Nov. 17, 1964 W. C. GEORGE 3,157,345

CONTAINER

Original Filed Nov. 14, 1956 2 Sheets-Sheet 1

FIG. 1

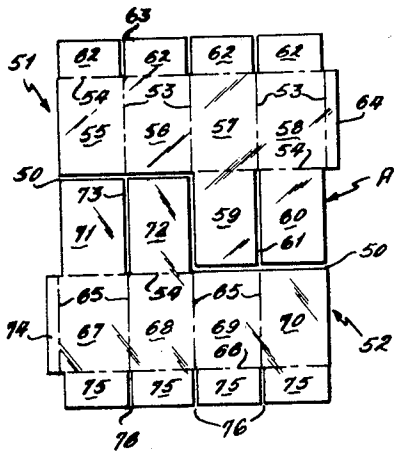


FIG. 2

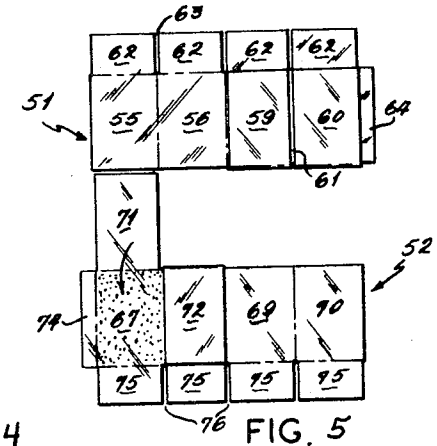


FIG. 3

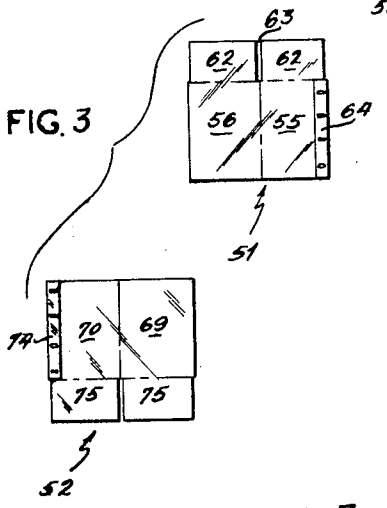


FIG. 4

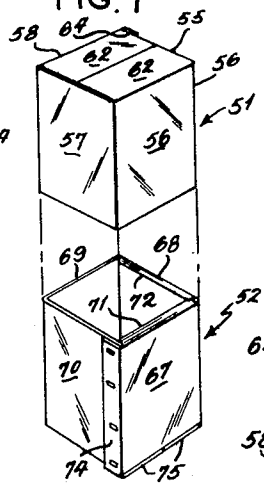


FIG. 5

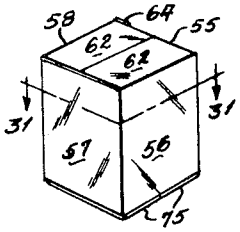


FIG. 6

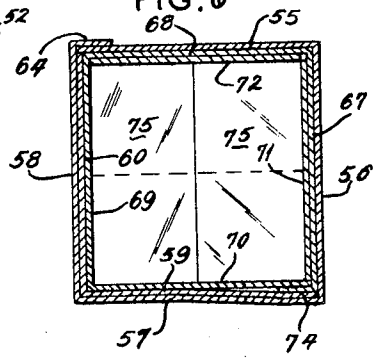
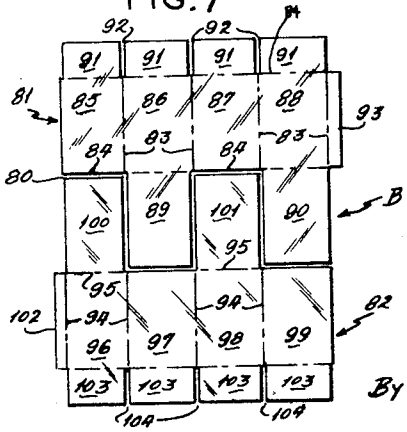


FIG. 7



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FIG. 8

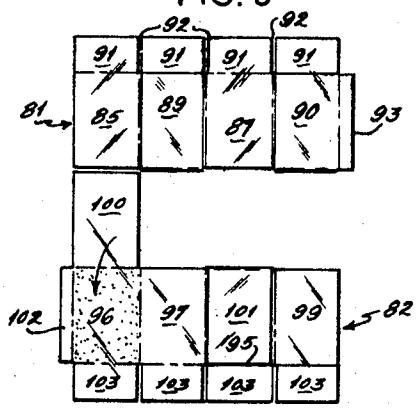


FIG. 9

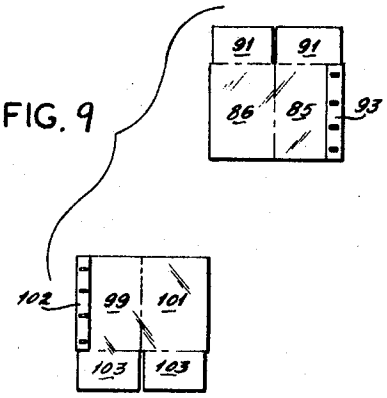


FIG. 10

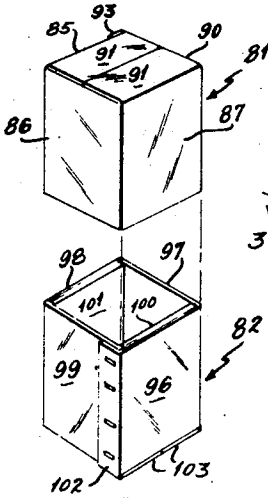


FIG. 11

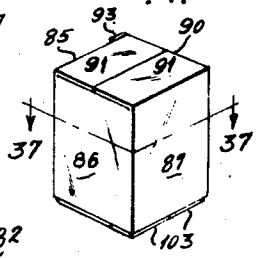


FIG. 12

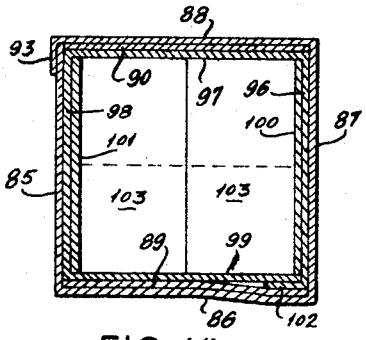


FIG. 13

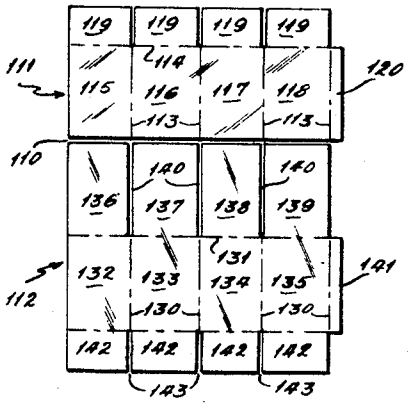
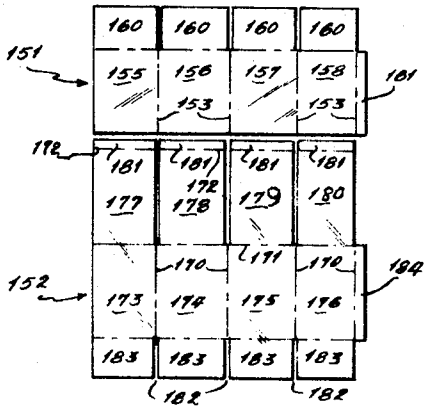


FIG. 14



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United States Patent Office

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3,157,345

CONTAINER

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Original application Nov. 14, 1956, Ser. No. 624,711, now Patent No. 3,007,622, dated Nov. 7, 1961. Divided and this application Sept. 18, 1961, Ser. No. 139,338

1 Claim. (Cl. 229—23)

This application is a division of copending allowed application, Serial No. 624,711, filed November 14, 1956, now Patent No. 3,007,622.

This invention relates to collapsible, heavy-duty containers constructed of paperboard or other similar materail, the blanks from which said containers are fabricated, and ways and means of folding and setting up the container.

The containers of the present invention are, of course, hollow and the body or wall structure comprising the same is unique in that certain opposed walls are fabricated from at least two overlapped panels which are especially secured and arranged with respect to each other and other opposed single panel wall structures in flat unfolded form so that the resultant body structure is sufficiently rigid so as to enable various articles and commodities to be stored therein and properly handled and shipped without a bulging of the walls or a crushing or breaking of the walls due to dropping of the same.

The wall structure may be used open-ended for certain articles and commodities or the same may have integral therewith a novel arrangement of closure flaps or, if preferred, a simple slip type closure or any other closure may be utilized at one or both ends of the panels comprising the wall structure.

In one embodiment of the invention, the completed container is adaptable for use for containing nails, spikes, bolts, screws and the like and serves more effectively to contain such articles than the conventional nail kegs in that the present container is indeed capable of receiving much more severe impacts without rupturing or bursting the same than the rigid wooden kegs in which nails are ordinarily stored and shipped. Then, too, in this embodiment of the invention, the present containers being foldable and collapsible, they can be shipped as such to the user who simply loads them with the articles and seals the flaps or other closure in any suitable manner.

While the different embodiments of the present invention have been set forth as adaptable for having packed certain articles of manufacture and citrus fruits, etc. therein, it is understood that any suitable commodities and articles may be packed into one or both of the containers.

With regard to the embodiment of the invention hereinbefore recited wherein the nails, etc. are to be packed and shipped, the same comprises two substantially identically formed body structures or sections each of which is closed at one end only and the only difference being that in opposite walls of the outer body member, conventional hand holes (not shown) may be provided for convenience in separating these two body members when one is telescoped within the other. Of course, in order to obtain the telescoping of the two body structures or sections, the interior dimensions of the outer body structure must be just slightly greater than the exterior dimensions of the outer body structure. In utilizing the two body structures, which hereinafter are referred to as inner and outer body structures or sections, the aforesaid wall structure is such that by the particular association and telescoping of the body structures and when fully telescoped, there results a body structure of the combined telescoped

structures which consists of at least three superposed panels for each wall of the body structure.

With the aforementioned in mind, one object of the invention is to provide containers, tubes or the like which are rectangular in shape and comprise connected together walls which may be provided with end closure means, whether said means be integral with or separate from the wall, the said walls characterized by being composed of a predetermined plurality of secured together superimposed panels of substantially identical dimensions, which panels comprise certain opposed walls that provide adequate stacking strength and resistance to outward deflection or bulging incident to the weight and nature of the commodity that may be packed therein.

Another object of the invention is to provide secured together panels in opposed wall structures of a container or the like, which said panels result in a unique combined reinforcement of the walls of the container or the like to thereby rigidify the same and said walls, along with other opposed walls, presenting a smooth unbroken interior surface for the container or the like and additionally serving as reinforcing means for the container wall structure at and adjacent the respective corners thereof.

Another object of the invention is that the free vertical side edges of the secured together panels extend to and are disposed at the score line defining the corner folds of the body structure and thus reinforce the body structure at and adjacent these corners.

Another object of the invention is to provide a novel blank structure from which the container wall structure is fabricated, the said blank structure consisting of two complementary blank sections formed waste-free from a single sheet or roll of paperboard or the like and which two sections, while in their substantially flat unfolded formation, prior to being assembled into tubular form, each comprises at least three connected together body panels, such as a panel intermediate of end panels, the end panels preferably being coextensive in all dimensions with each other, and with at least another panel of one section being in secured completely overlapping or superimposed relation with one of said body panels to which it is attached.

Another object of the invention is to provide the aforesaid body structure with the closure means. The closure means may be foldable flaps integral with one or both opposite edges of certain or all of the panels, and these flaps further may be alternately half and full flaps on one or both of the edges of said panels.

Another object of the invention is to provide closure means in combination with the tubular body structure, the said closure means consisting of flaps at one or both opposite edges of said body panels, and the flap closure means serving not only to effectively close one or both ends of the tubular body structure, but additionally to reinforce the said end or ends thereof and further to protect the fold or score lines on which the flaps hinge when the flaps are in their closed position.

Another object of the invention is to provide a new blank structure from which the tube, container or the like is fabricated, the blank being comprised of two complementary sections which, in one embodiment of the invention, are identical and, in the other embodiment of the invention, are substantially identical, the blanks being formed from a single piece, sheet or roll of paperboard or the like and slit transversely and waste-free to thus provide the two said sections.

Another object of the invention is to provide a method of forming the blanks consisting of the two aforesaid complementary sections, and the tube or container fabricated from the combined and permanently secured together blank sections.

Still another object is to provide two flat blanks each comprising a plurality of body wall forming panels foldable into complementary tubular telescoping sections each preferably with closure flaps on one end forming a container having walls of three panel thickness throughout, and four of the panels comprising body panels of each blank being connected together in side-by-side form.

Another object is to provide two flat blanks foldable into rectangular complementary tubular telescoping sections of a container having walls of three panel thickness throughout, each blank having four panels connected together in side-by-side relation and one blank having four panels connected in end-to-end relation with each of the four side-by-side panels and folded over in conterminous relation thereon, forming a flat unfolded blank of four side-by-side connected together panels of double panel thickness, the panels of the other blank being of single panel thickness throughout.

Still another object is a method of providing complementary blanks for forming inner and outer telescoping sections of a container having three panel wall thickness throughout, scoring said blanks longitudinally and transversely to form an aggregate of twelve wall forming panels, each blank having at least four of said panels connected together in side-by-side flat form, superimposing the remaining panels in flatwise conterminous relation over certain of the side-by-side connected panels, providing unfolded flat blanks complementary to each other with respect to single and double wall thickness, connecting the end panels of each blank by means of a sealing flap integral with the outer side edge of one of the end side-by-side panels, opening the structure thus formed into a rectangular section with wall panels complementary to each other with respect to double and single panel thickness, telescoping one of said sections over the other with the double panel walls of one section in parallel flatwise relation to the single panel walls of the other section to provide the assembled container with three wall panel thickness throughout.

Another object is to provide a container or three wall panel thickness throughout formed of inner and outer rectangular telescoped sections, each with closure flaps on one end, each section having four connected together side-by-side wall panels, one section having two or more panels connected in end-to-end relation and positioned in conterminous relation over the side-by-side panels to which they are connected, the other section being complementary to the said one section with respect to double and single wall forming panels, the sections being telescoped one over the other with the single panel walls in parallel flatwise relation to the double panel walls.

With the above and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claim hereto appended, it being understood that various changes in the form, proportions, and minor details of construction, within the scope of the claim, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

FIG. 1 is a plan view of two flat blanks for forming inner and outer telescoping sections of another embodiment of the invention;

FIG. 2 is a plan view of the section forming blanks of FIG. 1 each with four wall forming panels side-by-side and two adjacent panels connected in end-to-end relation and folded in overlapping relation to the side-by-side panels;

FIG. 3 is a plan view of the inner and outer section blanks of FIG. 2 with the end panels of each of the flat blanks connected together and collapsed;

FIG. 4 is a perspective view of the sections of FIG. 3 opened into rectangular form preparatory to telescoping one over the other;

FIG. 5 is a perspective view of the fully assembled container;

FIG. 6 is a horizontal sectional view of the container of FIG. 5 taken in the direction of the arrows 31—31;

FIG. 7 is a plan view of two flat section forming blanks of still another embodiment of the invention, each blank having four side-by-side panels and two panels foldably connected in end-to-end relation to two alternate side-by-side panels;

FIG. 8 is a plan view of the section forming flat blanks of FIG. 7 with the end-to-end connected panels of one section folded in overlapping relation to alternate side-by-side panels and the end-to-end connected panels of the other section in process of folding into overlapped relation with alternate side-by-side panels;

FIG. 9 is a plan view of the sections of FIG. 8 with the end panels of the flat section blanks connected together and collapsed;

FIG. 10 illustrates in perspective the sections of FIG. 9 opened into rectangular form preparatory to telescoping one over the other;

FIG. 11 is a perspective view of the fully assembled container;

FIG. 12 is a horizontal section of the container of FIG. 11 taken in the direction of the arrows 37—37;

FIG. 13 is a plan view of inner and outer section forming blanks of still another embodiment of the invention, the inner section blank being scored to define four side-by-side panels and four panels connected thereto in end-to-end relation and the outer blank being scored to define four side-by-side connected panels; and

FIG. 14 illustrates section forming blanks similar to the blanks of FIG. 13 with relatively narrow flaps foldably connected to the outer margins of the four panels connected in end-to-end relation to the side-by-side panels of the inner section.

The invention will be more readily understood by referring to the drawings in detail wherein the same reference numerals or characters all denote the same component parts.

Several modifications of the invention are illustrated in FIGS. 1 to 14 inclusive. A rectangular sheet A is divided substantially waste-free by a slot 50 into outer and inner telescoping section blanks 51 and 52 respectively. Longitudinal and transverse scores 53 and 54 define wall forming panels 55 to 60 inclusive of the outer sections 51. Panels 55, 56, 57 and 58 are connected together in side-by-side relation and adjacent panels 59 and 60, separated by slot 61, connected in end-to-end relation with the adjacent side-by-side panels 57 and 58. Closure flaps 62, separated by slots 63, may be foldably connected to the corresponding ends only of each of the side-by-side panels. A sealing flap 64 is foldably connected to the outer side edge of panel 58. Longitudinal and transverse scores 65 and 66 define wall forming panels 67 to 72 inclusive of the inner section 52. The panels 67, 68, 69 and 70 are connected together in side-by-side relation and adjacent panels 71 and 72 separated by slots 73 are foldably attached in end-to-end relation with adjacent side-by-side panels 67 and 68. A sealing flap 74 is foldably connected to the outer side panel 67. Closure flaps 75, separated by slots 76, may be attached to the outer ends of each of the side-by-side panels.

The blank of each of the telescoping sections 51 and 52 may be conveniently assembled by folding the adjacent panels 59 and 60 of the outer section in flatwise conterminous relation over the side-by-side panels 57 and 58 and adjacent panels 71 and 72 folded conterminously in flatwise relation over panels 67 and 68 as illustrated in FIG. 2, to form flat unfolded blanks with two adjacent panels of single thickness and two of double thickness. The outer and inner section blanks 51 and 52 are then folded over with one end panel connected to the other end panel by the sealing flaps 64 and 74 attached to the panels 55 and 70 respectively as shown in FIG. 3. In

this partially preassembled form the sections may be collapsed for shipment.

At the point of use the inner and outer sections are opened into rectangular form preparatory to telescoping one over the other as illustrated in FIG. 4, with the adjacent single panel walls of the outer section in parallel flatwise relation with the double panel walls of the inner section. In the fully telescoped relation of the sections as shown in FIG. 5, the container has side walls throughout of three-panel thickness. A transverse section of tthe assembled container taken in the direction of the arrows 31—31 of FIG. 5 is illustrated in FIG. 6.

Another modification of the invention is illustrated in FIGS. 7 and 12 inclusive which is similar to the embodiment described and illustrated in FIGS. 1 to 6 inclusive except for having alternate panels connected in end-to-end relation to alternate panels of the side-by-side connected together panels. In this modification of the invention, the outer section is scored longitudinally and horizontally by scores 83 and 84 respectively to define panels coextensive in all dimensions with four of said panels 85, 86, 87 and 88 in side-by-side relation and two panels 89 and 90 hinged in end-to-end relation with alternate side-by-side panels 86 and 88. Closure flaps 91 separated by slots 92 may be hinged to the outer ends of the side-by-side panels. The inner panel section 82 is likewise scored longitudinally and transversely by scores 94 and 95 respectively to define connected together side-by-side wall forming panels coextensive in all dimensions 96, 97, 98 and 99 and panels 100 and 101 connected in end-to-end relation with alternate panels 96 and 98 respectively. Sealing flap 102 is foldably attached to the outer side panel 96. Closure flaps 103 separated by slots 104 may be attached to the outer ends of the side-by-side panels.

The blanks 81 and 82 may be preassembled in the same manner as described in the embodiment of the invention illustrated by FIGS. 2 and 3, and collapsed in flat form for shipment. The preassembled sections at the point of use are opened up into rectangular form and telescoped one over the other with the adjacent single panel walls of the outer section in parallel flatwise relation to the double panel walls of the inner section, providing the container with three-panel wall thickness throughout. FIG. 11 shows the completely assembled container and FIG. 12 a transverse section thereof taken in the direction of the arrows 37—37 of FIG. 11.

The blanks for the telescoping sections 111 and 112 of still another embodiment of the invention are shown in FIG. 13. The outer section is divided by longitudinal scores 113 and transverse scores 114, defining four side-by-side connected together wall forming panels coextensive in all dimensions. The wall forming panels may have closure flaps 119 on one corresponding end only separated by slots. A sealing flap 120 is attached to the outer side of the panel 118. The inner section 112 is defined by longitudinal scores 130 and transverse scores 131 into side-by-side connected together wall panels 132, 133, 134 and 135 and panels 136, 137, 138 and 139 connected in end-to-end relation with the side-by-side panels all coextensive in slightly reduced dimensions compared with the panels of section 111. The panels connected in end-to-end relation with the side panels are separated on their side edges by slots 140. The sealing flap 141 may be attached to the outer side margin of panel 135.

The blank for the outer section 111 is folded into partially assembled form by attaching the sealing flap 121 to the outer side edge of panel 115. The blank for the inner section 112 is assembled by folding the panels 136, 137, 138 and 139 in conterminous flatwise relation to the side-by-side panels to which they are attached in end-to-end relation, forming a flat unfolded blank and then folding the ends of the blank in end-to-end relation and attaching the sealing flap 141 to the outer side margin of panel 132. Both sections thus partially assembled may then be collapsed into flat form for shipment. At the point of use they are opened up into rectangular form in the same manner as shown in FIGS. 4 and 10, and the outer section telescoped over the inner section to complete the assembly of the container. For the purpose of increasing the strength of the container of this embodiment of the invention, the adjacent side edges of the panels connected in end-to-end relation to the side-by-side panels may be flexibly connected together by strips of tape over their adjacent side margins.

The modification of the embodiment of the invention shown in FIG. 13 is illustrated in FIG. 14. The flat unfolded blanks 151 and 152 assembled therefrom are substantially identical with the corresponding sections of FIG. 13 with the exception of flaps 181, separated by slots 182 are connected to the outer ends of panels 177, 178, 179 and 180 and foldable about transverse score 172. The flat unfolded blank of this form of the invention may be assembled precisely as described with respect to the blanks of FIGS. 1, 7 and 13, the flaps 181 being folded right angularly inwardly in the assembled section 152 to provide a further reinforcement to the container.

It will be noted that one or both telescoping sections of the several embodiments of the invention forming the containers of three panel wall thickness throughout are formed from flat unfolded blanks scored to define wall forming panels, each comprising four or more panels connected together in side-by-side relation with one or more panels folded in flatwise conterminous relation over at least one of the side-by-side panels. These preformed flat blanks result in important economies since they reduce the preassembly operation to the simple step of securing the end panels of the flat blanks together to form four-sided sections which may be collapsed in flat form for shipment. At the point of use all that is necessary is to open the collapsed preformed sections into rectangular form and telescope the outer section over the inner section. It should be understood that one end of each of the sections of any of the embodiments of the invention may be provided with half closure flaps, full closure flaps, combinations thereof or any other type of closure desired.

While the drawings depict the paperboard as being of solid fiberboard, it is understood that all embodiments of the invention may be fabricated from conventional doubleface or doublewall corrugated paperboard.

The composite flat unfolded blanks of FIGS. 1 and 2, and the flat unfolded blanks of FIGS. 7, 8 and those similarly derived from FIGS. 13 and 14 are adapted to be assembled into tubular form on high-speed conventional paperboard assembling machines.

The panels 55, 56, 57, 58; 67, 68, 69, 70 in FIGS. 1–6, both inclusive, are denoted as body panels. Reinforcing flaps or panels in FIGS. 1–6, both inclusive, are designated 59, 60; 71, 72.

In FIGS. 7–12, both inclusive, body panels are denoted at 85, 86, 87, 88; 96, 97, 98, 99, and the reinforcing flaps or panels are denoted at 89, 90; 100, 101.

In FIG. 13, body panels are denoted at 115, 116, 117, 118; 132, 133, 134, 135. The reinforcing flaps or panels are denoted in FIG. 13 as 136, 137, 138, 139.

In FIG. 14, the body panels are denoted at 155, 156, 157, 158; 173, 174, 175, 176, and in this figure, the reinforcing panels or flaps are denoted at 177, 178, 179 and 180.

Although I have illustrated and described several presently preferred embodiments of the invention, it will be recognized that changes in the details and arrangements may be made without departing from the spirit of the invention or the scope of the appended claim.

I claim:

A rectangular container of three panel wall thickness throughout formed of two complementary telescoping inner and outer tubular sections formed of an aggregate of twelve wall forming panels defined by longitudinal and transverse scores, each section comprising four wall forming panels hingedly connected together in side-by-

side relation with the side marginal edges secured to form a tubular sleeve, the container interior section having four reinforcing panels each hingedly connected in end-to-end relation respectively with one end of the said side-by-side panels and superimposed in flatwise secured relation thereon forming side walls of double panel thickness throughout that section, means flexibly connecting the adjacent side marginal edges of each reinforcing panel, flap extension means hingedly secured to each of the reinforcing panels at the terminal ends thereof opposite the hinged connection to each of the wall forming panels, closure flaps connected to the four side-by-side panels of the interior section opposite the connection of the four reinforcing panels, said closure flaps disposed in infolded and secured relation to provide a container bottom closure, the outer container section having closure flaps connected to one end of each wall panel

thereof and disposed in infolded secured relation providing the container top closure, the opposite end of each wall panel of said outer section being free of flaps, the reinforcing panels of the inner section being substantially coextensive with both the wall panels of the inner section and the wall panels of the outer section.

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