

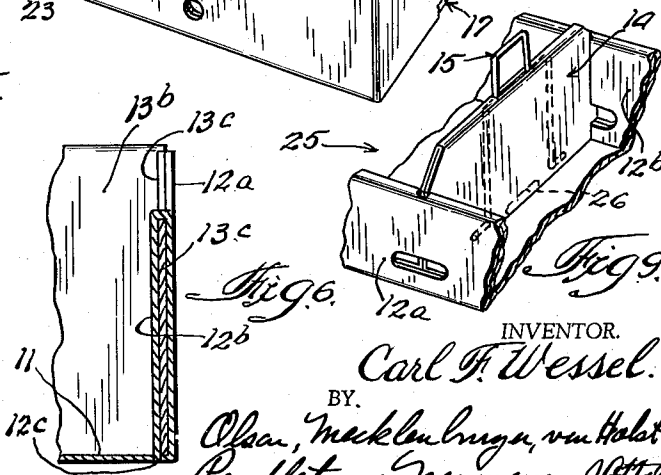
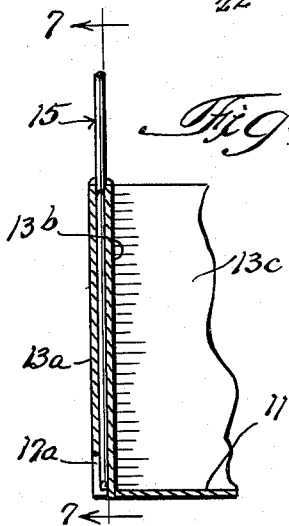
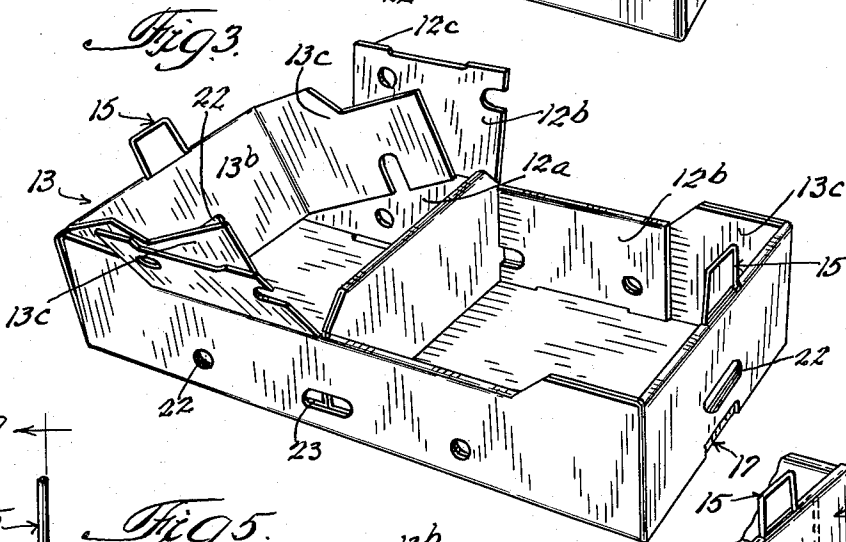
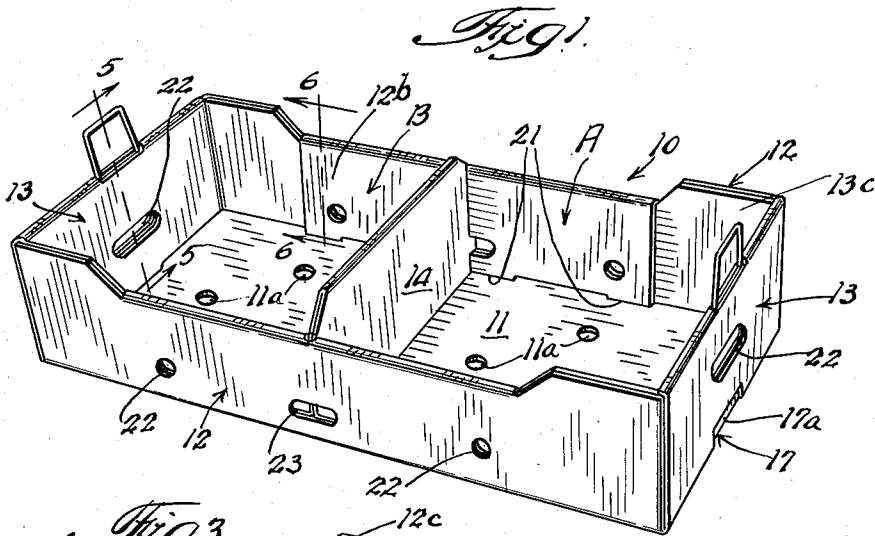
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CARTON CONSTRUCTION

2,990,995

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2 Sheets-Sheet 1



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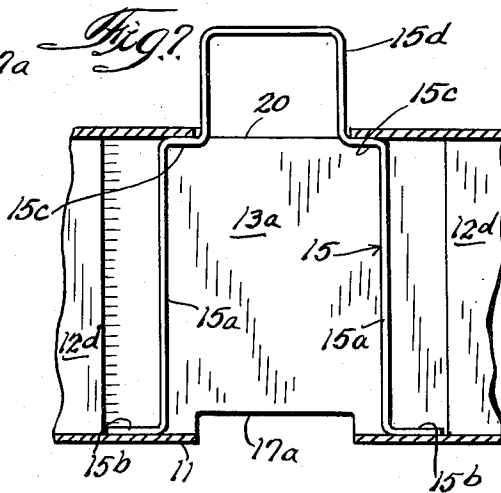
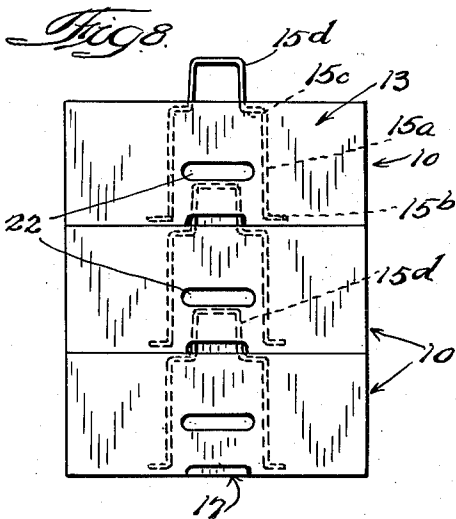
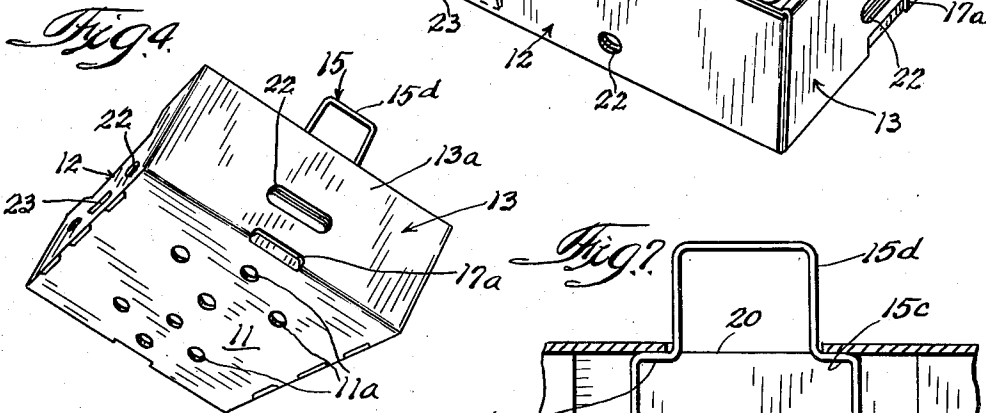
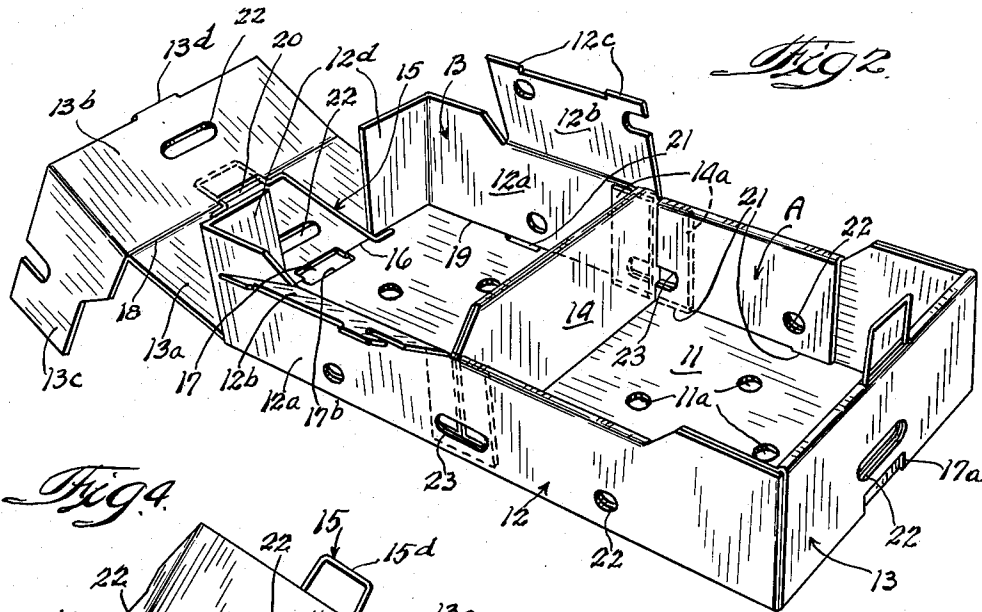
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2 Sheets-Sheet 2



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2,990,995

CARTON CONSTRUCTION

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3 Claims. (Cl. 229—34)

This invention relates to a carton construction and, more particularly, to an open top carton formed of fibreboard material or the like.

In the packing, handling and transporting of perishable products, such as fruit or the like, certain precautions must be observed; for example, the product must be afforded adequate ventilation and, in addition, such product must be protected against damage, bruising or crushing, even though the carton for such product is subjected to abusive handling.

Various fibreboard cartons intended for this purpose have heretofore been proposed but, because of their design, are beset with one or more shortcomings which seriously curtail the utility of such cartons.

It is not at all uncommon for cartons of this type, when carrying products of a delicate or readily crushable character, to be subjected to excessive loads caused by numerous loaded cartons being stacked thereabove during transporting or temporary storage. Furthermore, such cartons, even when loaded and in stacked relation, are oftentimes subjected to extreme climatic or environmental conditions which deleteriously affect the inherent stiffness and supporting strength of the fibreboard from which the carton is made. The product itself, being supported by the carton, oftentimes is in a wet state by reason of dew or the like and thus materially increases the humid environmental conditions which impair the utility of such a carton.

During stacking and transporting of the product in such cartons, it is important, also, that such cartons, when in a stacked relation, be restrained from shifting relative to one another, which is oftentimes caused by sudden starting, stopping and bouncing of the vehicle conveying such cartons. Furthermore, it is highly desirable that the weight of the carton be at a minimum so as to not only facilitate manual handling thereof, but also reduce manufacturing and transportation costs.

Thus, it is one of the objects of this invention to provide a carton which effectively meets the above-mentioned requirements and is not beset with the shortcomings normally associated with fibreboard cartons of this type.

It is a further object of this invention to provide a carton which may be readily stacked and is possessed of a high load-carrying capacity even under extreme environmental conditions.

It is a still further object of this invention to provide a carton which is possessed of a high degree of utility and is capable of withstanding abusive handling as well.

It is a still further object of this invention to provide a carton which is simple, compact, and light-weight in construction and is inexpensive to manufacture.

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

In accordance with one embodiment of this invention, an improved carton construction is provided which is adapted to readily accommodate perishable products and thereby greatly facilitate handling, packing, and/or storing thereof. The carton is preferably formed of fibreboard material and comprises a relatively flat bottom section and a wall section extending transversely upwardly therefrom and delimiting an open top. The upper edge portion of the wall section is provided with an elongated first slot; the juncture of the wall section

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with the bottom section is provided with an elongated second slot which is in substantial vertical alignment with the first slot. Disposed within the wall section is a reinforcing piece which has a first portion extending substantially the full height of the wall section and a handle portion projecting through the first slot. The handle portion is adapted to be slidably accommodated within the second slot of a like carton when the latter is disposed in superimposed 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 set up carton.

FIG. 2 is a perspective view showing the carton in one stage in the setting up.

FIG. 3 is a view similar to FIG. 2, but showing the carton in a further stage in the setting up of the carton.

FIG. 4 is a perspective end view of the set up carton, taken from below.

FIG. 5 is an enlarged fragmentary sectional view taken along line 5—5 of FIG. 1.

FIG. 6 is similar to FIG. 5, but taken along line 6—6 of FIG. 1.

FIG. 7 is an enlarged fragmentary sectional view taken along line 7—7 of FIG. 5.

FIG. 8 is an end elevational view showing a plurality of the improved cartons in stacked relation.

FIG. 9 is a fragmentary perspective view of a modified form of the improved carton.

Referring now to the drawings and, more particularly, to FIG. 1, an improved carton construction 10 is shown which, in this instance, is suitable for accommodating a plurality of berry boxes or containers of the conventional quart or pint size customarily used for packaging strawberries, raspberries, etc. It is to be understood, of course, that the invention, hereinafter described, is not limited specifically to the form of carton construction illustrated in the drawings, but such form has been illustrated and will be described hereinafter merely for the purpose of facilitating understanding of the invention.

The improved carton 10, in this instance, is of foldable construction and is preferably formed of double-faced corrugated fibreboard sheet material. This carton is so fabricated at the factory that the fibreboard sheets can be transported in flat condition and in the field or packing plant, as the case may be, quickly and easily folded to set-up condition while being assembled with the reinforcing pieces. When the carton is folded in the manner as shown in the drawings, that is to say, in its operative condition, the carton includes a relatively flat bottom section 11, elongated side wall sections 12, and elongated end wall sections 13. The side and end wall sections in this instance cooperate with one another to form a rectangularly shaped open top. A center dividing partition 14 may be utilized which separates the carton interior into two compartments, A and B, of like size and shape. The partition 14 reduces relative shifting of the boxes within the carton and also provides added reinforcement for the carton between the end wall sections.

In the preferred form of the improved carton 10, removable reinforcing means, in this instance shown as a bent wire piece 15 as shown in FIG. 7, is provided for each end wall section 13. The function and configuration of piece 15 will be described more fully hereinafter.

As shown in FIGS. 2 and 3, the side wall sections 12 are of like configuration and each spans the distance between the end wall sections. Each side wall section 12 includes an elongated first or outer portion 12a which, when the carton is set up, forms the outer exposed surface of the side wall. Outer portion 12a is foldably connected to the periphery of bottom section 11 along fold

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line 19. The center partition 14 divides inner side wall section portion 12a at substantially its midpoint.

Foldably connected to a portion of the upper edge of outer portion 12a and disposed on opposite sides of partition 14 are inner or second portions 12b which are of like configuration and form a part of the exposed interior surface of the side wall section 12, when the carton is set up. Each inner portion 12b is provided with a pair of peripheral tabs 12c, the function of which will be described more fully hereinafter. At the opposite end limits of outer portion 12a are foldably connected end portions 12d which, when in folded position, as seen in FIG. 3, are disposed in the planes of end wall sections 13 and effect stiffening of the latter.

Each end wall section 13 comprises an outer portion 13a foldably connected to the periphery of bottom section 11 along fold line 16. Portion 13a forms the exposed outer surface of the end wall section 13 when the carton is set up. Formed at substantially midpoint in fold line 16 is a pocket means which, in this instance, is shown as an elongated slot 17. Slot 17 comprises an elongated first cutout portion 17a which is formed in outer portion 13a and terminates at fold line 16; and an elongated second cutout 17b formed in bottom section 11 and terminating at fold line 16. The function of elongated slot or pocket 17 will become apparent from the discussion to follow hereinafter.

Foldably connected to outer portion 13a, along fold line 18, is an inner portion 13b which is of substantially the same size and configuration as outer portion 13a. Extending laterally from, and foldably connected to, opposite sides of inner portion 13b are flap portions 13c. A tab 13d is provided which is substantially centrally located on the elongated free edge of inner portion 13b. Tab 13d is adapted to cooperate with slot 17 and effect locking of end wall section 13 in its folded position, as shown in FIG. 1.

When end wall section 13 is in its folded set-up position, corresponding portions 12d of side wall sections 12 are sandwiched between the outer and inner portions 13a and 13b, respectively, of the end wall. The length of each portion 12d is relatively short and thus their terminating and concealed edges are relatively spaced from one another and reinforcing piece 15 is accommodated therebetween. The height of each portion 12d is substantially the same as the height of the end wall section 13 as a whole and thus effects three-ply construction, or added stiffness, for portions of the end wall section 13.

Each reinforcing piece 15, in its preferred form as shown in FIG. 7, is fabricated from relatively stiff wire material and includes a pair of elongated, relatively spaced, substantially parallel legs 15a, the length of which corresponds substantially to the distance between fold lines 16 and 18 of end wall section 13. The lower end of each leg 15a is outwardly offset to form an elongated foot portion 15b which is adapted to rest upon the bottom section 11 closely adjacent fold line 16, formed between bottom section 11 and outer portion 13a, see FIG. 7. The upper end of each leg 15a is offset in the opposite direction to form an elongated shoulder 15c, which is adapted to engage portions of the fold line 18 circumjacent an elongated slot 20 formed therein. Shoulders 15c render the piece 15 impassable with respect to slot 20. Slot 20 is of substantially the same length as elongated slot 17 and is in substantial vertical alignment therewith. Interconnecting shoulder portions 15c of piece 15, is a bail-like handle portion 15d which is adapted to project through elongated slot 20 in a manner as shown in FIG. 1 and is disposed in substantial coplanar relation with respect to the mid-plane of the end wall section 13. In addition to providing a handle to facilitate carrying carton 10, bail-like portion 15d is adapted to be accommodated within slot 17 formed in a like carton when the latter is in superimposed or stacked relation therewith, see FIG. 8. When portion 15d is accommodated in a slot 17, relative

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shifting laterally or longitudinally between stacked boxes is prevented. This feature is of extreme importance when a plurality of cartons are being transported. The cutouts 17a formed in the outer end wall portions 13a serve an important function in facilitating positioning or guiding of bail-like portions 15d in slots 17 when stacking one carton upon a lower carton.

The reinforcing piece 15, as the name implies, materially increases the stiffness and supporting qualities of the end wall sections and thereby prevents the lower cartons in a stack from being crushed, even though such cartons are exposed to extreme humid conditions which, under normal circumstances, would materially weaken the fiberboard material from which the carton is made. Heretofore, the problem of crushing under such humid conditions has been a most serious one.

A modified form of carton 25 is shown in FIG. 9, wherein the reinforcing piece 15 is disposed within partition 14 rather than in the end wall sections 13. Partition 14 is of two-ply construction and is provided with end tabs 14a which extend in opposite directions and are sandwiched within the corresponding side wall sections between outer portion 12a and inner portions 12b thereof. Where the reinforcing piece 15 is disposed in partition 14, a suitable elongated slot 26 is formed in bottom section 11 and is aligned with respect to partition 14.

When end wall section 13 is in folded relation, as shown in FIG. 1, the flap portions 13c are in coextensive relation with corresponding portions of outer portions 12a of side wall sections 12, disposed to one side of partition 14, and thus provide added stiffness for the side wall sections.

When inner portion 12b is in folded relation, as shown in FIG. 1, a segment of each flap portion 13c is disposed between portions 12a and 12b, thereby providing three-ply construction. The tongues or tabs 12c formed on inner portion 12b cooperate with relatively spaced elongated slots 21 formed in bottom section 11 adjacent the periphery thereof and thus lock inner portion 12b of the side walls in folded relation.

While reinforcing piece 15, in this instance, is shown of bent wire construction, it is to be understood, of course, that other materials might be utilized, for example, thin-gauge sheet metal or plastic which is relatively stiff and shaped to form an area approximating that defined by the bent wire shown in FIG. 7.

As previously indicated, where perishable products are being transported in carton 10, it is oftentimes of extreme importance that such products be afforded proper ventilation, even though a plurality of loaded cartons are arranged in stacked relation, as shown in FIG. 8. Such ventilation is provided in the improved carton construction by a plurality of openings 11a formed in bottom section 11 and a plurality of openings 22 formed in side and end wall sections 12 and 13, respectively.

An elongated slot 23 may, if desired, be formed in each side wall section 12. The slot 23 is aligned so as to be intersected by the plane of partition 14. The end tabs 14a of partition 14 are provided with cutouts which are in registration with slots 23 when the carton is in folded relation, as shown in FIG. 1. Where slots 23 are omitted, the cutouts in tabs 14a and inner portions 12b may likewise be omitted, thereby increasing the strength of the side walls 12. The slots and openings 22 and 23, besides providing the necessary means for ventilating the product disposed within the carton, also serve an additional function, namely, that of hand-holes to facilitate carrying one or more of the cartons.

The side wall sections 12 have the central portion thereof of reduced height, as seen in FIGS. 1-3, thus providing additional means for ventilating the product supported within the carton notwithstanding that such cartons are disposed in stacked relation, as shown in FIG. 8. It is not uncommon for the berries disposed within the carton to be in a relatively wet condition at the time of pack-

ing, by reason of dew or the like and, therefore, in order to minimize the effects of such dew, which cause limpness to the fibreboard, means must be provided in the carton for good ventilation, to expedite dissipation of such moisture.

As previously mentioned, the shape and size of the improved carton, and the number of ventilating openings or slots, may be varied to suit the particular need. Furthermore, the number, configuration, and sturdiness of the reinforcing pieces 15 may also be varied.

While several embodiments of this invention are 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 a bottom section, a wall section of at least two-ply thickness extending upwardly from and substantially normal to said bottom section, the upper edge of said wall section being provided with an elongated slot, and reinforcing means for said wall section; said reinforcing means including a bent wire piece having a concealed first portion disposed intermediate the plies of said wall section, said first portion being formed of a pair of elongated relatively spaced parallel legs having a length substantially equal to the height of said wall section and disposed on opposite sides of said elongated slot, a pair of feet segments extending laterally from the ends of said legs and contacting said bottom section, and a pair of shoulder segments extending laterally from the opposite ends of said legs and contacting the portions of the end wall section upper edge disposed adjacent the end limits of said slot; and an exposed bail-like handle portion interconnecting said shoulder segments and projecting through said elongated slot.

2. A carton construction comprising a bottom section, side wall sections foldably connected to and extending upwardly from and substantially normal to said bottom section, end wall sections extending upwardly from and substantially normal to said bottom section, said side and end wall sections cooperating with one another to delimit an open top, each end wall section including an outer portion having an edge segment thereof foldably connected to the periphery of said bottom section, and an inner portion foldably connected to the opposite edge segment of said outer portion, said inner and outer portions, when in one position of folded relation, cooperating with one another to form an end wall section of at least two-ply thickness, the lines of fold between said bottom section and said end wall section outer portion, and between the outer and inner portions of said end wall sections being provided with elongated openings, and reinforcing means disposed intermediate the inner and outer portions of said end wall sections, when said portions are in carton-forming folded relation, each of said reinforcing means having a handle portion projecting through the elongated opening formed in the line of fold between said inner and outer portions, and a base portion integral with said handle portion and disposed intermediate the inner and outer portions of an end wall section; the handle portion of a reinforcing means being accommodated

within an elongated opening formed in a line of fold connecting the bottom section and outer portion of the end wall section of a like carton, when the latter is disposed in superimposed relation thereon; the base portion of each reinforcing means being of greater width than the length of the fold line opening through which said handle portion projects, said base portion having shoulder sections contacting portions of the fold lines disposed adjacent the end limits of said openings, and intermediate sections interconnecting the shoulder sections disposed adjacent the corresponding end limits.

3. A carton construction comprising a bottom section, side wall sections foldably connected to and extending upwardly from and substantially normal to said bottom section, end wall sections extending upwardly from and substantially normal to said bottom section, said side and end wall sections cooperating with one another to delimit an open top, each end wall section including an outer portion having an edge segment thereof foldably connected to the periphery of said bottom section, and an inner portion foldably connected to the opposite edge segment of said outer portion, said inner and outer portions, when in one position of folded relation, cooperating with one another to form an end wall section of at least two-ply thickness, the lines of fold between said bottom section and said end wall section outer portion and between the outer and inner portions of said end wall sections being provided with elongated openings, and reinforcing means formed of bent wire disposed intermediate the inner and outer portions of said end wall sections, when said portions are in carton-forming folded relation, each of said reinforcing means having a base portion engaging the lines of fold of said end wall section disposed on opposite sides of said elongated openings, and a handle portion integral with said base portion and in substantially coplanar relation therewith, said handle portion projecting through the elongated opening formed in the line of fold between said end wall section inner and outer portions and being accommodated within the elongated opening formed in the line of fold connecting the bottom section and the outer portion of the corresponding end wall section of a like carton, when the latter is disposed in superimposed relation thereon, the base portion of each reinforcing means being impassable with respect to said elongated openings and spanning the distance between the fold line of said inner and outer portions and the fold line between said outer portion and said bottom section.

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