March 9, 1954 J. ROSEN 2,671,598

CORRUGATED BOARD BOX CONSTRUCTION

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Fig. 1.

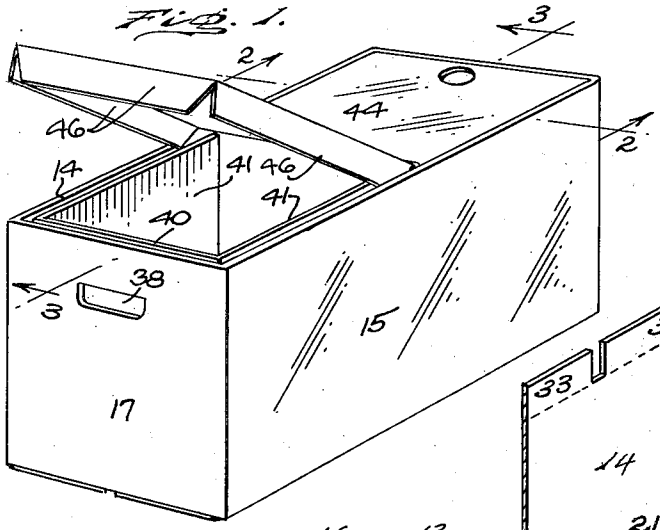


Fig. 10.

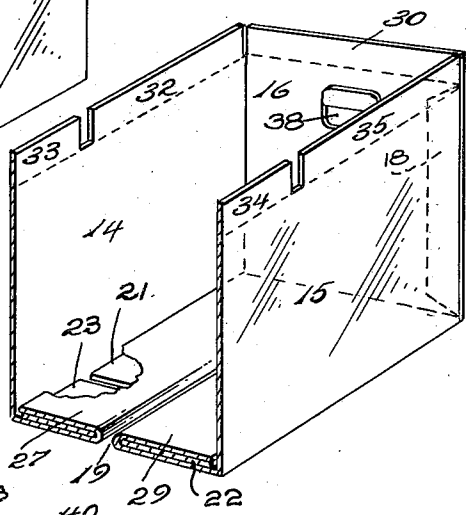


Fig. 4.

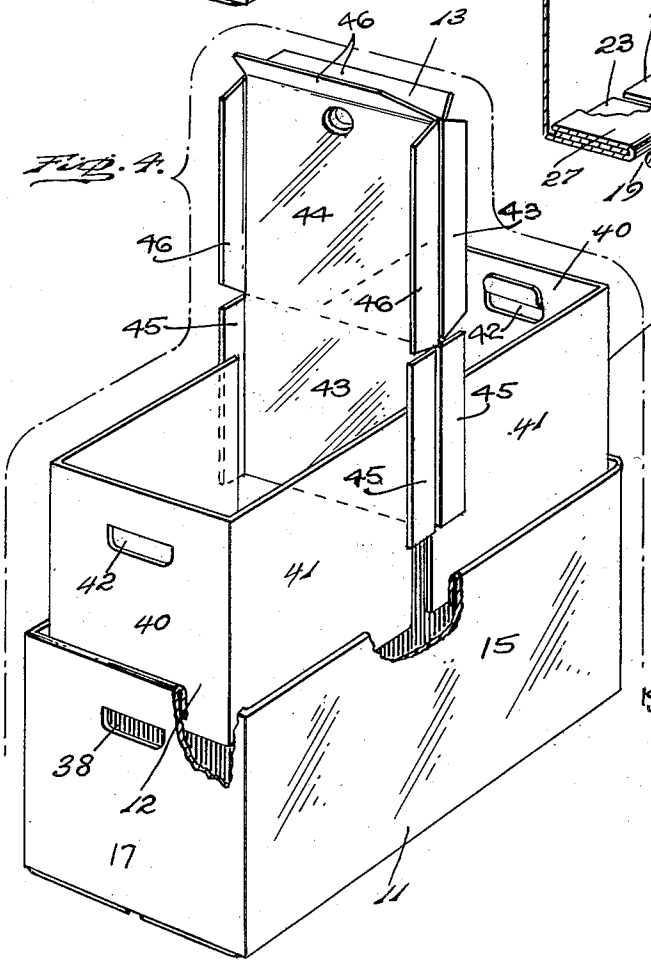
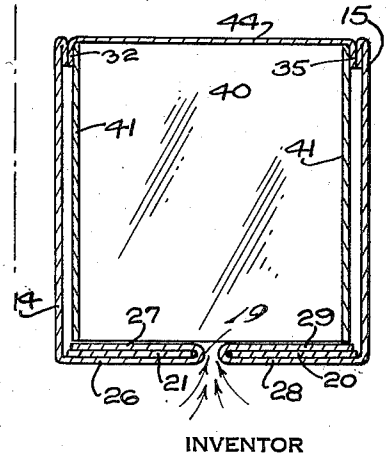


Fig. 2.



INVENTOR
JOHN ROSEN
BY Leon Edelson
ATTORNEY

March 9, 1954 J. ROSEN 2,671,598

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Fig. 5.

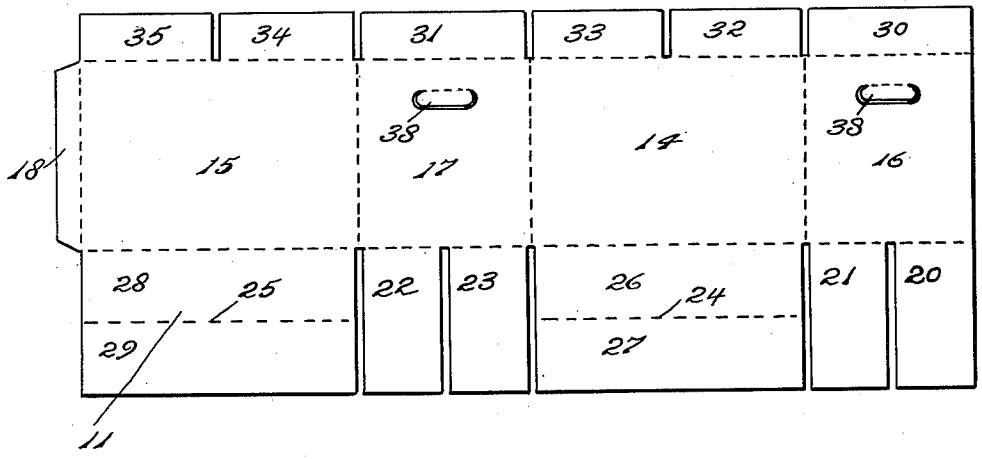


Fig. 7.

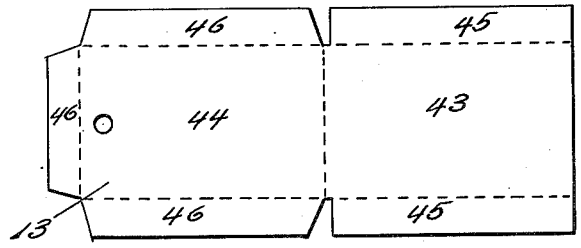
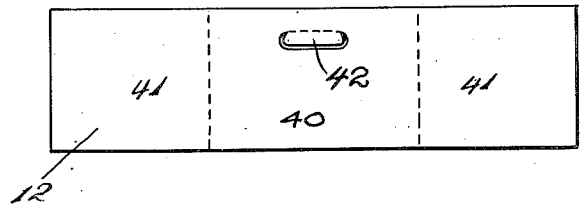


Fig. 6.



INVENTOR
JOHN ROSEN
BY Lew Edelson
ATTORNEY

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Fig. 8.

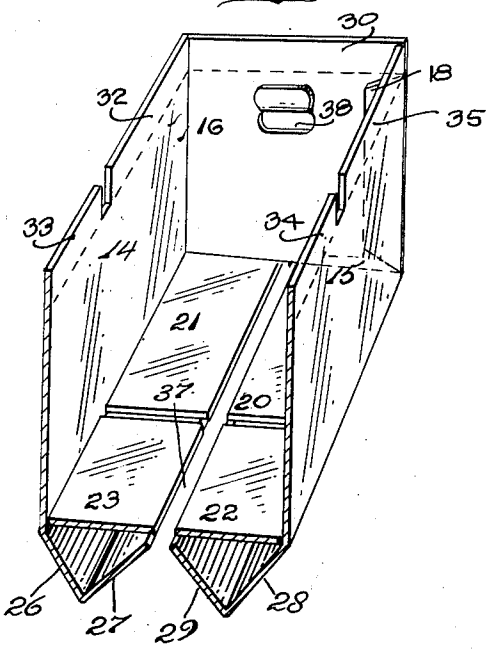


Fig. 9.

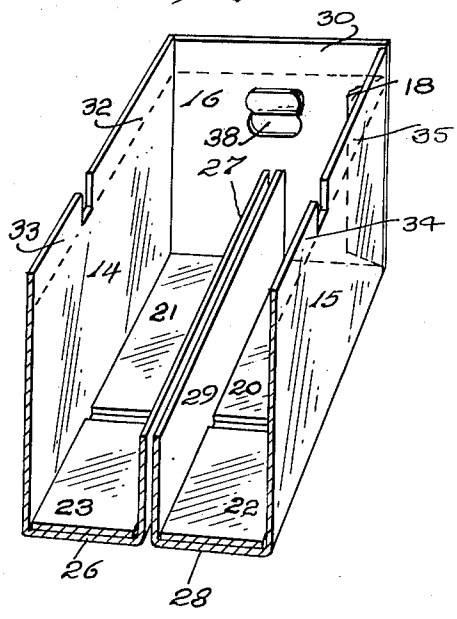
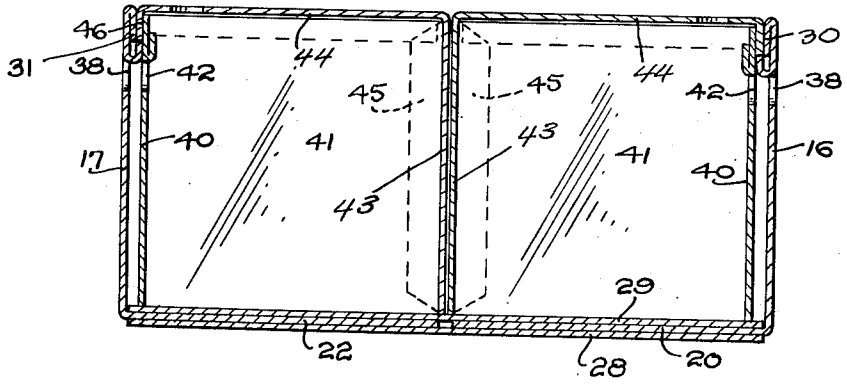


Fig. 3.



INVENTOR
JOHN ROSEN
BY Fear Edelson
ATTORNEY

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UNITED STATES PATENT OFFICE

2,671,598

CORRUGATED BOARD BOX CONSTRUCTION

John Rosen, Philadelphia, Pa.

Application August 23, 1950, Serial No. 180,959

2 Claims. (Cl. 229—15)

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The present invention relates generally to a box construction having for its main objects economy in manufacture, facility in assembly of the parts, and adequate ruggedness and strength.

More particularly, the present invention is directed to the construction of a box made of fiberboard, corrugated cardboard or similar sheet material, in which the several component parts thereof are in the form of die cut blanks suitably scored to facilitate relative folding and assembly thereof into a box structure the bottom and side walls of which are respectively formed of a plurality of superimposed layers of the box-forming sheet material. In the specific embodiment of the invention as illustrated, the bottom of the box comprises three layers of the sheet material while the side and end walls of the box each comprise at least two layers of material.

An important object of the present invention is to provide a box construction as above described wherein there is provided a ventilating slit or opening in its bottom, and wherein the free edges of the sheet material employed in the construction of the box are all substantially protected against the ingress of moisture or other damage thereto.

Other objects of the invention will become apparent to persons skilled in the art from the following specification and the accompanying drawings which are illustrative of a preferred embodiment of the invention, it being understood that variations thereof falling within the scope of the appended claims will be obvious to persons skilled in the art.

In the drawings, Figure 1 is a perspective view of a box constructed in accordance with and embodying the present invention;

Figure 2 is a transverse sectional view as taken on line 2—2 of Figure 1;

Figure 3 is a longitudinal sectional view as taken on line 3—3 of Figure 1;

Figure 4 is an exploded view of the box showing the parts that enter into the box assembly;

Figure 5 is a plan view of the main blank of sheet material of which the box is formed;

Figure 6 is a plan view of one of a duplicate pair of blanks of which are formed the internal liners of the box;

Figure 7 is a plan view of one of a duplicate pair of blanks forming the central transverse partition and top walls of the box;

Figure 8 is a perspective view showing the main shell of the box as it appears during the initial stage of expanding it into box-forming shape;

Figure 9 is a perspective view illustrating a subsequent stage in the setting-up of the box; and

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Figure 10 is a perspective view showing the main shell of the box as it appears in its final expanded form.

The box of the present invention is generally rectangular in horizontal shape and is centrally partitioned as shown to provide a pair of compartments each with a separate cover or lid. Except for the lid all of the walls including the bottom, side and end walls of each compartment are of at least two layers of material, the bottom wall being preferably of three layers of material and provided with a longitudinal slit for the circulation of air throughout the contents of the box.

As best shown in Figure 4, the box comprises five separable elements which may be readily assembled and disassembled. The main body element 11, which is made of a single blank shown in Figure 5, itself constitutes an open-topped box having a three-ply bottom wall. The duplicate units 12, each made of the blank shown in Figure 6, each provide a second ply for the end and side walls of the box, while the duplicate units 13, each made of the blank shown in Figure 7, conjointly provide a centrally disposed, transversely extending two-ply partition which divides the box into two equal compartments. It will be observed that each of the units 13 additionally provides hinged cover or lid for each of the two compartments.

The main blank shown in Figure 5 consists of a single sheet of material which is die cut and scored as shown, the scoring being indicated by the dotted lines. The vertical score lines divide the main body portion of the blank into side wall sections 14 and 15 and end wall sections 16 and 17. The side wall section 15 is provided along its free outer edge with a narrow flap 18 which is designed to overlap the free marginal edge portion of the end wall section 16 and be secured thereto permanently by metal staples or the like. The bottom edges of the wall-forming sections 14, 15, 16 and 17 are each provided with flaps which serve to overlap one another and be interlocked to form a three-ply bottom wall for the box which is longitudinally divided into two halves by an open slot 19 extending the full length of the box. To this end, each of the end wall sections 16 and 17 is provided with a pair of relatively long extensions adapted to be folded into right angular relation with respect to their supporting wall section, the extensions of the wall section 16 being respectively designated 20 and 21 and those of the wall section 17 being designated 22 and 23.

The side wall sections 14 and 15 are respec-

tively provided along the bottom edges thereof with flap extensions 24 and 25 each of a length equal to the length of the wall section to which it is secured and of a width approximately twice that of the flaps extending from the wall sections 16 and 17. At this point, it will be noted that the several flaps 20, 21, 22, and 23 extending from the wall sections 16 and 17 are each of a length approximately one-half the length of the flaps 24 and 25 extending from the wall sections 14 and 15, so that when the several wall sections 14, 15, 16 and 17 are arranged in right angular relation to form the side and end walls of the box and the several flaps extending from the bottom edges of said wall sections are inturned to form the bottom wall of the box, the flaps 20 and 22 conjointly extend along the full length of the flap 25, while the flaps 21 and 23 similarly extend along the full length of the flap 24. The flaps 24 and 25 are each longitudinally scored along the dotted lines shown in Figure 5 to respectively provide them with relatively foldable sections 26 and 27 (for the flap 24) and 28 and 29 (for the flap 25). As will presently appear, the foldable sections 26 and 27 of the side wall section 14 embrace therebetween the coplanar flaps 21 and 22 when the latter are turned inwardly of and at right angles to the end walls 16 and 17, while the corresponding foldable sections 28 and 29 of the side wall section 15 embrace therebetween the inturned coplanar flaps 20 and 22 of the end walls.

Referring again to the blank 11 of Figure 5, it will be noted that the end wall sections 16 and 17 are respectively provided along their upper edges with relatively narrow flaps 30 and 31, while the side wall sections 14 and 15 are respectively provided with similar flaps centrally notched to provide the flap sections 32—33 and 34—35.

The main body portion 11 of the present box is formed from the blank shown in Figure 5 in a manner which will be readily understood from inspection of Figures 8, 9 and 10. For this purpose the blank is folded along the vertical score lines so as to form an oblong box with the overlap flap 18 attached to the end wall 16 by means of wire staples, glue or otherwise. The flaps 20, 21, 22, and 23 which depend from the lower edges of the end walls 16 and 17 are then turned inwardly of the box into horizontal, substantially coplanar relation as shown in Figure 8. The flaps 24 and 25 which are attached to the lower edges of the side walls 14 and 15 are then manipulated in the manner shown in Figures 8 and 9 so that the outer portions 27 and 29 thereof commonly enter the longitudinal slot 37 which extends the full length of the box from one end wall to the other and is formed between the inner longitudinally extending edges of the coplanar flaps 20—22 on the one side and the coplanar flaps 21—23 on the opposite side of the box. The outer portions 27 and 29 are then folded over in the manner shown in Figure 10.

Thus, it will be seen that the relatively foldable sections 26—27 of the side wall bottom flap 24 embrace therebetween one pair of the end wall flaps (21—23), while the relatively foldable sections 28—29 of the opposite side wall bottom flap 25 embrace therebetween the remaining pair of the end wall flaps (20—22). In this manner, the bottom wall of the box is made up of three plies of sheet material and in addition the several flaps cooperate in such manner as to rigidify not only the bottom of the box, but

also impart great rigidity and strength to the entire box. The upper flaps 30 to 35, inclusive, are at this point folded down and serve as a reinforcement for the upper edges of the box. If desired, the end walls 16 and 17 may be respectively provided with conventional hand hold openings 38—38.

The box formed of the blank 11 shown in Figure 5 has thus far been described as having single-ply side and end walls and a triple-ply bottom. It now remains to provide the side and end walls with an additional ply of material and with a centrally disposed dividing partition wall. For the first of these latter objectives, two blanks 12—12 of the form shown in Figure 6 are employed, each comprising an oblong piece of sheet material which is provided with two vertical score lines to divide the blank into a central portion 40 and two end portions 41—41. These blanks are adapted to be folded along the score lines and inserted in the manner shown in Figure 4 so that the central portions 40 thereof respectively provide inner reinforcing plies for the opposite end walls of the main body of the box, while the laterally spaced portions 41—41 thereof constitute corresponding reinforcing plies for the side walls of the main body of the box. The overall length of the blank employed in the units 12 is somewhat less than half the perimeter of the box in consequence of which, when they are inserted into the box in the manner shown in Figure 4, their free ends are separated from each other and provide a space for receiving therebetween the transversely disposed partition units 13—13. Preferably, the central portions of the units 12—12 are each provided with a hand hold opening 42, these latter being adapted for registry respectively with the hand hold openings 38—38 formed in the end walls of the box.

With the reinforcing units 12 fully positioned in the main unit 11 the side and end walls of the box are suitably reinforced. In the next operation of the assembly of the box, the units 13 are inserted to provide a two-ply central partition for the box and to provide a hinged lid or cover for each of the two compartments formed by the partition. The units 13 are each formed of a blank shown in Figure 7 which is suitably scored as indicated by the dotted lines to provide a main body portion 43 and a lid portion 44, the partition portion being provided along its opposite edges with a pair of parallel flaps 45, while the lid portion is marginally provided with three flaps 46. The two units 13 are assembled into the box in the manner shown in Figure 4, with their body portions 43—43 in flatwise engagement and with their corresponding edge flaps 45—45 oppositely turned into substantially coplanar relation and at right angles to the body portions 43—43, each pair of oppositely turned flaps 45—45 being interposed between a side wall of the main box structure and the contiguous portions 41—41 of the reinforcing inserts 40—40. The squared upper ends of the flaps 45—45 of the partition forming members 13 are respectively overlapped by the downturned flaps 32, 33, 34, and 35 of the side walls of the box, in consequence of which the body portions 43—43 of the partition forming members are securely retained within the box against any possibility of vertical displacement therefrom. It will be noted that the transversely extending body portions 43—43 of the units 13—13 are so received within the spaces formed between the proximate free ends of the inserts 40—40 as to prevent any possible shifting of the partition-

ing members lengthwise of the box. With the members 13—13 inserted into position as shown and just described, the portions 44—44 thereof serve as hinged lids for closing the tops of the two separate compartments of the box, the edge flaps 46 of each lid being tucked into the top edges of the box as shown best in Figures 1, 2 and 3. In this connection, it will be observed that when the edge flaps 46 of the lid portions 44—44 are tucked between the top edges of the box proper and the corresponding top edges of the reinforcing inserts 40—40, the lid portions respectively rest upon and are supported against collapse by said top edges of the inserts. Thus, with the lids closed, the boxes may be safely stacked vertically one upon the other.

In the bottom wall construction of the box of the present invention, the dimensions of the several ply-forming sections thereof are preferably such that when the bottom is completely formed it is provided with the longitudinally extending slot 19 best shown in Figure 10 for the purpose of ventilating the interior of the box. It will be understood, however, that where the present invention is employed in a construction of box in which ventilation is neither desired nor required, then the dimensions of the bottom-forming sections may be such that the two facing edges of the two halves of the bottom closely abut one another and so provide a substantially sealed bottom. In each form of the invention the structure is such that one pair of parallel walls are provided with portions that are directed toward each other and form an intermediate layer of a triple-ply bottom, while the other pair of parallel walls are provided with portions which form upper and lower plies between which the intermediate layer is embraced.

It will be understood, of course, that the present invention is susceptible of various changes and modifications which may be made from time to time without departing from the general principles or real spirit thereof, and it is accordingly intended to claim the same broadly, as well as specifically, as indicated by the appended claims.

What is claimed as new and useful is:

1. A box of the character described having a bottom wall, and a pair of opposite side walls interconnected by a pair of opposite end walls disposed at right angles to said side walls, a pair of separately formed, removable internal liners for said box, each liner having a central body portion disposed flatwise against an end wall of the box and a pair of lateral extensions respectively disposed flatwise against the opposite side walls of the box, the extensions along each side wall being disposed in coplanar relation with their free vertical edges spaced from each other, a pair of separately formed, removable members having separable body portions disposed commonly in the space formed between the vertical edges of the lateral extensions of said internal liners to thereby form a two-ply partition, a pair of closure members respectively hinged to each of said partition-forming members, said partition-forming members being each provided with a pair of opposed flap elements respectively adapted for disposition between the side walls of the box and their adjoining internal liner extensions, and said side walls of the box being respectively provided along their top edges with inwardly foldable flaps adapted to overlap the top ends of the flap elements of said partition-forming members whereby to maintain the latter downwardly pressed against the bottom of the box.

2. A box of the character described having a bottom wall, and a pair of opposite side walls interconnected by a pair of opposite end walls disposed at right angles to said side walls, a pair of separately formed, removable internal liners for said box, each liner having a central body portion disposed flatwise against an end wall of the box and a pair of lateral extensions respectively disposed flatwise against the opposite side walls of the box, the extensions along each side wall being disposed in coplanar relation with their free vertical edges spaced from each other, a pair of separately formed, removable members having separable body portions disposed commonly in the space formed between the vertical edges of the lateral extensions of said internal liners to thereby form a two-ply partition, a pair of closure members respectively hinged to each of said partition-forming members, and means for locking said partition-forming members in position against vertical displacement from the box whereby to maintain said members downwardly pressed against the bottom of the box at all times.

JOHN ROSEN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,066,485	Quackenbos	Jan. 5, 1937
2,326,947	Hurrey et al.	Aug. 17, 1943
2,342,564	Van Saun	Feb. 22, 1944
2,344,999	Newsom	Mar. 28, 1944
2,351,825	Limbert	June 20, 1944
2,364,829	Tichenor	Dec. 12, 1944
2,450,419	Cassidy et al.	Oct. 5, 1948
2,475,107	Newsom	July 5, 1949
2,488,194	Hunsworth	Nov. 15, 1949
2,540,712	Cassidy et al.	Feb. 6, 1951

FOREIGN PATENTS

Number	Country	Date
530,091	Great Britain	Dec. 4, 1940