July 16, 1968 CHUNG C. WEI 3,392,904

FRUIT AND VEGETABLE CARTON

Original Filed Sept. 1, 1966 2 Sheets-Sheet 1

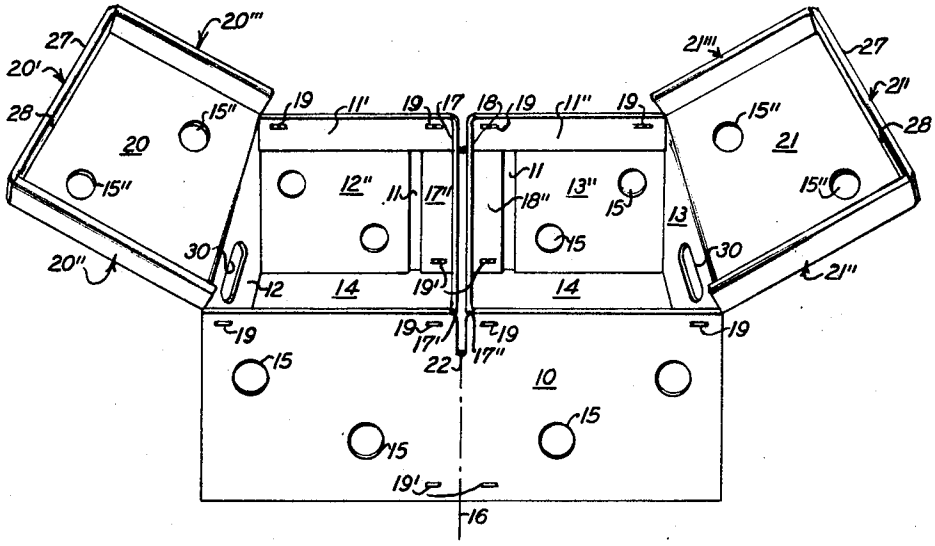


FIG. 1

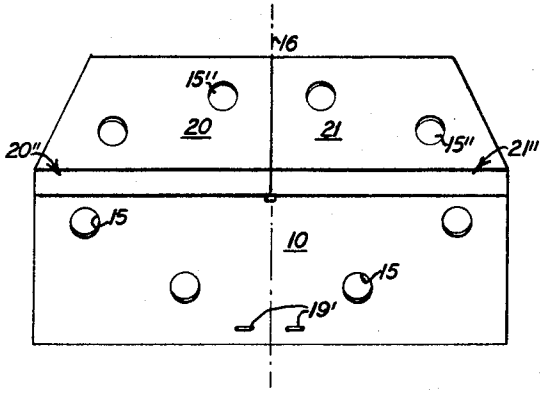


FIG. 2

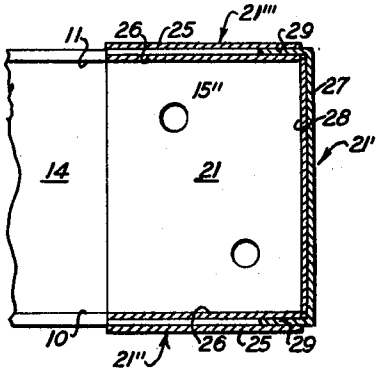


FIG. 5

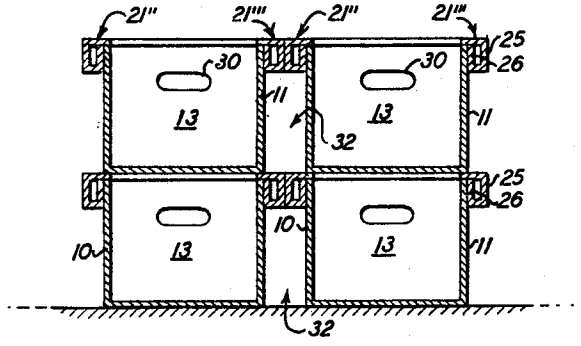


FIG. 6

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FRUIT AND VEGETABLE CARTON

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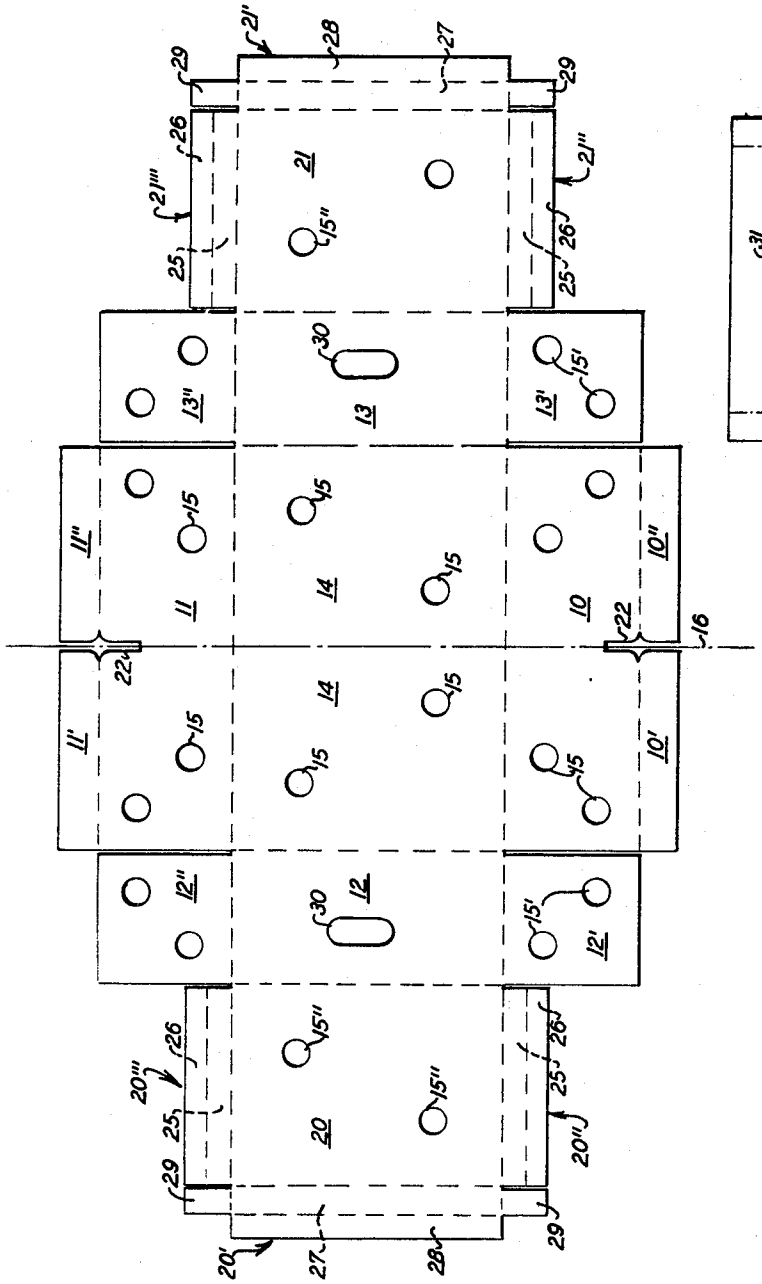


FIG. 3

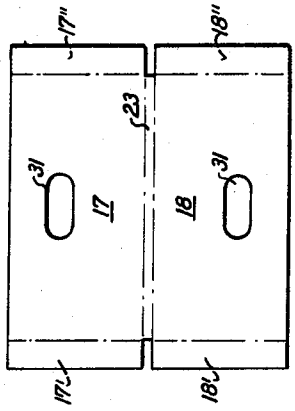


FIG. 4

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FRUIT AND VEGETABLE CARTON

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13 Claims. (Cl. 229—33)

ABSTRACT OF THE DISCLOSURE

A unitary carton comprising side walls, end walls and cover flaps. Two spaced partitions are located centrally of the carton and are attached to the side walls by flaps. Flaps extending from the end walls are joined to the side walls. The portions of the side walls and bottom wall between the partitions are severable to transform the unitary carton into two separate complete cartons.

This application is a continuation of parent application Ser. No. 576,590, filed on Sept. 1, 1966.

This invention relates to paper boxes and more particularly to an improved carton possessing certain advantages over known types of cartons for packing fruit and vegetables.

The advantages of the carton of this invention may best be understood when one considers by way of example the problems involved in the shipping of bananas in foreign commerce.

One method of shipping bananas from the country in which they are grown to other nations, is to pack them in hands separated from the stem in cardboard boxes provided with openings for ventilation. It is the custom of different countries to import the resulting hands of bananas at certain weight. Thus, importers of the United States of America usually import the hands of bananas in about forty pound lots, whereas the importer in European countries usually buy the bananas in about twenty-five-pound lots. This heretofore necessitated that the exporter carry in stock cartons of different sizes to satisfy the requirements of the different countries to which the bananas are shipped.

It is the primary purpose of the present invention to provide a carton which can be employed to ship fruit and vegetables, as for example bananas, in the larger quantities required by certain countries, and yet can be readily adapted to the shipment of such products in the smaller quantities customary with other countries.

Another object of the invention is to provide an improved fruit and vegetable box construction which can successfully withstand the crushing stresses to which this type of box is subjected in the stacking and handling thereof during shipment of the product.

A further object of the invention is to provide an improved fruit and vegetable carton construction that will provide maximum ventilation for the product when such catrons are piled in multiple stacks closely arranged together.

A still further object of the invention is to provide an improved banana box construction which is less expensive to manufacture, can be more readily assembled and is easier to open than known boxes of this type.

A better understanding of the invention will be obtained from the following description when read in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view showing a carton embodying the invention in opened condition;

FIG. 2 is a similar view showing the carton closed;

FIG. 3 is a plan view of the cardboard blank from which the body of the carton is formed;

FIG. 4 is a plan view of the cardboard partition blank;

FIG. 5 is a horizontal sectional view through one of the cover flanges; and

FIG. 6 is an end view of a group of stacked cartons embodying the invention.

In the drawings, the numerals **10** and **11** designate the side walls of the carton, the numerals **12** and **13**, the end walls of the carton, and the numeral **14** the bottom wall of the carton. As is shown more clearly in FIG. 3 of the drawings, the aforesaid walls are formed from a single piece of cardboard and are separated from each other by suitable creases formed in the blank. The cardboard is preferably of the type in which a central corrugated layer of paper material is sandwiched between two plain layers of such paper material to provide a relatively stiff paperboard. The side walls **10** and **11** of the carton and the bottom wall **14** thereof are provided with ventilation openings **15** which are preferably symmetrically arranged with respect to a transverse median plane indicated by the dotted line **16** in FIGS. 1–3 of the drawings.

Hingedly connected by creases to both side edges of the end walls **12** and **13** are flaps **12'**, **12''** and **13'**, **13''**, respectively, of equal length. The flaps **12'**, **13'** overlie the interior surface of the side wall **10**, and the flaps **12''**, **13''** overlie the interior surface of the side wall **11**. It will be noted that the length of the flaps **12'**, **12''**, **13'**, **13''** is less than one-half the length of the side walls **10** and **11** so that the ends of such flaps are spaced a substantial distance from the transverse centerline **16** of such side walls. The length of such flaps, however, is sufficiently great to overlie the major portion of one-half of such side walls, as is shown in FIG. 1 of the drawings. The flaps **12'**, **12''**, **13'** and **13''** are provided with openings **15'** which register with the openings **15** in the side walls **10** and **11**.

The carton is divided at its center by two transverse cardboard partitions **17** and **18**. The partition **17** is provided with end flaps **17'**, **17''**, the former of which, as is shown in FIG. 1, overlies the interior surface of side wall **10** and the latter of which overlies the interior surface of side wall **11**. The flap **17'** is disposed in the same plane as and in opposed relation to the flap **12'**, and the flap **17''** is disposed in the same plane as and in opposed relation to the flap **12''**. It will be noted that the flaps **12'**, **17'** and **12''**, **17''** substantially cover the areas of such side walls **10** and **11**, respectively, between the partition **17** and end wall **12**. Similarly, the partition **18** is provided with end flaps **18'**, **18''** overlying the interior surfaces of the side walls **10** and **11**, respectively, and disposed in the same planes as and in opposed relation to the flaps **13'** and **13''**, respectively. The flaps **13'**, **18'** and **13''**, **18''** substantially cover the areas of the side walls **10** and **11**, respectively, between the partition **18** and the end wall **13**. The side wall **10** is provided with top flaps **10'**, **10''**, the former of which overlies the upper portions of the flaps **12'**, **17'** and the latter of which overlies the upper portions of the flaps **13'**, **18'**. Similarly, the side wall **11** is provided with top flaps **11'**, **11''**, the former of which overlies the upper portions of the flaps **12''**, **17''** and the latter of which overlies the upper portions of the flaps **13''**, **18''**. The aforesaid flaps of the side walls **10** and **11** are each secured at its ends by two staples **19** to the top portions of the associated end wall and partition flaps and side wall halves, which staples secure the end walls **12** and **13**, the partitions **17** and **18**, and the side walls **10** and **11** in properly assembled relation.

It will be noted that the partitions **17** and **18** are in spaced relation and that the arrangement of the afore-

said flaps is such that partition **17**, end wall **12** and the associated halves of the side walls **10** and **11** form one complete separate container, and that partition **18**, end wall **13** and the associated other halves of the side walls **10** and **11** form another complete separate container. The two containers are integrally connected together by the portions of the side walls **10** and **11** and the bottom wall **14** between the two partitions **17** and **18**. The partitions **17** and **18** are preferably spaced apart a distance equal to the thickness of the flaps or flanges of the two covers **20, 21** so that the outer end sections **20', 21'** of such flaps or flanges will fit snugly therebetween. It will also be noted from FIG. 4 of the drawings, that the two partitions **17, 18** are formed from a single blank and are integrally joined by a spacing section **23** which seats on the bottom wall **14**. This spacing section **23** and the staples **19** secured to the flaps of the partitions **17** and **18** maintain such partitions properly spaced throughout their entire areas. The central connecting portions of the side walls **10** and **11** between the spaced partitions, are provided at their upper ends with slots **22, 22**, each having vertical edges spaced apart a distance equal to the spacing between the partitions **17, 18**, and a depth approximately equal to the width of the end sections **20', 21'** of the cover flanges. The upper ends of the side edges of the slots **22, 22** are beveled to facilitate the insertion of the cover flange end sections **20', 21'** into such slots. It will be noted also that the associated upper portions of the side wall flaps **10', 10'', 11'** and **11''** are also beveled to conform to the shape of the entry end of the slots **22, 22**.

The covers **20** and **21** are integral with and hingedly connected to the end walls **12** and **13**, respectively. Each cover is provided with an integral, rigid flap or flange which by its construction remains in assembled relation without the aid of any additional fastening means. The end and side sections of the flap or flange on cover **20** are designated generally by the reference numerals **20'**, **20''** and **20'''**, and the end and side sections of the flange on cover **21** are designated generally by the reference numerals **21'**, **21''** and **21'''**. It will be noted from a comparison of FIGS. 3, 5 and 6 of the drawings that the side flange sections **20''**, **20'''**, **21''** and **21'''** are each composed of an intermediate flap **25** hinged to the body of the cover blank and an outer flap **26** hinged to the intermediate flap **25**, the two flaps being folded inwardly on each other as shown in FIGS. 5 and 6. The end flange section **20', 21'** are each composed of an intermediate flap **27** which is hinged to the body of the cover blank and an outer flap **28** hinged to such intermediate flap, the two flaps being folded inwardly on each other as indicated in FIGS. 1 and 5. The intermediate flaps **27** are each provided with end flaps **29, 29** which are located between the folded flaps **25, 26** of the associated side flange sections (note FIG. 5). It will also be noted from FIGS. 1 and 5, that the outer flaps **26, 26** of the two side flange sections of each cover are locked in folded position by the outer flap **28** of the associated end flange section, thereby maintaining all of the flange flaps of each cover in such assembled relation as to provide a rigid cover flange.

It will be understood from the foregoing that the two integrally connected separate containers formed from the single body blank and the single partition blank, may both be filled and closed by their covers **20, 21**, and utilized as a single, unitary container for shipment of the content thereof. The hingement of the two covers on the ends of the unitary container makes for easy access to its two compartments and the ready opening and closing of such compartments. As is shown in FIG. 2 of the drawings, in the closed condition of the unitary container the end flange sections **20', 21'** of the covers will be inserted between the partitions **17, 18** and into both the slots **22, 22**, the side flange sections **20'', 21''** overlying the outer surface of the side wall **10**, and the side flange sections **20'''** and **21'''** overlying the outer surface of the side wall **11**.

The end flange sections **20', 21'** snugly fit between the partitions **17, 18** and in the slots **22, 22** so that the covers **20, 21** will be effectively locked in closed condition by the coaction of such parts. If it is desired to make the single unitary container into two separate containers either at the place of shipment, or at the place of delivery, this may readily be accomplished by cutting the side walls **10** and **11**, the spacing section **23** of the partition blank, and the bottom wall **14** along the dotted line **16** in FIGS. 1–3 of the drawings. When such cut is made, there will result two separate complete containers each capable of holding one half the quantity of product capable of being held by the unitary container from which they were formed. The region of cut may be better defined by securing two staples **19'** to the bottom portions of the partition flanges **17', 17'', 18'** and **18''** (see FIGS. 1 and 2). The addition of these staples **19'** will also further increase the stability of the structure of the carton. The line of cut may also be made more definite by printing lines on the side and bottom walls of the carton coincident with the dotted line **16**.

The cardboard material of the end walls **12** and **13** of the unitary container are cut to provide two hand holes **30, 30** by which such container may be carried and which also functions as ventilation holes for the product. Preferably also, the partitions **17, 18** are provided with similar hand hold openings **31**, in FIG. 4, to provide ventilation through the length of the unitary carton and to provide hand holds for the divided cartons. The covers **20** and **21** are also provided with ventilation holes **15''** which may be arranged, as illustrated, to be aligned with the ventilation holes **15** provided in the bottom wall **14** of the carton when the covers are closed. As a result of such ventilation holes, and the construction of the covers, there is provided ample ventilation for the product when such cartons are in stacked relation. It is usual in the shipment of such cartons to place stacks of about eight or ten thereof closely adjacent of one another to form a row of stacks. As is indicated in FIG. 6 of the drawings, when the cartons of this invention are so stacked, the relatively thick side flange sections **20'', 20''', 21'', 21'''** will cause substantial spacings **32** to be formed between the cartons in adjacent stacks. These spaces **32** are sufficiently wide, at least one-half inch, to provide for adequate ventilation through the ends of such spaces and through the openings **15** in the side walls of the cartons. It will be noted also that in such stacked relation of the cartons, the increased strength afforded them by the end wall flaps **12, 12'', 13', 13''**, the partition flaps **17', 17'', 18'** and **18''**, the partitions **17, 18**, and the association with the latter of the rigidified cover flanges, will prevent destruction of the cartons under the crushing stresses they will be subjected to during shipment.

While I have hereinabove described and illustrated in the drawings, a preferred embodiment of my invention, it will be apparent to those skilled in the art that various changes may be made therein without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. A unitary carton comprising a body blank having a central panel forming the bottom wall of the carton, two side panels and two end panels hingedly connected to the sides of said central panel and forming the side and outer end walls, respectively, of the carton, and two panels hingedly connected to the outer sides of said end panels and forming the covers of the carton, said outer end walls each having two side flaps overlying the interior surfaces of said side walls, two partitions located in spaced relation centrally of said side walls and extending transversely of the latter, said partitions constituting the inner end walls of two divisible cartons forming said unitary carton, and each of said partitions having two side flaps overlying the interior surfaces of said side walls and disposed in opposed relation to the two side flaps of

the outer end wall with which it is associated in a divisible carton, and means securing the flaps of said outer end walls and said partitions to said side walls, said covers each having an end flap insertable into the space between said partitions, and the portions of said side walls and bottom wall between said partitions being severable to transform the unitary carton into two separate complete cartons.

2. A unitary carton as defined in claim 1, in which said side walls are each provided with a central slot extending downwardly from the upper edge thereof, the ends of the end flaps on said covers extending into said slots.

3. A unitary carton as defined in claim 1, in which said partitions are spaced apart a distance equal to approximately the combined thickness of said cover end flaps.

4. A unitary carton as defined in claim 1, in which said securing means fastening the flaps of said partitions to said side walls defines the side boundries of the portions of said side walls to be severed to product the divided cartons.

5. A unitary carton as defined in claim 1, in which said outer end wall flaps each overlie the major portion of one-half of a side wall and is provided with ventilation openings in registry with ventilation openings in said side walls.

6. A unitary carton as defined in claim 1, in which said outer end walls and said partitions are provided with elongated openings forming hand holes and ventilation openings.

7. A unitary carton as defined in claim 2, in which said side walls are each provided with a top flap on each side of said central slot thereof, each top flap being inturned and overlying the upper portions of an associated outer end wall flap and partition flap, said securing means fastening such associated top, outer end wall and partition flaps to a side wall.

8. A unitary carton as defined in claim 1, in which said partitions are formed from a single blank having a spacing section hingedly connecting the bottom edges of said partitions and seated on said bottom wall of the carton.

9. A unitary carton as defined in claim 1, in which said end flap on each of said covers comprise an end intermediate section hingedly connected to the body of said cover and an end outer section hinged connected to the said intermediate section and folded on the latter, said covers each comprising a side intermediate section hingedly connected to each side edge of the body of said cover and a side outer section connected to each side intermediate section and folded on the latter, said end intermediate section being provided with end flaps each located between the adjacent ends of each pair of folded side intermediate and outer sections, and said end outer section engaging and locking such adjacent ends of the side outer sections in folded condition.

10. A unitary carton as defined in claim 1, in which said side walls are each provided with a plurality of ventilation openings, and in which said covers each include side flaps along the side edges thereof, said side flaps being substantially thicker than the material forming the body of such cover and such that when a multiplicity of said cartons are arranged in a plurality of stacks with the side flaps of the covers of adjacent cartons in the stacks in engagement with one another, longitudinally extending ventilation openings of substantial width will be formed between the opposed side walls of adjacent cartons to provide increased ventilation through the ventilation openings in the side walls of the cartons.

11. A fruit and vegetable carton comprising a panel forming the bottom wall of the carton, two side panels and an end panel hingedly connected to three sides of said bottom panel and forming the two sides and one end wall, respectively, of the carton, and a panel hingedly connected to the outer side of said end panel and forming the cover of the carton, said one end wall having two side flaps overlying the interior surfaces of said side walls, a separate panel constituting the other end wall of the carton and having two side flaps overlying the interior surfaces of said side walls and disposed in opposed relation to the two side flaps of said one end wall, and means securing the flaps of said one end wall and said other end wall to said side walls.

12. A unitary carton composed of a cardboard body blank formed into a plurality of panels and comprising a bottom wall, and two side walls and two end walls hingedly connected to the sides of said bottom wall, two panels hingedly connected to the upper sides of said end walls and forming the covers of the carton, two partitions made of cardboard material separate from said body blank and located in spaced relation centrally of said side walls and extending transversely of the latter, said partitions constituting the inner end walls of two divisible cartons forming said unitary carton, and each of said partitions having two side flaps overlying the interior surfaces of said side walls, said body blank including a plurality of side wall flaps overlying the interior surfaces of said side walls, and covering major portions of the interior surfaces of said side walls between each end wall and an associated partition, and means securing said body blank flaps and said partition flaps to said side walls, said covers each having a flap insertable into the space between said partitions, and the portions of said side walls and bottom wall between said partitions being severable to transform the unitary carton into two separate complete cartons.

13. A unitary carton comprising a body blank having a central panel forming the bottom wall of the carton, two side panels and two end panels hingedly connected to the sides of said central panel and forming the side and outer end walls, respectively, of the carton, and two panels hingedly connected to the outer sides of said end panels and forming the covers of the carton, said outer end walls each having two side flaps overlying the interior surfaces of said side walls, two partitions located in spaced relation centrally of said side walls and extending transversely of the latter, said partitions constituting the inner end walls of two divisible cartons forming said unitary carton, and each of said partitions having two side flaps overlying the interior surfaces of said side walls, and means securing the flaps of said outer end walls and said partitions to said side walls, said covers each having an end flap insertable into the space between said partitions, and the portions of said side walls and bottom wall between said partitions being severable to transform the unitary carton into two separate complete cartons.

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