Sept. 18, 1934. H. DENSEN 1,974,061

CORRUGATED BOARD KNOCK-DOWN BOX

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Fig. 1.

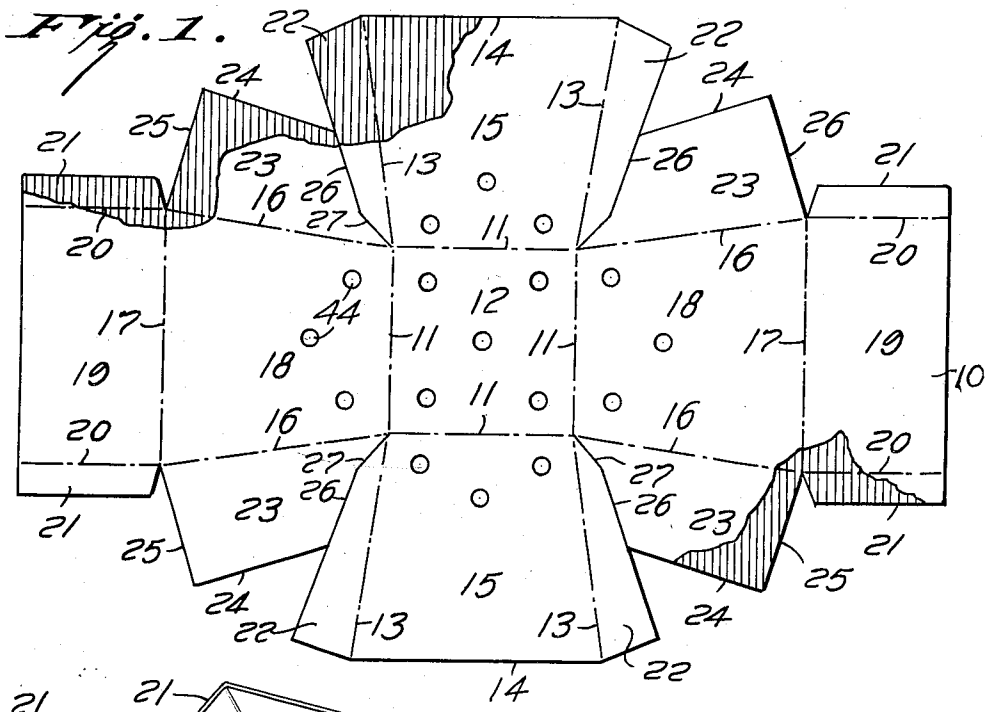
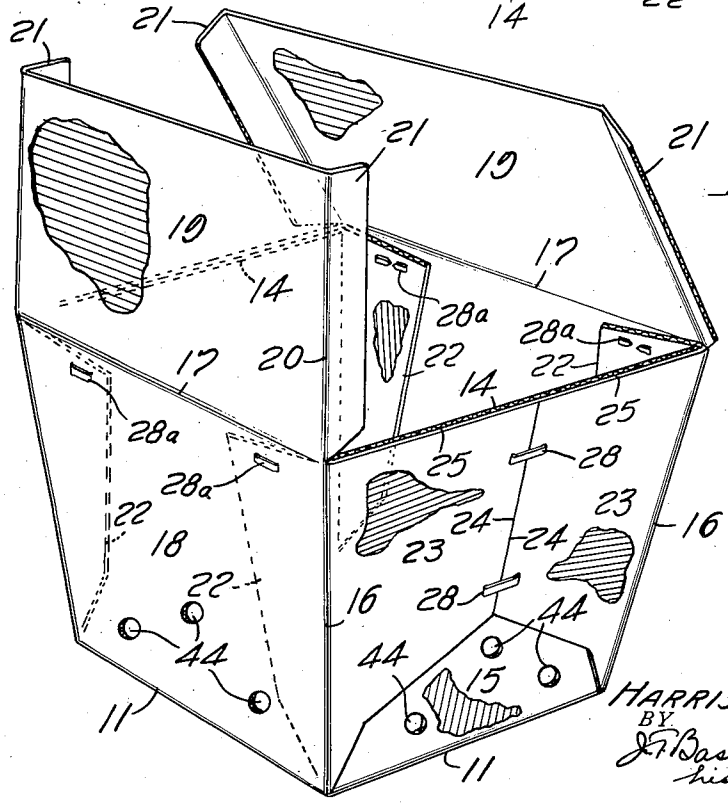


Fig. 2.



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Fig. 3.

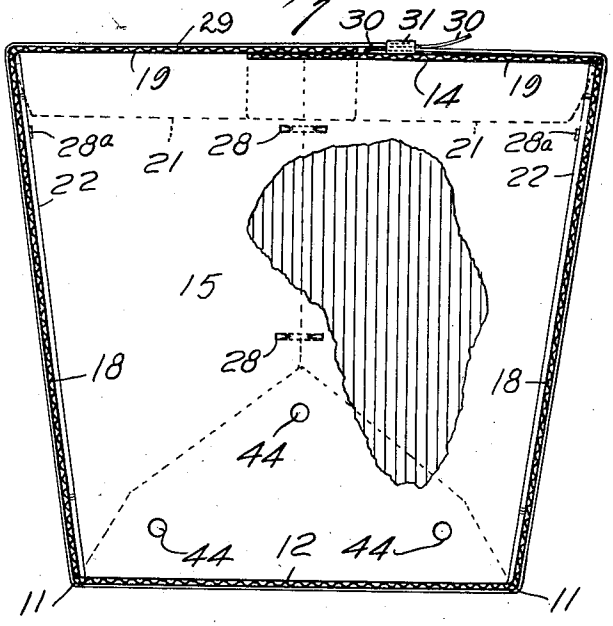
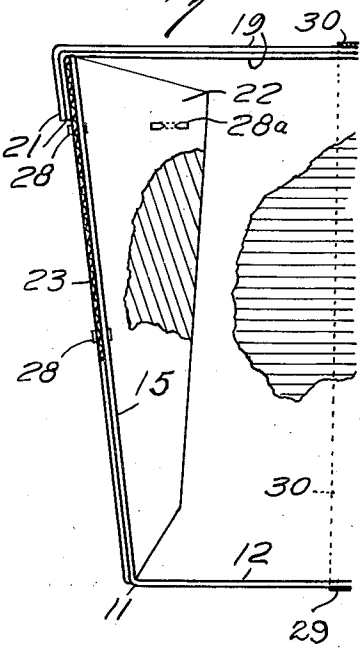


Fig. 4.



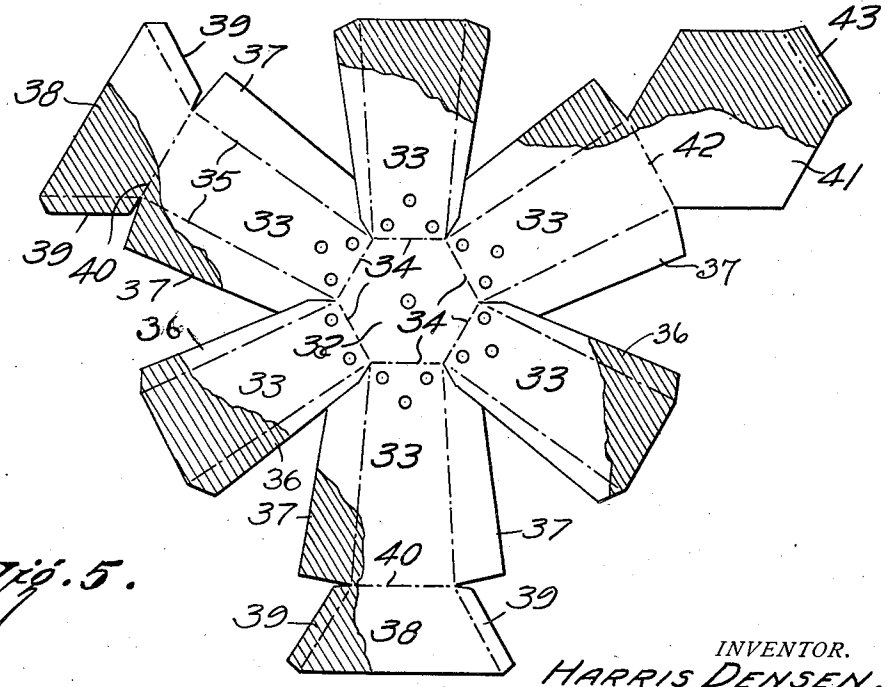


Fig. 5.

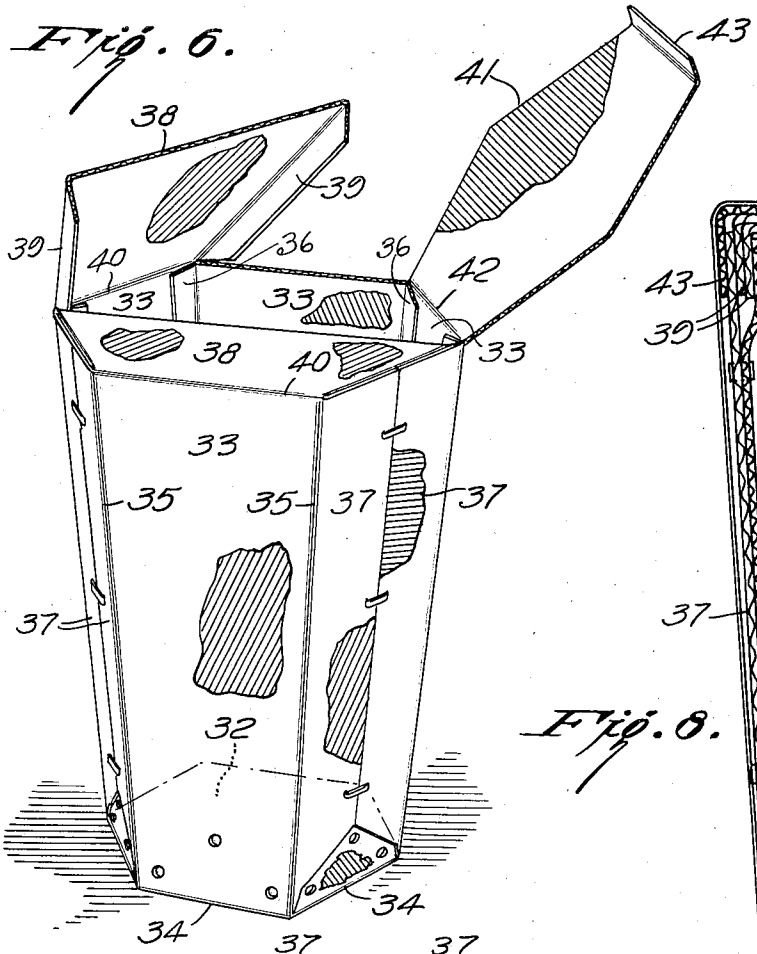
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Fig. 6.



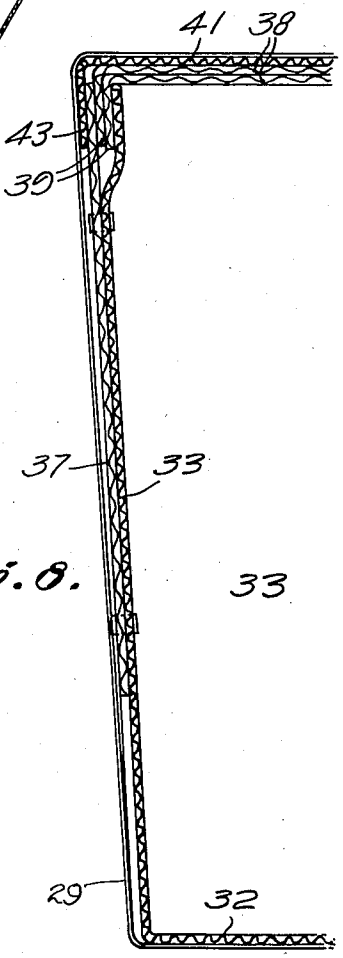


Fig. 8.

33

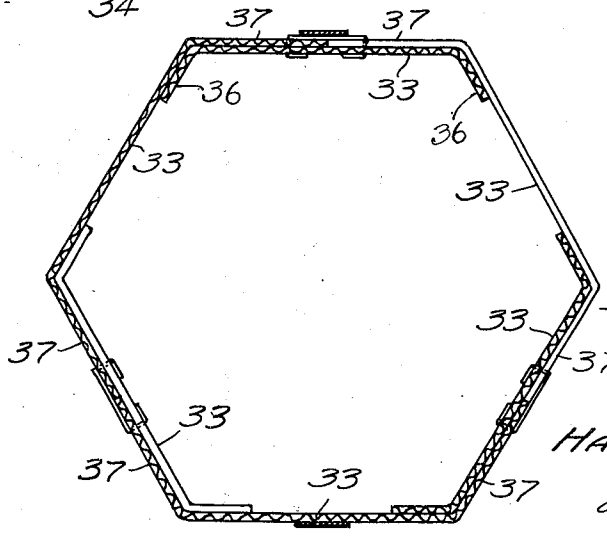


Fig. 7.

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UNITED STATES PATENT OFFICE

1,974,061

CORRUGATED BOARD KNOCK-DOWN BOX

Harris Densen, New York, N. Y.

Application June 6, 1932, Serial No. 615,638

5 Claims. (Cl. 229—32)

This invention relates to knock-down or shipping boxes, particularly those made of corrugated board, and further, to blanks or cutout forms from which a shipping box may be assembled.

It is an object of my invention to provide a blank or cutout from which crates or baskets may be formed, for the shipment of fruits, vegetables and similar commodities, from relatively inexpensive material, such as corrugated board, so that the material from which the container will be made may be shipped to various centers and occupy the minimum space during shipment, to be subsequently assembled into final form as a container. It is contemplated by my invention to provide a cutout or blank from corrugated board, which may be quickly and facilely assembled into a container, the cutout portion or blank serving to form the walls and cover member of a container in such association that the material, corrugated board, may be used to successfully supplement wood, previously used for crates or baskets in the shipment of fruits, vegetables and the like.

It is further contemplated by my invention to provide a knock down folding box which will substantially supplement the wooden construction of crates or baskets by forming a blank of corrugated board, the blank being cut out to form the walls and bottom of corrugated sheet, with other portions not defining the side walls, forming stiffening members for the walls of the container, by positioning the portions of the blank to be overlapped so that the corrugations thereof are cross-grained to the corrugations of an overlapping side wall.

It is a further object of my invention to provide a shipping container or crate, to supplement crates or baskets of wood, made from a blank of corrugated board, the blank being formed to be readily and quickly assembled when needed, and when so assembled, will impart maximum stiffening action and rigidity by the coordinating parts in the assembled container.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, I make reference to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a plan view of a blank made of corrugated board, for one embodiment of my invention;

Figure 2 is a perspective view of an assembled container, with the lid forming portions thereof open;

Figure 3 is a vertical section of the container when fully assembled;

Figure 4 is a fragmentary section taken on the line 4—4 of Figure 3;

Figure 5 is a plan view of a blank of another embodiment of my invention;

Figure 6 is a perspective view of the assembled container made from the blank disclosed in Figure 5, with the lids left open;

Figure 7 is a horizontal section taken immediately below the lid;

Figure 8 is a fragmentary vertical section of the completely assembled container shown in Figure 6.

Making reference to the drawings, in the preferred embodiment of my invention, I provide a sheet of corrugated board of the general type made of a plurality of laminations of paper or pasteboard, having interposed between the two laminations a corrugated strip.

In the embodiment shown in Figure 1, 10 is the blank of such corrugated board, the blank being cut from a strip of corrugated board with the corrugations running transverse to the longest dimensions. This blank is formed with score lines 11, defining substantially a square bottom 12. Score lines 13 are formed to cooperate with the lines 11 and edges 14, to form substantially trapezoidal side walls 15. Score lines 16 and 17 cooperate with the score lines 11, to define trapezoidal end walls 18. From the portion contiguous to each of the walls 18, there are formed lid forming flaps 19, each being provided with score lines 20 to either side thereof, forming folding flaps 21.

The material of the blank between the score lines 13 and 16 is severed to form a short flap 22 and a wider flap 23, affixed to the walls 15 and 18 respectively, to either edges of these respective walls. The flap 22 is in the general form of a trapezium. The flap 23 is in the general form of an irregular pentagon. Edges 24 are preferably cut a distance from the score line 16 so that when the edges 24 are arranged in abutting relationship, substantially vertically, the two sections, placed edge to edge, will conform to the dimensions of the trapezoidal side wall 15.

The edges 25 are formed at an angle to the score lines 16 so that when finally positioned in the container, they will coincide with the edge 14 of the sides 15. Severance between the flaps 22 and 23 is along the broken lines 26 and 27, so as to retain as much material as possible in the flap 22, without impairing the function previously ascribed to the flaps 23.

With a blank as thus provided, to assemble the same into a container, the side walls 15 are raised

substantially vertically by hinging the same along the fold line 11. The flaps 22 are then each folded inwardly along score lines 13. In this position, the flaps 18 are then hinged along the fold line 11, adjacent thereto, to substantially the vertical position, whereupon the flaps 23 are folded along the score line 16. The flaps 23 are then disposed to the outer face of the side walls 15 and the edges 24 are brought into abutting position. The score lines 13 and 16 will then overlie each other, forming a reinforced corner. The assembly is completed by passing staples 28, through the body of the flaps 23, and the side walls 15, the staples being upset on the inner surface of the walls 15. It will be observed that the corrugations of the blank in the walls 15 run substantially vertically and that when the flaps 23 have been folded into the plane of the walls 15, the corrugations will be positioned horizontally or cross grained to the corrugations of the wall 15. Thus, the positioning of the flaps 23, as just described, will reinforce the corrugations and stiffen the wall 15 horizontally.

It will further be observed that the corrugations in the walls 18, when the container is completely formed, will lie substantially horizontally. The flaps 22, which are folded in the face of the wall 18, will lie substantially vertically and thereby reinforce and stiffen the wall 18 by the cross grained position of the corrugations in the walls 18 and flaps 22, respectively. This position is assured by driving staples 23*a* through the side walls 18 and into the flaps 22, crimping the prongs of the staples on the inner walls of the flaps 22, as will be readily understood.

When the container is thus completed, and assembled, it may be filled with the materials to be shipped, such as apples, vegetables or similar substances. The lids 19 are then folded in abutting position upon the edges 14, as more clearly shown in Figure 3, the lids 19 being of a size to overlap each other, as shown in Figure 3. When the lid is closed, a tie strap 29 is wrapped around the entire container and the ends 30 are fastened by a crimped sleeve 31, of the character usually employed in strapping wooden containers.

In Figures 5, 6, 7 and 8 I have described a blank and container generally corresponding to an elongated bushel basket and formed generally of hexagonal configuration, instead of the square configuration shown in Figures 1 to 4. In this embodiment, the blank 32 is formed with six side walls 33, integrally united to the bottom 32, by score lines 34. These side walls 33 are formed into trapezoidal configuration by score lines 35, each alternating wall 33 being formed with short and long flaps 36 and 37, respectively, having a relationship to the trapezoidal walls 33 in the manner as described in connection with the embodiment illustrated in Figures 1 to 4.

Two alternate walls 33 are formed with trapezoidal lid forming flaps 38 and side flaps 39, integrally attached to the respective walls 33 along fold lines 40. A third wall 33, alternately spaced from the walls to which the lid forming flaps 38 are attached, is provided with an integrally attached hexagonal lid 41, at the fold line 42. Folding flap 43 is oppositely disposed to the fold line 42 on the hexagonal lid forming flap 41.

The assembly of this blank is substantially identical to the embodiment disclosed and illustrated in Figures 1 to 4, being substantially as shown in Figures 6 to 8.

It will therefore be observed that though I have illustrated containers of four and six sides, respectively, similar containers may be made of other polygonal contours, such as by making the same into octagons and similar equilaterally sided contours.

It will thus be observed that by the construction shown, I have provided a blank which will occupy the minimum amount of space in storage, so that any number of these blanks may be shipped in superimposed relationship until they are ready for use, whereupon they may be readily assembled to form a container, merely by stapling in accordance with the description heretofore given. When so formed, the blanks serve to provide extremely rigid containers, capable of holding, in bushel size containers, as much as ninety pounds of vegetables, fruits or similar merchandise, and when so formed, will resist the rigorous treatment encountered in transportation. This I attribute to the stiffening action obtained in the method of assembling the side walls, flaps and edges in overlying position and into abutting or overlapping position in engaging such flaps as 23, in the embodiment shown in Figures 1 to 4, and the corresponding flaps shown in the embodiment illustrated in Figures 5 to 8, and also to the cross grain relationship of the corrugations where the blank that is used is made from corrugated board.

It will also be observed that though in the preferred embodiment of my invention I prefer to form the larger flaps 23 with edges 24, so that when the blank is finally formed into a container, the edges 24 abut each other, the material severed from the blank between the edge 24 and the flap 22 may be retained to provide overlapping portions to be stapled to the corresponding wall 15, in the completely assembled container. In such construction, though the benefit of the abutting relationship of the edges 24 may not be derived to limit the assembly of the container, nevertheless these flaps, when folded in position, will have the corrugations thereof cross grained to thereby augment the stiffening action in association with the corresponding wall 15.

It will further be observed that the flaps 22 not only serve to stiffen the walls 18 by the cross grained relationship of the corrugations previously referred to, but when the lids 19, attached to the walls 18, are folded over into closed position, the corner formed by the fold line 17 will give the wall 18 additional stiffening.

Where the container, finally formed, is to be used for shipment of perishable materials, particularly fruits and vegetables, ventilating orifices or holes 44 may be formed, to assure that no dead air is entrapped and that a moist atmosphere, which may tend to cause spoilage, will be minimized.

While in the embodiments I show a container which, in its cross section, is of equilateral, polygonal contour, and this is preferred by me, I intend to cover within the scope of my claims such polygonal figures which though necessarily not of equilateral configuration, embrace the structural features inherent in the construction shown.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is—

1. A corrugated board box made from a blank having all the side walls of identical configuration and including a top and bottom formed therefrom of integral construction, the material

of the blank between the edges defining the side walls being severed into a narrow flap and a wide flap by an irregularly cut line, the narrow flap being formed into a configuration to provide sufficient material to provide a reinforcing corner and carried by one pair of oppositely disposed side walls, the wide flap being formed into a configuration one edge of which extends for a length corresponding to one half of a side of the container and another edge of which is in alignment with the top edge of the container when in the box-folded position, said last mentioned wide flap being carried by another pair of oppositely disposed side walls, the edges of the second mentioned wide flaps meeting in butt-joint engagement when the blank is in the box-folded position and top flaps integral with said walls for forming a lid.

2. A corrugated board box made from a blank having all the side walls of identical configuration and including a top and bottom formed therefrom of integral construction, the material of the blank between the edges defining the side walls being severed into a narrow flap and a wide flap by an irregularly cut line, the narrow flap being formed into a configuration to provide sufficient material to provide a reinforcing corner and carried by one pair of oppositely disposed side walls, the wide flap being formed into a configuration one edge of which extends for a length corresponding to one half of a side of the container and another edge of which is in alignment with the top edge of the container when in the box-folded position, said last mentioned wide flap being carried by another pair of oppositely disposed side walls, the edges of the second mentioned wide flaps meeting in butt-joint engagement when the blank is in the box-folded position and top flaps integral with said walls for forming a lid, the corrugations of said blank being arranged in cross grained relationship so that when the flaps are folded into box forming position the corrugations of the wider flaps will be arranged cross grained to the corrugations of a side wall, forming at least a pair of said side walls for substantially the full area thereof, into a double layered, reinforced wall of cross grained corrugations.

3. A corrugated board box made from a blank having all the side walls of identical configuration and including a top and bottom formed therefrom of integral construction, the material of the blank between the edges defining the side walls being severed into a narrow flap and a wide flap by an irregularly cut line, the narrow flap being formed into a configuration to provide sufficient material to provide a reinforcing corner and carried by one pair of oppositely disposed side walls, the wide flap being formed into a configuration one edge of which extends for a length corresponding to one half of a side of the container and another edge of which is in alignment with the top edge of the container when in the box-folded position, said last mentioned wide flap being carried by another pair of oppositely disposed side walls, the edges of the second mentioned wide flaps meeting in butt-joint engagement when the blank is in the box-folded position and top flaps integral with said walls for forming a lid, the corrugations of said blank being arranged in cross grained relationship so that when the flaps are folded into box forming position the corrugations of the wider flaps will be arranged cross grained to the corrugations of a side wall, forming at least a pair of said side walls for substantially the full area thereof, into a double layered, reinforced wall of cross grained corrugations, the narrow flaps being arranged as stiffening members for the vertical corners and adjacent sides.

4. A corrugated board box made from a blank having all the side walls of identical configuration and including a top and bottom formed therefrom of integral construction, the material of the blank between the edges defining the side walls being severed into a narrow flap and a wide flap by an irregularly cut line, the narrow flap being formed into a configuration to provide sufficient material to provide a reinforcing corner and carried by one pair of oppositely disposed side walls, the wide flap being formed into a configuration one edge of which extends for a length corresponding to one half of a side of the container and another edge of which is in alignment with the top edge of the container when in the box-folded position, said last mentioned wide flap being carried by another pair of oppositely disposed side walls, the edges of the second mentioned wide flaps meeting in butt-joint engagement when the blank is in the box-folded position and top flaps integral with said walls for forming a lid, and fastening means uniting said narrow flaps to a side wall adjacent to the wall carrying the same and fastening means uniting said wider flaps to each other and a side wall adjacent to that carrying the said wide flaps.

5. A corrugated board box made from a blank having all the side walls of identical configuration and including a top and bottom formed therefrom of integral construction, the material of the blank between the edges defining the side walls being severed into a narrow flap and a wide flap by an irregularly cut line, the narrow flap being formed into a configuration to provide sufficient material to provide a reinforcing corner and carried by one pair of oppositely disposed side walls, the wide flap being formed into a configuration one edge of which extends for a length corresponding to one half of a side of the container and another edge of which is in alignment with the top edge of the container when in the box-folded position, said last mentioned wide flap being carried by another pair of oppositely disposed side walls, the edges of the second mentioned wide flaps meeting in butt-joint engagement when the blank is in the box-folded position and top flaps integral with said walls for forming a lid, the corrugations of said blank being arranged in cross grained relationship so that when the flaps are folded into box forming position the corrugations of the wider flaps will be arranged cross grained to the corrugations of a side wall, forming at least a pair of said side walls for substantially the full area thereof, into a double layered, reinforced wall of cross grained corrugations and fastening means uniting said narrow flaps to a side wall adjacent to the wall carrying the same and fastening means uniting said wider flaps to each other and a side wall adjacent to that carrying the said wide flaps.

HARRIS DENSEN.