United States Patent [19]

Rosenburg, Jr.

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[45] **Oct. 16, 1973**

[54] **HOLLOW WALLED CARTON**

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[52] **U.S. Cl.** ..... **229/34 HW**, 40/154

[51] **Int. Cl.** **B65d 5/22**, G09f 1/12

[58] **Field of Search** ..... 229/34 HW, 126 A; 40/124.1, 154, 155

[56] **References Cited**

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Attorney—Watson, Cole, Grindle & Watson

[57] **ABSTRACT**

A carton constructed of a single folded cardboard blank having hollow wall units along the periphery thereof, means on each of the walls at opposite ends thereof for interlocking adjacent walls together, said locking means being located on the upper wall portions of the hollow wall units and being so arranged as to require opposing ones of hollow wall units to be moved inwardly and subsequently outwardly to effect the interlock between adjacent walls. Moreover, the spacing between the lower ends of the inner and outer walls of each wall unit is slightly less than the width of the respective top wall of the unit, thereby permitting the item stored within the carton to be snugly held in place during shipment.

3 Claims, 6 Drawing Figures

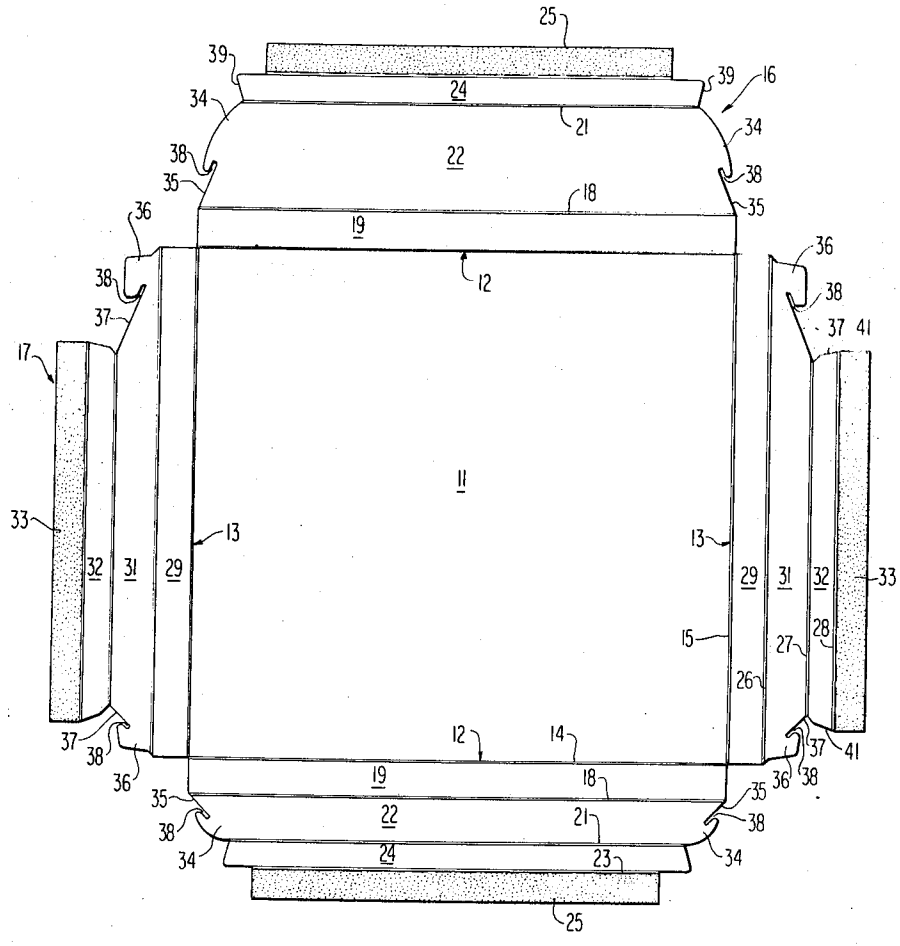


FIG.1

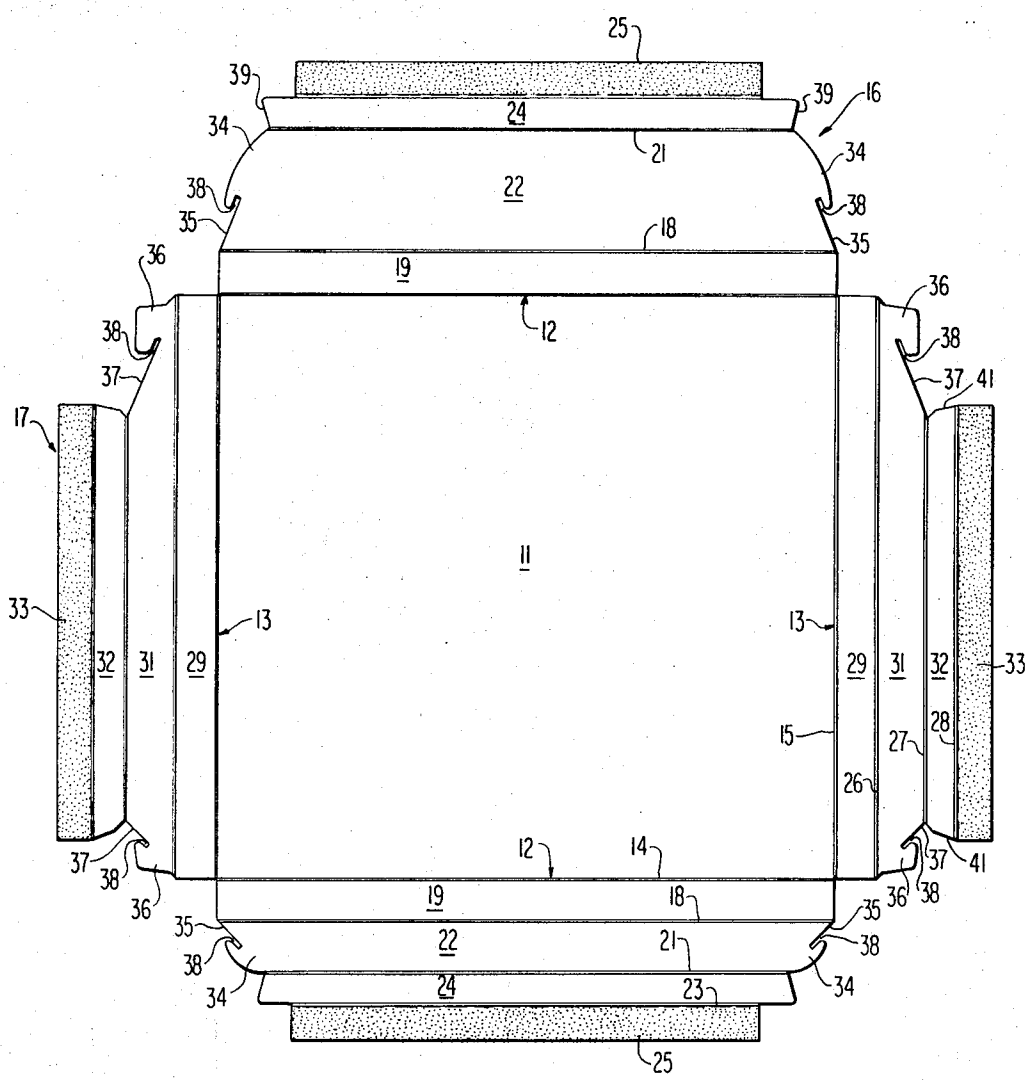


FIG.3

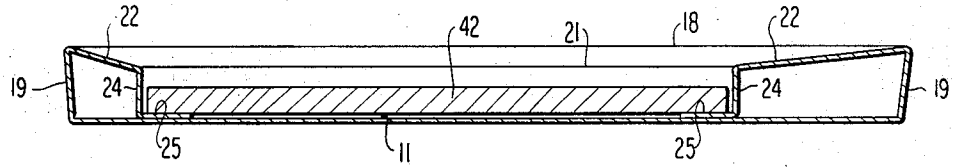


FIG.4

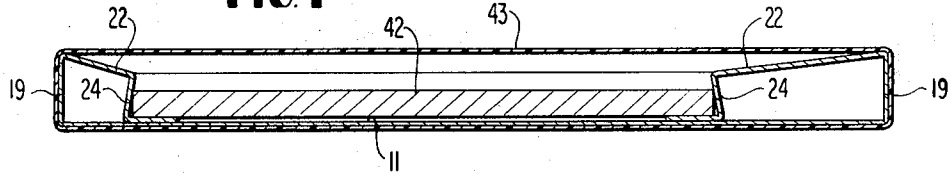
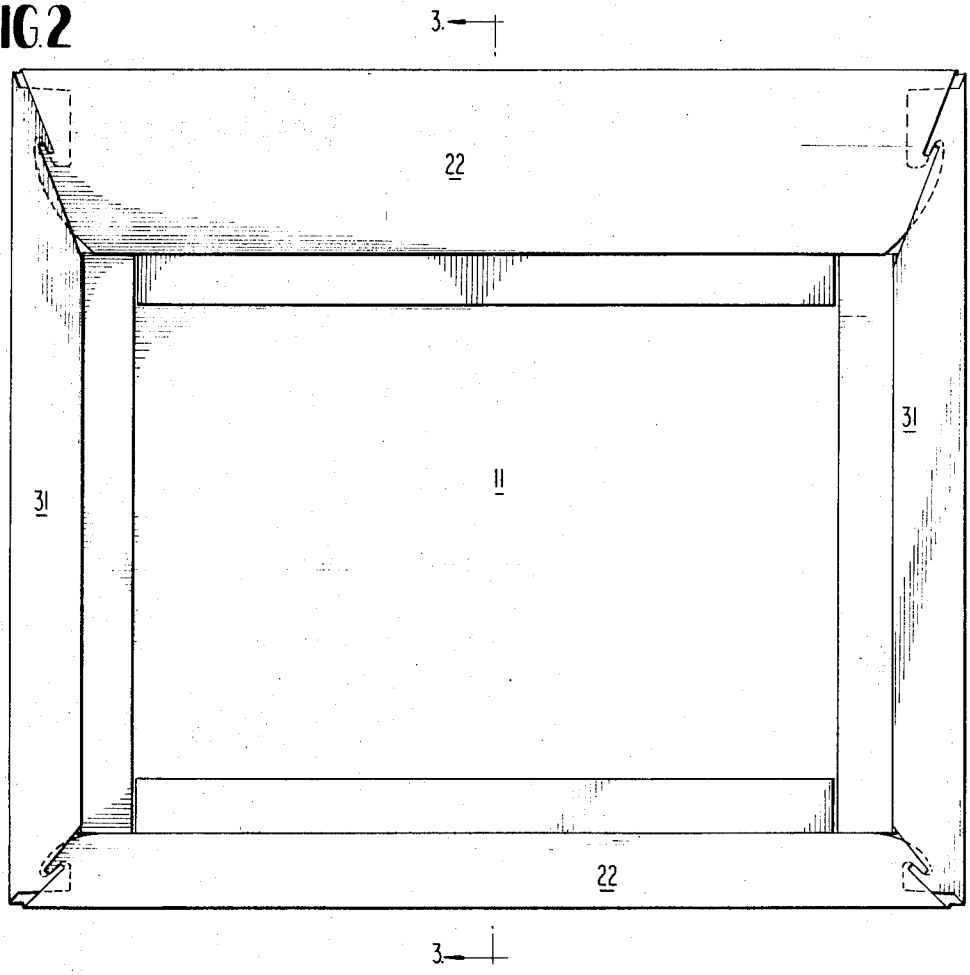


FIG. 2



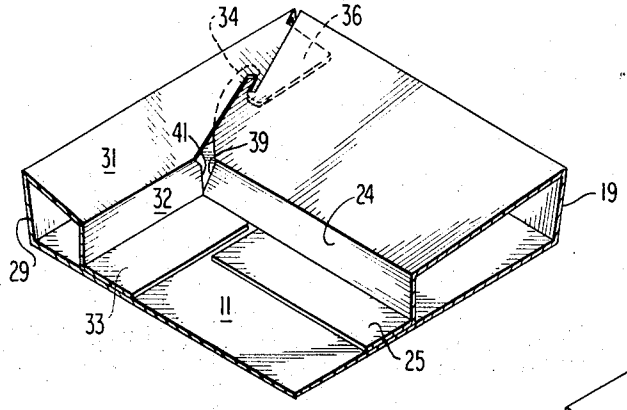
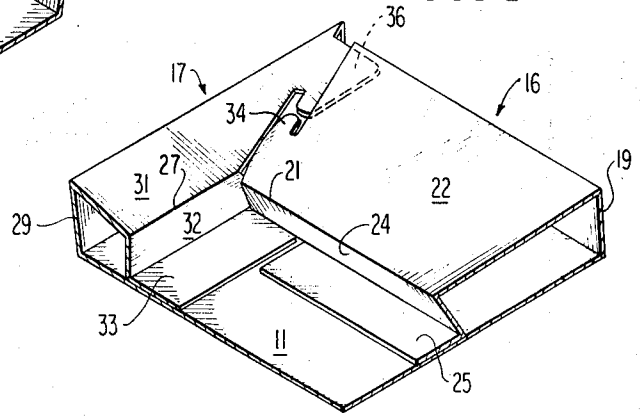


FIG. 6

FIG. 5



HOLLOW WALLED CARTON

This invention relates generally to cartons and more particularly to cartons having interlocked hollow or tubular wall units located along the periphery thereof thereby defining a hollow frame formed about an item to be packaged.

Cardboard trays designed to be erected from a single blank have been devised in the past as having tubular side and end walls thereby defining a support tray for an item to be packaged. Such a tray is thereafter normally shrunk wrapped after it has been erected and an item placed therein. During shipment, however, it has been found that such items have a tendency to shift within its tray or package thereby requiring hold-down means or tapes for maintaining the packaged item snugly in place. Moreover, such tubular wall cartons either require locking tabs to be inserted within tab apertures or other types of interlocking means to be manipulated for interlocking adjacent tubular walls together. The construction of such cartons is, therefore, many times of a relatively complex nature, although if they were of a simpler design, the interlock between tubular walls would probably not be adequate for maintaining the integrity of the erected carton during shipment.

It is therefore a principal object of the present invention to provide a carton which may be erected from a single blank into a carton having hollow or tubular side and end wall units which are simply and conveniently interlocked together and are inwardly movable so as to snugly embrace the corresponding end and side walls of the packaged item within the carton.

Another object of the invention is to provide such a carton wherein the locking means for the hollow wall units are provided on the top wall portions of each unit and are so designed that simple inward movement of adjacent top wall portions serves to align interlocking tongues provided for the interlock, and subsequent outward movement of these top wall portions serves to positively interlock these tongues together.

A further object of the present invention is to provide such a carton wherein each of the inner walls of the hollow wall units are made to slant inwardly toward the base panel provided for the carton so as to provide slanting inner walls for abutting against the end and side walls of the packaged item lying therein.

A still further object of this invention is to provide such a carton wherein each of the end edges at opposite ends of the top wall portions lie along a diagonal line extending between the outer and inner walls of each unit and the locking tongues each lie in the same plane as thier corresponding top wall portions and extend outwardly from the opposite edges thereof.

Other objects, advantages and novel features of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings wherein:

FIG. 1 is a plan view of the blank from which the carton in accordance with the present invention is formed;

FIG. 2 is a plan view of the fully erected carton having interlocked hollow wall units as assembled from the blank in FIG. 1;

FIG. 3 is a sectional view of the assembled carton taken along the line 3—3 of FIG. 3, showing the item to be packaged stored therein;

FIG. 4 is a sectional view similar to FIG. 3 showing the outer cover tightly wrapped about the carton to effect a retention of the item to be packaged by the hollow wall units;

FIG. 5 is a perspective view of a portion of the erected carton in the process of interlocking adjacent hollow wall units thereof; and

FIG. 6 is a perspective view similar to FIG. 5 showing a portion of the assembled carton blank with its hollow wall units fully interlocked together.

Turning now to the drawings wherein like reference characters refer to like and corresponding parts throughout the several views there is shown in FIG. 1 a carton blank generally designated **10**, fabricated of paperboard, cardboard, or the like and including a central base panel **11** of rectangular form having a pair of opposed parallel end edges generally designated **12**, and a pair of opposed parallel side edges generally designated **13**. Each of the end edges **12** include a fold-line **14** and each of the end edges **13** include a fold-line **15**.

End panel means generally designated **16** project outwardly of end edges **12**, and side panel means as generally designated **17** project outwardly of side edges **13** as shown. The assembled carton in accordance with the present invention is erected and portions thereof interlocked together when the end panel means and the side panel means are properly folded, glued and configured along various fold-lines of each of the panel means.

Referring now in more detail to the end panel means **16**, it can be seen that a fold-line **18** is provided in parallel and spaced relationship to end edge **12** thereby defining an outer end wall **19**, and a fold-line **21** is provided outwardly of fold-line **18** in spaced, parallel relationship therewith to thereby define a top end wall **22**. Furthermore, each end panel means includes a fold-line **23** in spaced, parallel relationship with fold-line **21** thereby defining an inner end wall **24**. Glue flaps **25** project outwardly of each fold-line **23** and are each provided with a quantity of adhesive thereon for properly securing the folded end panel means **16** in place.

With respect to the side panel means **17**, it can be seen that fold-lines **26, 27** and **28** are each provided in spaced, parallel relationship to fold-line **18** thereby respectively defining an outer side wall **29**, a top side wall **31**, an inner side wall **32** and a glue flap **33**. Again, each of the glue flaps **33** is provided with a quantity of adhesive for securing the folded side panel means in place.

The interlocking means for locking together the hollow wall units of the carton to be ultimately formed, includes locking tongues **34** extending outwardly of opposite edges **35** of each top end wall **22**. Moreover, locking tongues **36**, similar to locking tongues **34**, are provided for each side panel means **17** as well. Such locking tongues **34** project outwardly of opposite end edges **37** of each top side wall **31**. It can be seen that, for the end panel means **16**, end edges **35** are each formed along a diagonal line extending between fold lines **18** and **21**, while the opposite end edges **37** of the side panel means **16** are each formed along diagonal lines extending between fold-lines **27** and **26**. Moreover, each of the locking tongues **34** and **36** are provided with locking grooves **38**, and each of the inner end walls **24** of end panel means **16** have opposite edges **39** which are slanted inwardly, while each of the inner side walls **32** of the side panels means **17** likewise

have opposite edges 41 which are slanted inwardly for a purpose to be described hereinafter.

Having fully described the specific design of blank 10, it will be seen that the carton may be assembled in accordance with the present invention by simply upwardly folding the outer side panels 29 along their respective fold-lines 15 and upwardly folding the outer end panels 19 along their respective fold-lines 14. Top side wall panels 31 are thereafter folded inwardly along their respective fold-lines 26 and top end wall panels 22 are inwardly folded along their respective fold-lines 18. Finally, inner end wall panels 24 are folded downwardly along their respective fold-lines 21 and inner side wall panels 32 are downwardly folded along their respective fold-lines 27 after which glue flaps 25 and 33 are folded along their respective fold-lines 23 and 28 to overlie the top surface of base panel 11. The carton is therefore fully erected, as shown in FIGS. 2 and 3, so that the end panel means 16 and the side panel means 17 are each formed into hollow or tubular wall units secured in place by means of the glue flaps. As can be seen most clearly in FIG. 3, the glue flaps 25 are secured in place in such a manner that the distance between the lower portions of inner and outer walls 24 and 19 is less than the width of top wall 22 which extends between fold-lines 18 and 21. Also, the height of outer end wall 19 is greater than that of inner end wall 24, and the height of inner side wall 32 is less than that of outer side wall 29, whereby the top side and end walls 31, 22 each slope inwardly toward base 11.

After the carton has been erected in such manner, the adjacent end panels means 16 and side panels means 17 are interlocked together by means of their locking tongues 34 and 36 which are made to inter-engage with one another. FIG. 5 discloses the manner in which top end wall 22 and top side wall 31 are shifted inwardly before the locking tongues 34 and 36 thereof are made to inter-engage. These top walls are so shifted in a manner whereby inner end wall 24 slants inwardly at an angle less than 90° with basepanel 11 while inner side wall 32 is perpendicular with respect to the base panel. By shifting top wall 22 first, it can be seen that locking tongue 36 will be made to underlie top wall 22 during this initial shifting procedure. Thereafter, release of side panel means 17 causes top wall 22 to shift outwardly whereby the locking tongues 36 and 34 interlock as their grooves 38 are mated together. This can be clearly seen in FIG. 6 of the drawings which shows a typical corner of the carton fully interlocked, it being understood that the remaining three corners of the carton are interlocked in an identical manner except that the top end wall 22 at the lower end of the carton is of a shorter width as compared to the top end wall 22 at the top end thereof. In FIGS. 3 and 6 it can be also seen that inner end wall 24 is now substantially perpendicular to base panel 11 so that outer end wall 19 of the end panel means 16 slants outwardly away from the base panel 11 at an angle slightly in excess of 90°. This is also true for the relative disposition of inner side wall 32 and outer side wall 29 of the side panel means 17.

The angularity of edges 39 and 41 of their respective inner walls 24 and 32, i.e., slanting away from their respective fold-lines 21 and 27, avoids any binding between the end panel and the side panel means during the process of interlocking them together as aforedescribed.

The depth of each locking groove 38 is such that inner walls 24 and 32 of the erected carton may each lie perpendicular with respect to the base panel 11 at the time the interlock is fully effected. Also, it can be seen that outer end wall 19 (FIG. 4) and outer side wall 29 will assume a perpendicular position with respect to the base panel 11 as the corresponding top walls 22 and 31 are shifted inwardly to thereby cause their respective inner walls 24 and 32 to be slanted inwardly toward the base panel at an angle less than 90° with respect thereto. FIG. 4 shows a typical section through the erected carton with outer end walls 19 perpendicular to base panel 11, it being understood that the outer side walls 29 are similarly disposed although such is not shown.

Such an inward shift of the top walls 22 and 31 may, therefore, conveniently serve to retain an item 42 in place between inner walls 24 and 32 while resting on the top surface of base panel 11. A portion of inner walls 24 and 32, are, therefore, made to abut against the edges of item 42 so as to conveniently hold it in place without the need for additional flap means or tapes of any type. Of course, such a shifting of the top walls 22 and 31 may be conveniently effected by means of a cover 43 (see FIG. 4) which is shrunk-wrapped over the erected carton after the item 42 is placed therein. Consequently, any shifting of the item within the carton, during shipment, will be substantially minimized.

From the foregoing it will be seen that a carton has been devised which may be conveniently erected as having hollow wall units about its periphery which are capable of being interlocked together by simply shifting of the top walls of these units inwardly in a manner whereby adjacent locking tongues conveniently and effectively inter-engage. The locking tongues are so arranged that simple movement of a pair of opposing inner walls toward the base panel less than 90 degrees with respect thereto permits adjacent locking tongues to inter-engage when such opposing pair of panel means are subsequently moved outwardly. Moreover, an inward shift of the top wall of each of the end panel and side panel means, as by a tightly wrapped outer cover for the carton, causes the inner walls of the end and side panel means to be slanted inwardly thereby abutting against the item or product within the carton. Such a carton as afore-described is erected and assembled from a blank of a simple die-cut construction so as to thereby produce an easily operated and highly economical hollow walled carton capable of retaining a product to be shipped snugly in place without the need for additional elements.

Obviously, many modification and variations of the present invention are possible in the light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

I claim:

1. A carton made from a single blank of material comprising: a rectangular base panel; an integral hollow wall unit along the periphery of said base panel at each of the four end edges thereof; each of said hollow wall units comprising spaced inner and outer side walls interconnected by a top wall, the width of each said top wall being greater than the spacing between the respective ones of said inner and outer side walls at the lower portions thereof; glue flaps on said inner walls for se-

curing each of said units to said base panel; locking tongues on each of said top walls at opposite ends thereof for interlocking adjacent units together through interengagement of adjacent tongues, said locking tongues on a first opposing pair of said units being provided with outwardly open locking grooves, and said locking tongues on a second opposing pair of said units being provided with inwardly open locking grooves for respectively engaging with said outwardly open grooves, said grooves each being of a predetermined width, whereby, upon interengagement of said adjacent tongues, each of said inner walls are disposed perpendicularly with respect to said base panel and each of said outer walls are slanted outwardly with respect to said base panel by reason of said relative widths of said top walls and said inner and outer wall spacings.

2. The carton according to claim **1** further including a wrapper snugly in contact with the outer surfaces of said top walls, said outer side walls and said base panel for causing said outer walls to be disposed perpendicularly with respect to said base panel and said inner walls to be slanted inwardly with respect to said base panel, whereby the product to be supported on said base panel between said opposing hollow wall unit pairs is snugly held in place by said inwardly slanting inner side walls abutting against the end and side walls of said product.

3. The carton according to claim **1** wherein said opposite ends of each said top wall each lie along a diagonal line extending between said outer side walls and said inner side walls of each said unit, said tongues extending outwardly of said opposite edges of each said unit.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,765,598 Dated October 16, 1973

Inventor(s) Charles W. Rosenburg, Jr.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the title page please insert --Assigned to F. N. Burt Company of Buffalo, New York--

Signed and sealed this 23rd day of April 1974.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

ORM PO-1050 (10-69)

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334.