsible carton shown in Fig. 3 compressed to opened, article-receiving condition;

3

Fig. 6 is a perspective view of the erected carton shown in Fig. 5 with rounded articles, such as apples, shown in dotted line position and held therein in package-forming condition;

Fig. 7 is a transverse sectional view of Fig. 6, somewhat enlarged, showing the carton with apples in solid line position clipped therein to maintain the same in package position;

Fig. 8 is a plan view of a modified form of blank adapted to be folded and secured together in collapsible carton formation;

Fig. 9 is a plan view of the bottom of the blank shown in Fig. 8 after the same has been folded and secured together;

Fig. 10 is a plan view of the front, or top, of the collapsible carton shown in Fig. 9;

Fig. 11 is a view similar to Fig. 1 but showing the collapsible carton opened to article-receiving position;

Fig. 12 is a perspective view of the carton shown in Fig. 11 with a row of longitudinally arranged apples in stem to calyx relation maintained therein in packaged position;

Fig. 13 is an enlarged side elevational view of a fragmentary end portion of the opened carton shown in Fig. 11;

Fig. 14 is a transverse sectional view of the carton shown in Fig. 13, taken along the lines 14—14 and looking in the direction of the arrows;

Fig. 15 is a plan view of another modified form of cut and scored blank adapted to be folded and secured together to provide a carton embodying the invention;

Fig. 16 is a plan view of the bottom of the blank shown in Fig. 15 after the same has been folded and secured together to provide a collapsible carton;

Fig. 17 is a plan view of the top, or front, of the carton shown in Fig. 16;

Fig. 18 is a plan view of the carton shown in Fig. 17 after the same has been opened to article-receiving condition;

Fig. 19 is a transverse sectional view, somewhat enlarged, taken along the lines 19—19 of Fig. 18 and looking in the direction of the arrows; and

Fig. 20 is a perspective view of the carton shown in Fig. 18 after the same has been filled with apples aligned in a longitudinal row in stem to calyx relation.

Referring more particularly to Figs. 1 through 7 of the drawings, there is indicated generally at 21 a preferred form of a single die-cut and scored blank adapted to be folded and secured together to provide a collapsible carton embodying the invention. This blank is formed of suitable paperboard material of a desirable gauge and comprises a central panel indicated generally at 22 having a plurality of laterally-spaced, longitudinally-extending, parallel-disposed score lines 23, and fold lines 24, which define a bottom wall 25 and side walls 26, respectively.

Extending outwardly from the ends of the central panel 22 are irregularly-shaped portions, or panels, indicated generally at 27, which form the end wall structure for the carton and these are defined by a first fold line 28 adjacent each end of the panel 22, and a second fold line 29 outwardly of and parallel to the first fold line 28. Diagonal score lines 30 may also be provided in the area between the fold lines 28 and 29 to facilitate ready flexing and bending of the material in that section when the completed carton is put into use.

On opposite sides of the central panel 22, along the fold lines 24, are side panels 31 having extension members indicated generally at 32 projecting outwardly from the ends of the side panels. The side panels and the extension members are adapted to be infolded along the score lines 24 to overlie the central panel and the irregularly-shaped portions, respectively, and portions of the extensions adhesively secured to the latter as will more fully appear hereinafter. Each extension member 32 has

4

transverse score lines 33 and diagonal score lines 34 which are adapted to facilitate flexing of the end portion of the carton when the same is set up ready for use. Tabs 36 are connected to the extensions along score lines 35 which said score lines lie substantially coincident with the outer or top-forming edge of the adjacent end panel when said side panels are infolded over said central panel and said end panels are folded along score lines 28 and 29, as described below and shown in Fig. 2. Thus, the tabs 36 may then be folded over the end panels along the score lines 35 and adhesively secured to said end panels. The gluing, folding and securing operation may conveniently be performed by passing the cut and scored blank through a gluing machine in which glue may be applied to the tabs 36. The irregularly-shaped end panels are folded around the fold lines 28 against the bottom of the central panel 22 and then outwardly upon themselves around the fold lines 29 to project outwardly beyond the ends of the central panel. The side panels 31 are folded around the fold lines 24 to overlie the central panel 22 and the tabs 36 are folded around the diagonal score lines 35 so that they adhere to the projecting irregularly-shaped portions, or tabs, 27. The diagonal fold lines 35 are important and must be arranged at proper angles to coincide with and fold around the diagonally cut edges 37 of the end panels 27.

When the blank 21 has been folded and secured together as above described, it will provide a collapsible carton as shown in Figs. 2 and 3. When opposite sides of the collapsed carton are squeezed together by pressure applied adjacent the ends of the fold lines 24, the carton will automatically be opened to form a trough with rounded bottom and side walls. At the same time, the portions between the fold lines 28 and 29 which are folded underneath the carton and against the outwardly-extending, irregularly-shaped member 27, as shown in Fig. 4, will automatically be unfolded and snap outwardly so that the remainder of the irregularly-shaped portions will extend upwardly to form the end walls of the carton as shown in Figs. 5 and 6. The panels 31 which form the top closure walls overlying the trough, then can easily be separated so that a row of apples can readily be slipped between the closure walls and into the trough as shown in dotted line position in Fig. 6. Because of the tension in the top closure walls, they will return to their initial position as the apples are clipped into the trough to overlie a portion of the top half of each apple and maintain the same in packaged position in stem to calyx relation in such a manner as to prevent bruising or puncturing during shipment, or subsequent handling of the apples by the consumer.

Figs. 8 through 14 show a modified form of blank and collapsible carton embodying the invention. Such a carton is provided by a blank indicated generally at 51 having a central panel indicated generally at 52. The central panel has a plurality of laterally-spaced, longitudinally-extending, parallel-disposed score lines 53 and fold lines 54 which define a bottom panel 55 and side panels or walls 56, respectively.

Extending outwardly from the ends of the central panel 52 are irregularly-shaped portions, or panels, indicated generally at 57, which form the end wall structures for the carton. These end panels 57 are connected to the central panel along score lines 58, and have two other score lines 59 and 60 therein in spaced parallel relation to each other.

On opposite sides of the central panel 52, along the fold lines 54, are side panels 62 having extension members indicated generally at 63 projecting outwardly from the ends thereof. The side panels and extension members are adapted to overlie the central panel and the irregularly-shaped portions, respectively, when folded and adhesively secured to the latter as will more fully appear hereinafter.

Each extension member 63 has diagonal score lines

5

64 which are adapted to facilitate flexing of the end portion of the carton when the same is set up ready for use. Also, the extension members 63 have transversely extending score lines 65 along which are connected end tabs 66 adapted adhesively to be secured to the irregularly-shaped portions or tabs 57 when the blank is folded. The gluing, folding and securing operations may conveniently be performed by passing the cut and scored blank through a gluing machine. After glue has been applied to the tabs 66, the end sections 61 are folded around the fold lines 60, the side panels are folded around the fold lines 54 and the end tabs 66 are adhesively secured to the overfolded end sections 61. The diagonal score line 65 must coincide with the outer or top forming edges 67 of the overfolded end sections 61 so that the end tabs 66 will properly be hinged thereto.

When the blank has been folded and secured together as above described, it will provide a collapsible carton as shown in Figs. 9 and 10. In erecting such a carton, opposite sides thereof are compressed, preferably along the fold lines 54, to form a trough which will provide rounded bottom and side walls. The end tabs 66 being adhesively and hingedly secured to the overfolded portions 61, will simultaneously raise the irregularly-shaped portions 57 to form the end walls for the carton. The panels 62 forming the top closure walls then can readily be spread apart to receive a row of apples in stem to calyx relation and return to a position partly overlying portions of the upper halves of the apples as shown in Fig. 12. The rounded walls will be maintained by the weight and pressure of the apples within the trough as shown by the dotted lines in Fig. 14.

Another modification of the invention which will provide a collapsible carton is shown in Figs. 15 through 20. A die-cut and scored blank is indicated generally at 71 and comprises a central panel, indicated generally at 72, provided with a plurality of laterally-spaced, longitudinally-extending, parallel-disposed score lines 73 and fold lines 74 which define a bottom wall 75 and side walls 76, respectively.

Extending outwardly from the central panel 72 are irregularly-shaped end panels indicated generally at 77 and these are defined by transverse score lines 78 adjacent each end of the central panel.

On opposite sides of the central panel 72, along the fold line 74, are side panels 89 adapted to form top closure walls as will more fully appear hereinafter. Extending from the ends of the fold lines 74 to the score lines 78 are diagonal score lines 79. The side walls 76 each have a score line 80 extending parallel to, and between, the score lines 73 and the fold lines 74. Diagonal score lines 81 extend from the ends of the score line 80 to the fold lines 78. Diagonal fold lines 82 extend from the ends of the fold lines 74 across the ends of the score lines 80 to the fold line 78 at the base of each irregularly-shaped portion 77. Diagonal fold lines 83 also extend from the ends of the fold line 74 across the side panels 89 and together with the fold lines 82 define foldable corner portions, indicated generally at 84, for folding the corners of the central panel 72 and the ends of the side panels 89. Extending from the ends of the side panels 89 are glue tabs 86 provided with diagonal score lines 87 which are adapted to coincide with the outer or top-forming edges 88 of the irregularly-shaped end panels 77. The side panels 89 may be provided with diagonal score lines 90 extending from their edges to the fold lines 78 to intersect the fold lines 83 which, together with the score lines 81 and 85, facilitate flexing of the end portions of the carton. The ends of the central panel 72 are also provided with closure tabs 91 adapted to provide a closed end wall structure for this modification of collapsible carton.

In forming such a carton from the above described blank, glue or adhesive is applied to the end extension tabs 86. The side panels 89 are folded upon the central

6

panel 72 along the fold lines 74. The foldable corner portions 84 are then folded along the fold lines 83 and then along the fold lines 82 until the corner portions overlie the ends of the side panels 89 and corners of the central panel. The irregularly-shaped end panels 77 are then folded inwardly to overlie the end closure portions 91, and the end tabs 86 are folded along the fold lines 87, around the diagonally cut sections 88, and adhesively secured to the irregularly-shaped end panels 77.

When the blank 77 has been folded and secured together as above described, it will provide a collapsible carton as shown in Figs. 16 and 17. To erect such a carton, the side walls are compressed along the fold lines 74 to provide a trough in which the overfolded corner portions 84 will automatically be unfolded to a position as shown in Fig. 18. The panels 89 which provide the top closure walls may then readily be momentarily spread apart so that the trough can be filled with a row of apples in stem to calyx relation as described in connection with the previous modifications of the invention and the bottom wall and side walls will assume a rounded position as shown by the dotted lines in Fig. 19, with the top closure walls returning to a position overlying a portion of the upper halves of the apples to maintain the same in packaged position.

It will thus be seen that the objects hereinbefore set forth may be readily and efficiently attained and since certain changes may be made in the above described blanks and cartons and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

From a consideration of the foregoing in connection with the drawing, it will be noted that the end panels of each of these species are connected to the central panel only in the central portions of the ends of said central panel; and that portions of each blank at each end thereof which lie on each side of the end panels are cut out to form reentrant spaces, so that the extensions of the side panels and the tabs thereon are in substantially laterally spaced relation to said end panels.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A flat carton blank formed of paperboard and comprising a central panel having a plurality of longitudinally-extending, parallel-disposed, score lines in the central portion thereof adapting it to be flexed transversely into a trough like shape to form the bottom and portions of the opposite sides of said carton; side panels connected to the opposite sides of said central panel along score lines parallel to the first mentioned score lines adapting said side panels to be infolded over the adjacent portions of said central panel; panels adapted to form the ends of said carton connected to the central portion only of each end of said central panel along a transversely extending score line; extension members projecting from the ends of each of said side panels in laterally spaced relation to said end-forming panels, each of said members provided with an end tab connected thereto along a score line substantially coincident with the outer and top-forming edge of the adjacent end-forming panel when said side panels are infolded and said end-forming panels are upturned into carton-forming relation thereto; whereby said tabs may be folded over said top-forming edges of said end-forming panels along the score lines where they are connected to said extensions and adhesively secured to said end-forming panels.

2. The structure set forth in claim 1 in which said ex-

7

tension members are each provided with at least one transversely-extending score line angularly-disposed to and intersecting the score line between the extension member and the tab thereon at one of the marginal edges of said extension; whereby to facilitate the deformation of said extension without rupture.

3. A flat carton blank formed of paperboard and comprising an elongated central panel having a plurality of longitudinally-extending, parallel-disposed, score lines in the central portion thereof adapting it to be flexed transversely into a shallow trough-like shape to form the bottom and portions of the opposite sides of said carton; side panels connected to the opposite sides of said central panel along score lines parallel to the first mentioned score lines adapting said side panels to be infolded over the adjacent portions of said central panel; panels adapted to form upturned ends of said carton connected to the central portion only of each end of said central panel along a first transversely-extending score line; said central panel having a second score line therein in spaced, parallel-disposed relation to and adjacent each of said first score lines, whereby the portions of said blank between said first and second score lines may be underfolded the ends of said central panel, and said end-forming panels may then be backfolded over said underfolded portions to lie in a plane substantially parallel to the plane of said central panel; extension members connected to the ends of said side panels along transversely-extending score lines and having end tabs thereon connected to said extension members along transversely-extending score lines; portions of said blank between said extension members and the adjacent end-forming panels being cut out to provide reentrant spaces of substantial width therebetween to facilitate the folding of said blank; and said score line between said extension members and the tabs thereon being substantially coincident with the outer and top-forming edge of the adjacent end-forming panels when said side panels are folded substantially flat upon the adjacent portion of the central panel and the portions of said blank are underfolded the ends of said central panel and said end-forming panels back folded, as aforesaid; whereby, said tabs may be folded over said top-forming edges of said end-forming panels along the score lines where they are connected to said extension members and adhesively secured to said end-forming panels.

4. A collapsible carton formed from a unitary flat

8

blank of flexible paperboard folded and secured together to provide, when in erected condition, an elongated trough having a transversely rounded bottom, side walls connected to said bottom along parallel-disposed score lines, end walls, and transversely-spaced top closure walls connected to said side walls along parallel-disposed score lines and adapted to be spread apart to receive a plurality of rounded articles within said trough but adapted to return to a position partially overlying said articles to retain the same in packaged position; when in substantially flat collapsed condition, the bottom and side walls of said carton comprising a flat central portion thereof, said end walls comprising irregularly-shaped portions extending outwardly from opposite ends of said central portion and connected thereto along a first transverse score line and provided with a second transverse score line spaced outwardly of and parallel to said first score line; said end walls being first folded along said first score line inwardly towards each other beneath said central portion and then outwardly substantially flat upon themselves along said second score line to project beyond the ends of said central portion; said top closure walls being folded inwardly towards each other substantially flat upon said side walls, and extension members projecting longitudinally from the ends of said top closure walls overlying said irregularly-shaped folded portions and adhesively connected thereto.

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