

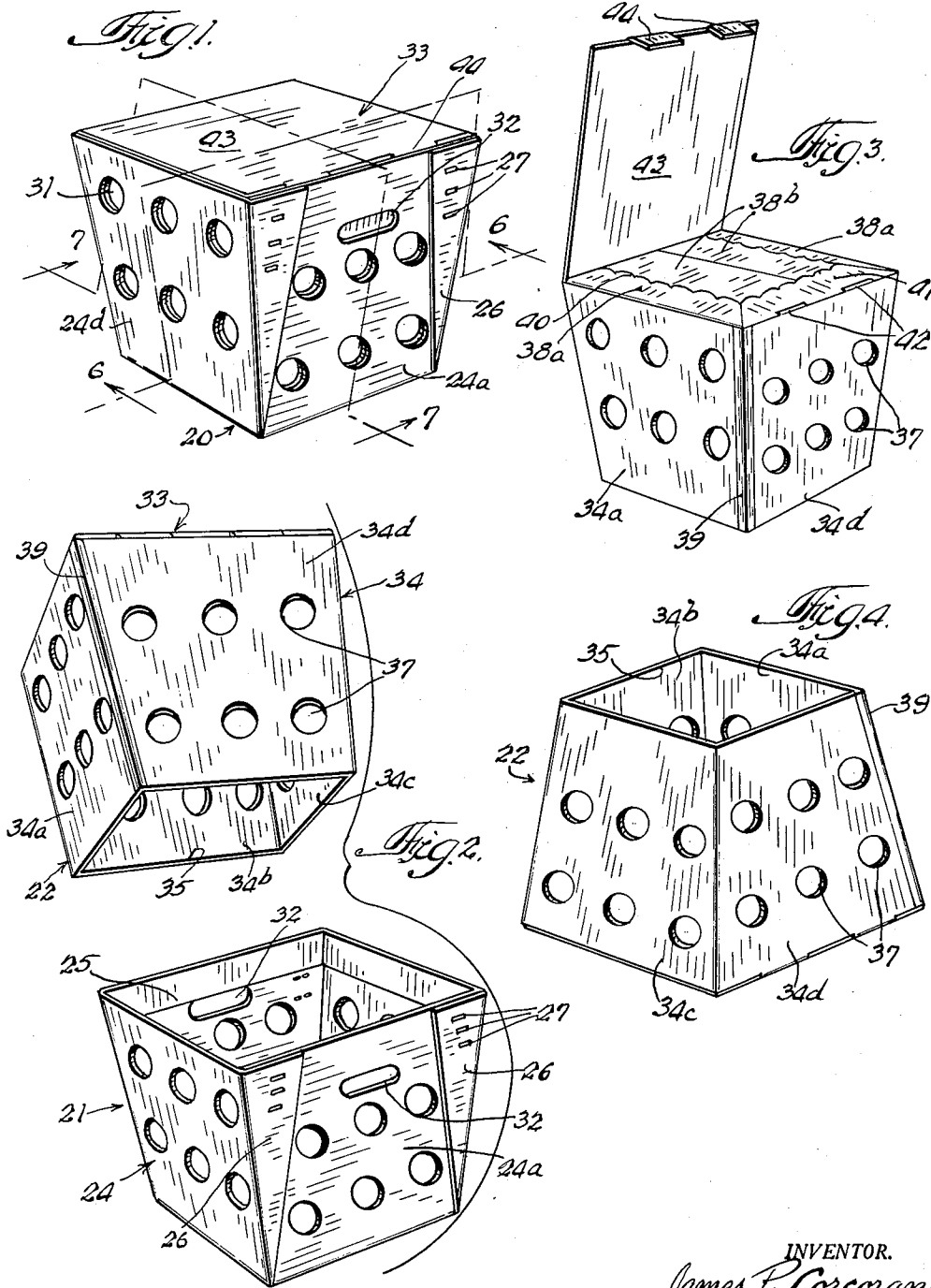
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J. P. CORCORAN  
CARTON CONSTRUCTION

2,950,850

Filed Nov. 20, 1958

3 Sheets-Sheet 1



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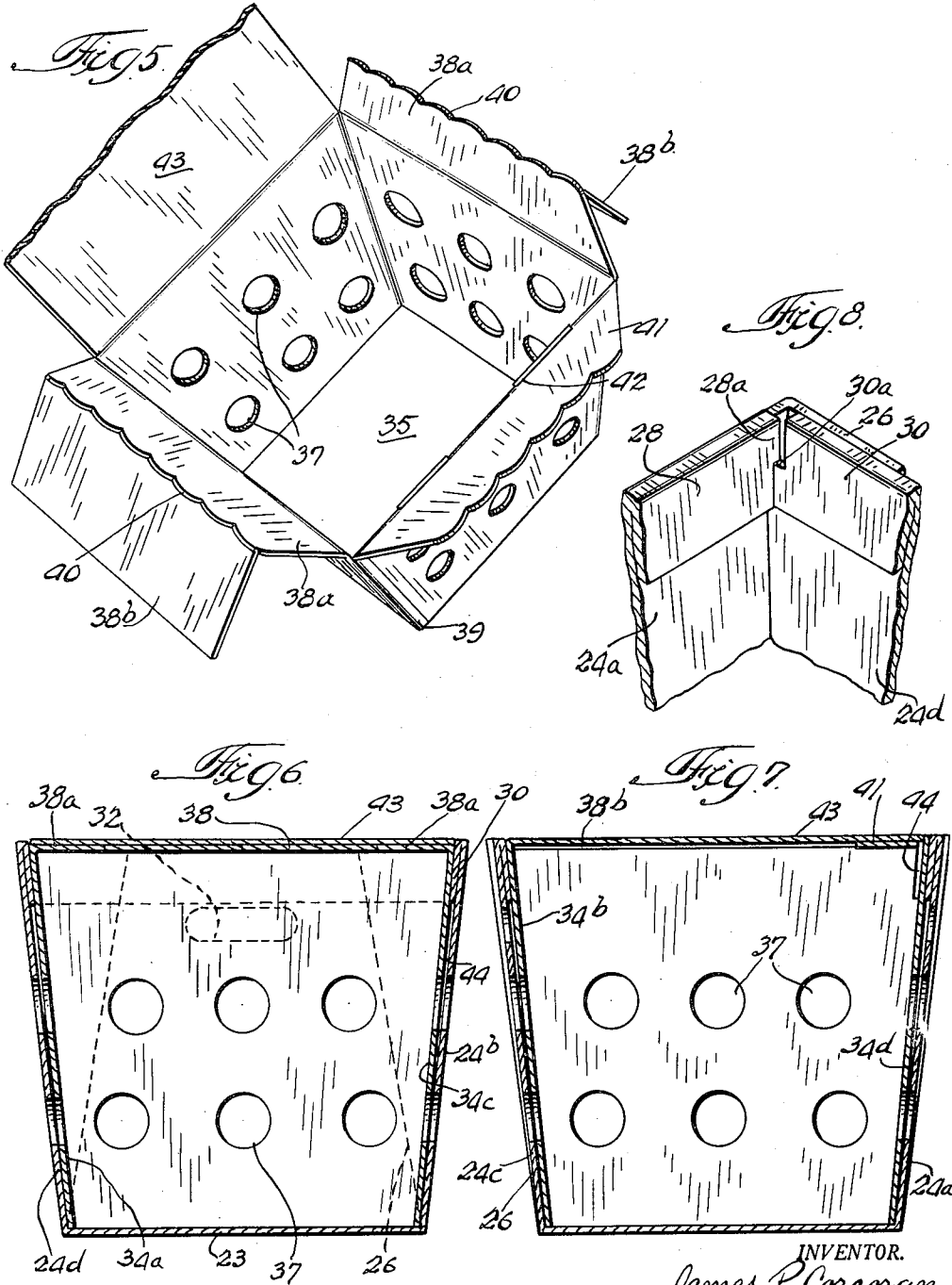
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3 Sheets-Sheet 2



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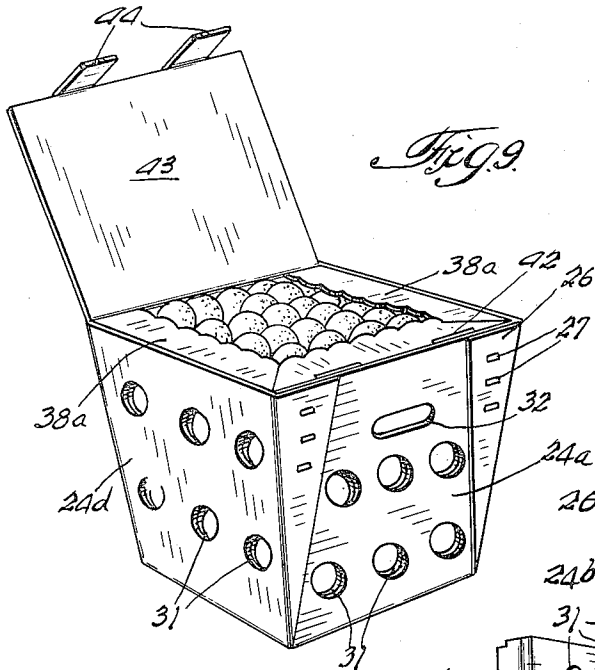
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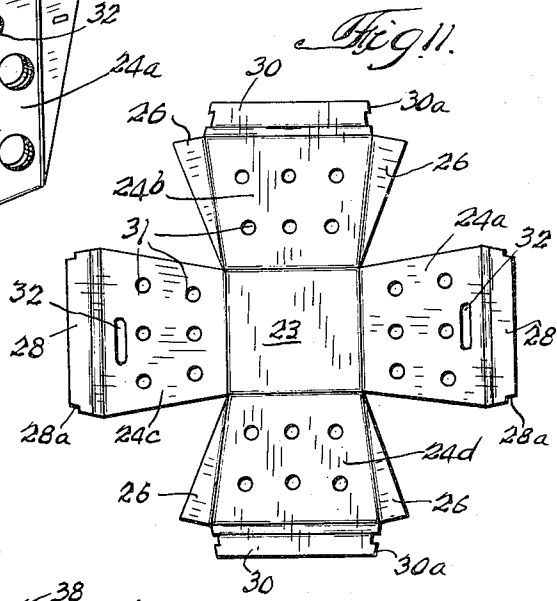
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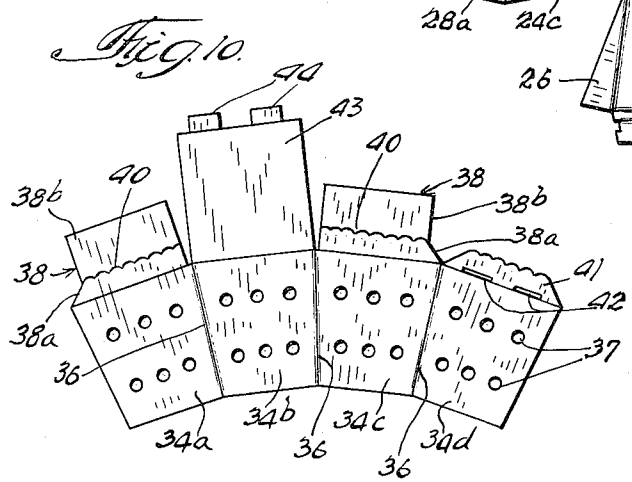
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*Fig. 9.*



*Fig. 11.*



*Fig. 10.*

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## CARTON CONSTRUCTION

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8 Claims. (Cl. 229-16)

This invention relates to a carton construction and, more particularly, to a carton construction adapted for use in the packing of produce.

In the harvesting and packing of peaches, for example, it is the customary practice to first gather in the grove all the picked peaches, regardless of size and shape, in a large box or receptacle. The filled box is then taken to a shed or packing plant, whereupon the boxed peaches are unloaded onto a grading machine. The function of the grading machine is twofold: (a) it brushes the periphery of each peach to remove the fuzz therefrom; (b) it separates the peaches into groups according to size. From the grading machine the graded peaches are packed into a shipping container, normally a conventional bushel-basket. Once the graded peaches are packed in the bushel-basket, the latter is then normally subjected to a cooling step, customarily referred to as "hydro-cooling," for the purpose of reducing the latent or field heat of the packed peaches, and thus eliminate the possibility of spoilage due to this cause. This cooling step is generally accomplished by either subjecting the packed peaches to a spray of cool water or causing cooled air to pass there-over.

In utilizing a conventional wooden bushel-basket for packing the graded peaches, it is necessary in the packing step to first employ a metal form having an enlarged closed end and upwardly-extending, slightly tapered sides, the closed end and sides of the form corresponding, respectively, to the open end and sides of the basket. A fibrous liner is then placed within the form and contacts the sides thereof. A first layer of peaches is then placed within the form, with the peaches thereof faced by hand, so that the most attractive side of each peach is in contact with the closed end of the form. The remainder of the form is then filled with peaches, being placed in random fashion behind the first layer. The basket in inverted position is placed over the filled form, and then the basket and form turned through an arc of approximately 180°, so that the basket is in its upright position. After the metal form is removed endwise from the basket, a decorative fringe piece is placed about the open end of the basket. This piece has an inwardly extending scalloped portion, the function of which is to enhance the appearance of the open end of the basket when the latter is utilized for displaying the peaches in a retail store. A cover with a fibrous pad disposed on the underside thereof is then placed over and secured to the open side of the basket.

It is readily apparent from the foregoing that the packing of peaches involves considerable time and care not only to make the basket attractive for display purposes but, also, to minimize the possibility of bruising or otherwise damaging the peaches.

Thus, it is one of the objects of this invention to provide a carton construction which will materially simplify the packing of produce.

It is a further object of this invention to provide a carton for packing produce which eliminates the need

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for a plurality of separate protective liners and embellishments in order to afford proper protection for its contents and in order to attractively display the latter.

It is a still further object of this invention to provide a carton which affords adequate ventilation for its contents and is not deleteriously affected by water or excessive moisture from its contents.

It is a still further object of this invention to provide a carton which is of light weight and compact construction and is of a shape suitable for stacking during transit or storage of its contents.

Further and additional objects will appear from the description, accompanying drawings, and appended claims.

In accordance with one embodiment, an improved carton construction is provided which includes an outer unit and a removable inner unit, the latter being nestable in the outer unit. The outer unit comprises a closed bottom section and a perforated side section extending upwardly therefrom and delimiting an open-top section. The configuration of the open-top section is substantially the same as that of the closed bottom section, but of a greater area than the latter. The inner unit is provided with a closable top section and a depending perforated side section delimiting an open bottom section. The configuration of the closable top section and the open bottom section approximate substantially the configuration of the open-top section and closed bottom section, respectively, of the outer unit. The side section of the inner unit is disposed in spaced, substantially parallel relation with the side section of said outer unit, when said units are in nested relation.

For a more complete understanding of this invention, reference should be made to the drawings, wherein:

Figure 1 is a perspective view of the improved carton with the outer and inner units thereof shown in nested relation;

Fig. 2 is a perspective view similar to Fig. 1, but showing the outer and inner units in disassembled relation;

Fig. 3 is a perspective view of the inner unit alone and showing the top section thereof in partially open condition;

Fig. 4 is a perspective view of the inner unit alone, and shown in inverted position suitable for use in packing therein the produce received from the grading machine;

Fig. 5 is a fragmentary perspective view of the inner unit alone, showing the top section thereof in fully open condition;

Fig. 6 is an enlarged sectional view taken along line 6-6 of Fig. 1;

Fig. 7 is similar to Fig. 6, but taken along line 7-7 of Fig. 1;

Fig. 8 is an enlarged fragmentary perspective interior view of a corner of the outer unit;

Fig. 9 is a perspective view of the improved carton construction, showing the closable top section of the inner unit open for attractively displaying the contents of the carton;

Fig. 10 is a plan view of a blank from which the inner unit is formed; and

Fig. 11 is a plan view of a blank from which the outer unit is formed.

Referring now to the drawings, an improved carton 20 is shown which, in this instance, comprises an outer unit 21 and an inner unit 22, the latter being nestable in such outer unit.

The carton, in this instance, is particularly suitable for use in the packing of produce, such as fresh fruit and vegetables.

The outer unit 21 is formed from a blank of sheet material of a configuration such as shown in Fig. 11. The sheet material is preferably double-faced, corrugated fibreboard, treated so as to have water-resistant charac-

teristics. With fibreboard of this type, there is provided sufficient cushioning for the contents of the inner unit 22 so that further packing material, such as liners or pads, is not required to protect the produce against bruising.

The outer unit 21 comprises a closed bottom section 23, preferably of a square configuration, side section 24 extending upwardly from the periphery of section 23 and having the upper edge thereof delimiting an open-top section 25. Top section 25 is of substantially the same configuration as bottom section 23, but of greater area. The side section 24, in this instance, comprises segments 24a, 24b, 24c, and 24d which, as shown in Fig. 11, extend upwardly from the periphery of bottom section 23. Each side segment 24a—24d is, in this instance, of trapezoidal configuration and has the narrow parallel side thereof foldably connected to the periphery of the bottom section 23. Segments 24b and 24d, which are oppositely disposed relative to one another, have triangularly shaped lateral flaps 26 which are adapted to overlie the exposed surface of segments 24a and 24c when the unit is formed. Flaps 26 are secured to segments 24a and 24c by staples or suitable means 27. Thus, the flaps 26 not only provide a convenient means for maintaining the side section segments in folded relation with respect to one another but, also, effect reinforcement of the corners of the unit.

Side segments 24a and 24c, in this instance, each have foldably connected to their outer parallel edge an end flap 28 which is adapted to cooperate with similar end flaps 30 formed on the outer parallel edges of segments 24b and 24d to provide reinforcement of the upper edge of the unit 21. Flaps 28 and 30 are folded inwardly and downwardly so as to overlap the interior surfaces of the respective side segments. The opposite ends of flaps 28 are provided with recesses 28a which accommodate tabs 30a formed on the opposite ends of flaps 30 and thereby effect interlocking of end flaps 28 and 30 in their downwardly disposed positions, as shown more clearly in Fig. 8.

Side segments 24a—d are provided with a plurality of ventilating apertures 31 and, in addition, side segments 24a and 24c are provided with elongated hand-holes 32 formed adjacent the outer or upper edges thereof.

The inner unit 22 (see Figs. 2 and 3) is provided with a closable top section 33 and a side section 34 depending from the periphery of said top section 33. The lower edge of the side section 34 delimits an open bottom section 35. Closable top section 33 and open bottom section 35 are of square configuration, corresponding substantially to open top section 25 and closed bottom section 23, respectively, of outer unit 21. The size of top section 33 and bottom section 35 is slightly less than the corresponding top and bottom sections of the outer unit 21, so as to enable the inner unit 22 to be readily nested within the interior of outer unit 21.

The side section 34 of inner unit 22 comprises segments 34a, 34b, 34c, and 34d, of substantially trapezoidal configuration, which are foldably connected to one another in a manner as shown more clearly in Fig. 10. Adjacent segments are separated from one another by fold lines 36 which constitute one of the non-parallel sides of the segments. Each side segment is provided with a plurality of ventilating apertures 37, similar to those formed in the side section 24 of outer unit 21.

The closable top section 33, in this instance, comprises a pair of like flaps 38, which are foldably connected to the upper edge of side segments 34a and 34c. Each flap 38, in turn, includes an inner portion 38a and an outer portion 38b (see Fig. 10). Outer portion 38b is connected to inner portion 38a by a perforated fold line 40 which, in this instance, is of a tortuous configuration. The reason for having fold line 40 perforated

is that flap portions 38b may be readily removed and the remaining inner portion 38a provide an attractive border for the contents of the carton when the latter is being utilized for display purposes, such as shown in Fig. 9. Flaps 38, when folded inwardly of inner unit 22, substantially span top section 33.

The upper edge of side segment 34d is provided with a flap 41 of a configuration substantially the same as that of flap inner portions 38a. Flap 41 is provided with a pair of spaced, elongated slots 42 formed adjacent the fold line between flap 41 and side segment 34d. The purpose of slots 42 will become apparent from the discussion to follow hereinafter.

Foldably connected to the upper edge of side segment 34b is a cover flap 43, which is of such size and shape as to completely overlie the flaps 38 and 41 when the latter are folded inwardly relative to the side section of the inner unit. Foldably connected to the outer edge of cover flap 43 are a pair of tabs 44, which are adapted to be inserted into slots 42 when the cover flap 43 is in closed position and thereby effect locking of such cover flap in its closed position. Thus, cover flap 43, in cooperation with flaps 38 and 41, provide a top section of at least two-ply construction.

The side segments 34a—d of the inner unit 22 are held in folded relation with respect to one another by an adhesive band or strip 39, which is secured to the adjacent elongated side edges of side segments 34a and 34d (see Fig. 3).

The tapered side sections of the inner and outer units are retained in closely spaced relation with respect to one another by the end flaps 28 and 30 formed on the outer unit; however, other means may be utilized to effect the same result—for example, a strip, not shown, may be affixed to the side section of the inner unit adjacent the closable top section thereof. A second way of accomplishing the same result would be to have either the outer or inner unit provided, respectively, with an inwardly or outwardly protruding detent. A still further way of accomplishing such result would be to utilize a separate insert piece, not shown, disposed intermediate the side sections.

In utilizing the improved carton, inner unit 22 is placed in inverted position, with the top section 33 in closed relation, such as shown in Fig. 4, and in such position is utilized for packing the produce subsequent to its being graded by the grading machine. If desired, the lower layer of the produce, adjacent the top section 33 when the inner unit is in inverted position, may be faced by hand so as to provide a more attractive appearance for display purposes. Subsequent to facing the bottom layer of produce, the remainder of the inverted inner unit 22 is filled with the produce arranged in random fashion. Once the unit 22 is completely filled with produce, the outer unit 21 in inverted position is brought into nested relation with the inner unit, whereupon the open end of the latter is covered over with the bottom section 23 of outer unit 21. Following nesting of units 21 and 22, they are turned as a unit through an arc of approximately 180°, so that the carton is in its normal upright position, as shown in Fig. 1. With the carton in this position, the contents thereof are subjected to "hydro-cooling," so that the latent or field heat of the produce is materially reduced and thus eliminate the possibility of spoilage of the packed produce due to such heat. As aforementioned, such hydro-cooling is accomplished by either spraying the carton and its contents with cool water or causing cool air to circulate through the carton. The fibreboard is treated with a water or moisture-resistant composition so that the carton is not adversely affected by the hydro-cooling operation.

The ventilating apertures 31 and 37 of units 21 and 22, respectively, enable the water used in hydro-cooling the produce, or any moisture associated with the packed produce, to be readily removed from the interior of the

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carton. Furthermore, apertures 31 and 37 permit adequate ventilation of the produce while the latter is being stored or in transit to the consumer.

When the inner unit is disposed within the outer unit, the reinforcing upper edge of outer unit 21 formed by portions 28 and 30, is adapted to engage the side section 34 of the inner unit and thus maintain a slight clearance 44 between the corresponding side section segments of the inner and outer units (see Figs. 6 and 7). Furthermore, the vertical dimension of the side section segments of the inner unit correspond substantially to the vertical dimension of the side section segments of the outer unit and, thus, when the units are in assembled relation, the lower edge of the side section segments of the inner unit rest on the closed bottom section 23 of the outer unit. Thus, the weight of the inner unit, when filled with produce, is substantially uniformly distributed on the reinforced upper edge of unit 21 and the marginal portion of the bottom section 23 of unit 21, as well.

It will be seen, therefore, that an improved carton construction has been provided which minimizes manual handling of the produce and greatly simplifies the packing of such produce. No protective liners or pads are required with the improved carton to prevent bruising of the produce packed therein. The improved carton is of compact and sturdy construction and can be readily used as an attractive display case for its contents without the addition of embellishments to the carton.

While a particular embodiment of this invention has been shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A carton construction comprising an outer unit and a removable inner unit disposed in nested relation within said outer unit; said outer unit having a bottom section and a side section extending upwardly therefrom and terminating in an open top section; said inner unit having a closable top section conforming substantially to the configuration of the open top section of the outer unit, and a side section extending downwardly therefrom and terminating in an open bottom section; and spacer means substantially coextensive with the top edge portion of said side section of said outer unit interposed at the top portion of the side sections of said units and in contact therewith to effect retention of said side sections in spaced close proximity with respect to one another to form a narrow air space substantially enveloping said inner unit side section.

2. A carton construction comprising an outer unit and a removable inner unit disposed in nested relation within said outer unit; said outer unit having a closed bottom section, a perforate tapered side section extending divergently upwardly therefrom and having the upper edge thereof defining an open top section, and protruding means coextensive with and mounted on the inner surface of the upper edge portion of said side section; said inner unit having a closable top section conforming substantially to the configuration of the open top section of the outer unit, and a tapered side section extending convergently downwardly therefrom and terminating in an open bottom section, the portion of said side section adjacent the periphery of said closable top section being in contact with the protruding means of said outer unit, the remainder of the side section of said inner unit being in spaced close proximity with respect to the side section of said outer unit and providing a narrow air space therebetween in enveloping relation with the side section of said inner unit.

3. A carton construction comprising an outer unit and a removable inner unit disposed in nested relation within said outer unit, said outer unit having a closed imper-

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forate bottom section of polygonal configuration, perforate side segments delimiting said bottom section and extending divergently upwardly therefrom and cooperating with one another whereby the upper edges of said side segments define an open top section of substantially the same polygonal configuration as said bottom section; said inner unit having a closable top section of substantially the same polygonal configuration as the open top section of said outer unit, but of lesser area than the latter, perforate side segments depending convergently from said closable top section, said inner unit side segments having the lower edges thereof defining an open bottom section of substantially the same polygonal configuration as said closable top section, said lower edges resting upon said outer unit bottom section; each of said side segments of said outer unit including an end flap integral and substantially coextensive with the upper edge thereof, said flaps folded inwardly and downwardly and notched at each end to interlock when urged outwardly toward the inner surface of said outer unit; the corresponding side segments of said outer and inner units being spaced apart by said end flaps.

4. A carton construction comprising an outer unit and a removable inner unit disposed in nested relation within said outer unit; said outer unit having a bottom section and a side section extending upwardly therefrom and terminating in an open top section; said inner unit having a closable top section conforming substantially to the configuration of the open top section of the outer unit, and a side section extending downwardly therefrom and terminating in an open bottom section; the upper edge portion of said side section of said outer unit having at least segments thereof at each side of said open end folded inwardly and downwardly to form a bearing surface for the side section of said inner unit when said units are in nested relation; the side sections of said units being spaced in close proximity with respect to one another and providing a narrow air space therebetween.

5. The carton construction recited in claim 4, wherein said folded segments are in interlocking relation with respect to one another.

6. A carton construction comprising an outer unit and a removable inner unit disposed in nested relation within said outer unit; said outer unit having a bottom section and a side section extending upwardly therefrom and terminating in an open top section; said inner unit having a closable top section conforming substantially to the configuration of the open top section of the outer unit, and a side section extending downwardly therefrom and terminating in an open bottom section; the closable top section of said inner unit including a pair of first flaps hingedly connected to oppositely disposed first portions of the upper edge of said side section delimiting the top section, a second flap hingedly connected to a second portion of the upper edge of said side section delimiting the top section and disposed intermediate said first portions, said first and second flaps, when in a predetermined position of hinged adjustment, extending into mutually abutting relation to effect substantial overlaying of said top section, and a third flap hingedly connected to a third portion of the upper edge of said side section delimiting the top section and substantially oppositely disposed with respect to said second flap, said third flap being adapted to substantially overlie said first and second flaps when the latter are in said predetermined position of hinged adjustment; and spacer means interposed along the top portion of the side sections of said units to effect retention of said side sections in spaced close proximity with respect to one another and providing a narrow air space therebetween.

7. A carton construction as in claim 6 and wherein at least one of said flaps is formed with a line of perforations thereacross to permit ready removal of a portion of said flap.

8. A carton construction comprising an outer unit and

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a removable inner unit disposed in nested relation within said outer unit; said outer unit having a bottom section and a side section extending upwardly therefrom and terminating in an open top section, said side section of said outer unit comprising a plurality of opposed pairs of side section portions integral with said base and extending upwardly therefrom, each portion joined to each of the next adjacent portions along their respective side edges by a flap integral with the side edge of one of said portions overlapping and secured to the next adjacent portion, whereby said flaps close and reinforce the corners of said side section of said outer unit, each of said portions including an integral end flap on the upper end thereof folded inwardly to reinforce the upper edge portion of said outer unit and to form spacer means between said nested units; said inner unit having a closable top section conforming substantially to the con-

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figuration of the open top section of the outer unit, and a side section extending downwardly therefrom and terminating in an open bottom section; the side sections of said units being in spaced close proximity with respect to one another providing a narrow air space therebetween.

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