

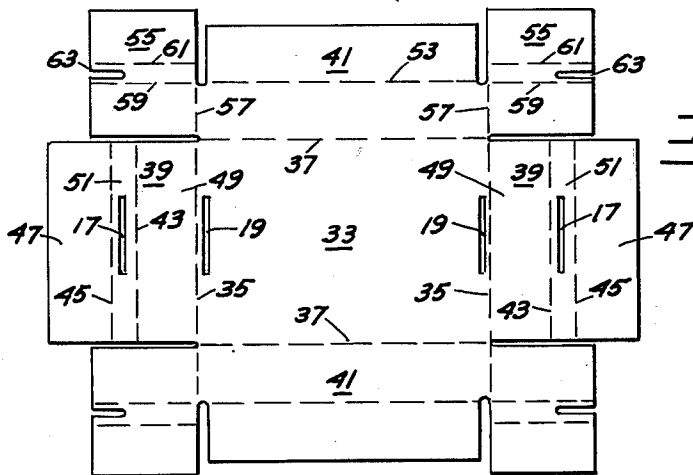
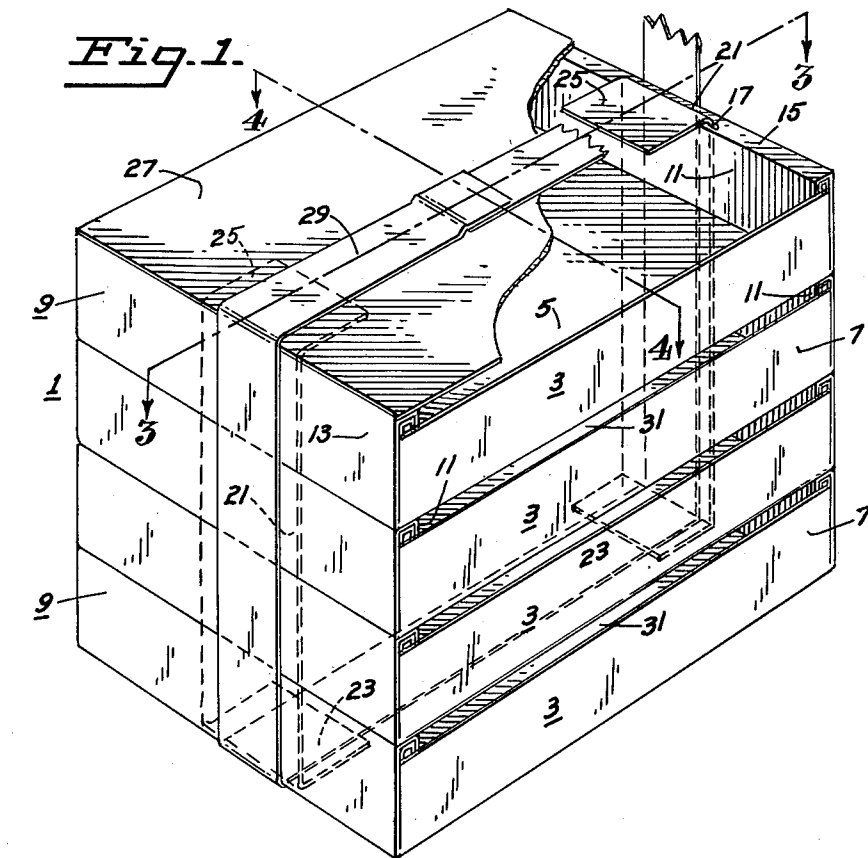
April 29, 1952

W. EVANS
BOX CONSTRUCTION

2,594,628

Filed Jan. 14, 1946

3 Sheets-Sheet 1



April 29, 1952

W. EVANS
BOX CONSTRUCTION

2,594,628

Filed Jan. 14, 1946

3 Sheets-Sheet 2

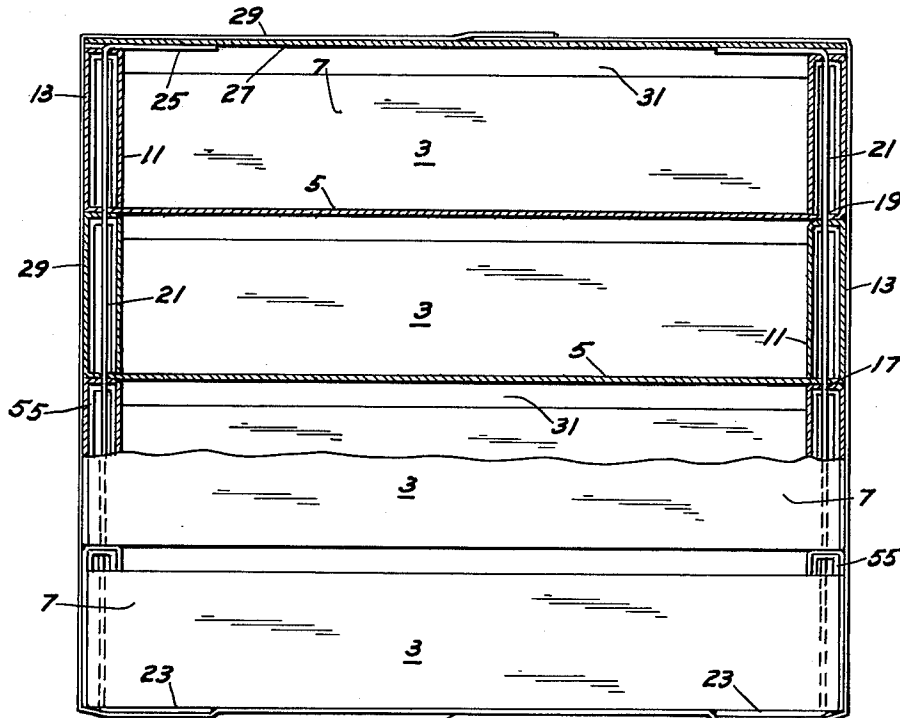


Fig. 3.

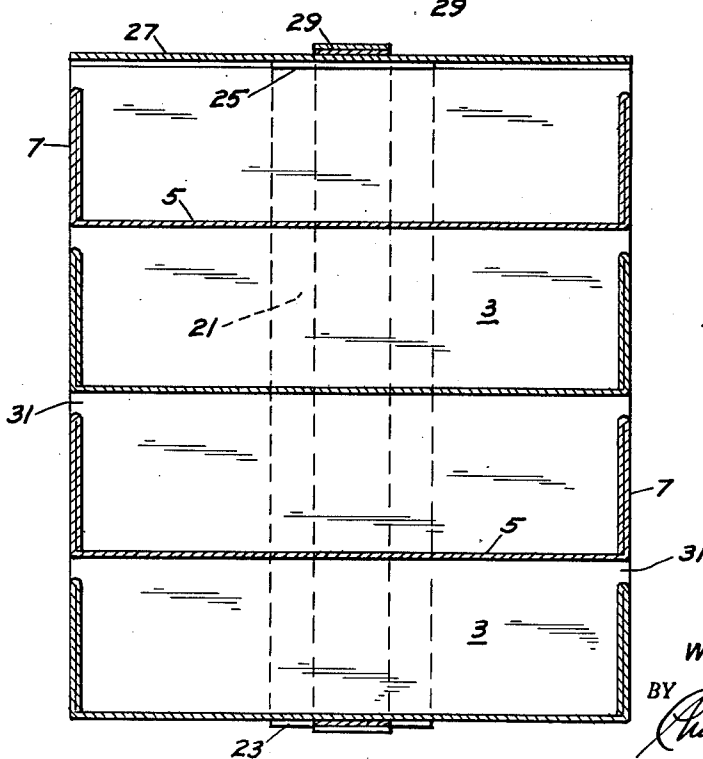


Fig. 4.

INVENTOR.
WIL EVANS

BY *Charles O. Bruce*
ATTORNEY

April 29, 1952

W. EVANS
BOX CONSTRUCTION

2,594,628

Filed Jan. 14, 1946

3 Sheets-Sheet 3

Fig. 5.

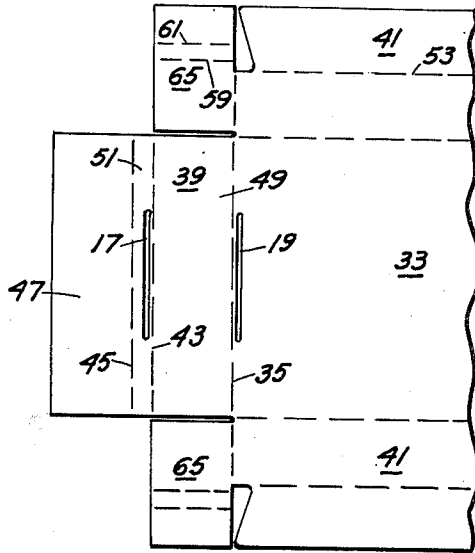


Fig. 7.

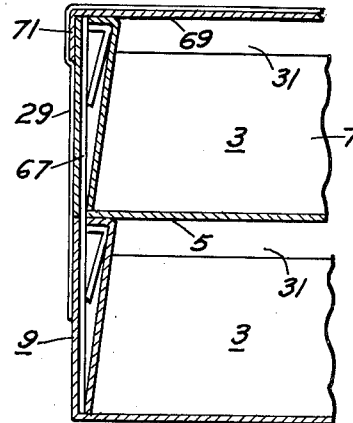
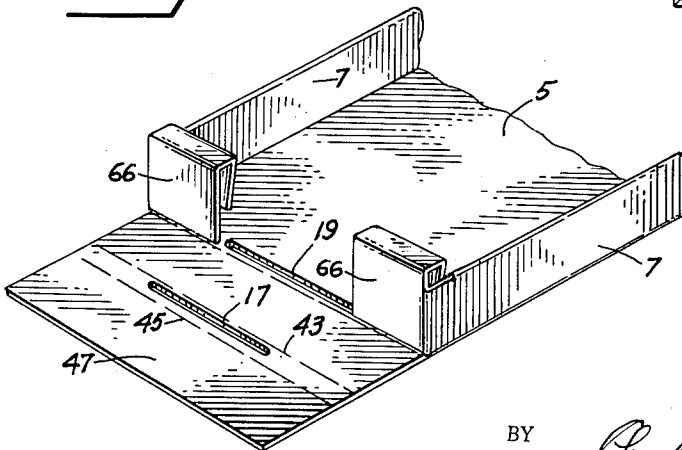


Fig. 6.



INVENTOR.
WIL EVANS
BY *Charles O. Bruce*

UNITED STATES PATENT OFFICE

2,594,628

BOX CONSTRUCTION

Wil Evans, Berkeley, Calif., assignor to California Container Corporation, Emeryville, Calif., a corporation of Delaware

Application January 14, 1946, Serial No. 641,102

4 Claims. (Cl. 229—6)

1

My invention relates generally to boxes and more particularly to a box tray stack and tray components therefor.

Among the objects of my invention are:

(1) To provide a novel and improved assembly of box trays;

(2) To provide a novel and improved assembly of box trays forming a rigid unit, yet which may be disassembled tray by tray without destroying the unitary character of the remaining portion of such assembly;

(3) To provide a novel and improved box tray which lends itself to being stacked in a rigid unitary assembly.

Additional objects of my invention will be brought out in the following description of a preferred embodiment of the same, taken in conjunction with the accompanying drawings wherein—

Figure 1 is a three-dimensional view of a tray stack embodying the features of my invention;

Figure 2 is a plan view of a blank from which a tray may be formed, which is capable of being stacked into the assembly of Figure 1;

Figure 3 is a view in section in the plane 3—3 of Figure 1;

Figure 4 is a view in section taken in the plane 4—4 of Figure 1;

Figure 5 is a fragmentary view of a modified form of blank;

Figure 6 is a fragmentary view of a partially assembled box tray, utilizing the modified blank of Figure 5;

Figure 7 is a fragmentary view in elevation illustrating the manner of stacking the tray of Figure 6.

In general, my invention contemplates the provision of a box tray stack and box trays adapted for this purpose by having end walls so designed as to enable such trays to be assembled on locking strips as they are stacked, to form a rigid unitary assembly capable of being handled as such.

In the specific embodiment of my invention, as illustrated in Figures 1—4, inclusive, of the accompanying drawings, the tray stack comprises a plurality of superposed trays 3, each tray including a bottom 5, side walls 7, and end walls 9. Each end wall is formed of an inner end wall 11 and an outer end wall 13 in spaced relationship to each other, and joined by a bridging wall 15. The bridging wall and bottom have aligned slit openings 17 and 19, respectively, therethrough, adapted for the reception of a locking strip 21.

In stacking the trays, such locking strip, of any suitable material, is threaded through the aligned openings of successive trays at each end, as each

2

tray is added to the stack, leaving an exposed tab 23 at the bottom of the stack and a corresponding exposed tab 25 at the upper end of the stack. During the assembly, the lower tabs 23 are turned in under the bottom tray, and following the completion of the stack, the upper tabs 25 are folded inwardly and held in such position by a cover 27 which is laid across the uppermost tray.

A strip of adhesive tape 29 is then wrapped around the entire stack in the median plane of the locking strips, with the ends of such strip preferably overlapping at some point on the cover. Such adhesive strip permanently seals the turned-under tabs 23 of the locking strips to the bottom of the lowest tray in the stack, and holds the cover in pressure engagement with the folded-in tabs at the top of the stack.

With the ends of the locking strips turned inwardly as described, the trays are securely locked into a unitary assembly and the entire stack may be carried with full assurance against separation of the trays.

The locking strips are substantially hidden within the end walls, and, accordingly, are protected against damage.

It is understood, of course, that the individual trays are loaded or packed with merchandise prior to or as they are stacked. Accordingly, the locking strips should be of material capable of withstanding the tension stresses involved. For the handling of such merchandise as produce, strips of cardboard, preferably of the corrugated type, will serve the purpose adequately.

A wide locking strip is to be preferred as it not only increases the load sustaining ability of the locking strips, but, in a direction edgewise of the strips, the strips become quite rigid when of reasonable width and, therefore, serve to hold the trays very rigidly against shifting.

The adhesive strip, aside from its previously discussed functions, may also be looked upon as enhancing the stability of the assembly. Upon breaking this adhesive strip and removing the cover, the unitary character of the assembly is not destroyed, though the trays may now, upon removing or stripping sufficient of the adhesive strip from the ends of the assembly, be unthreaded from the locking strips in the reverse order of their assembly.

The invention is ideally suited for the packaging and shipping of perishable goods such as produce, in containers from which the merchandise may be dispensed directly to the consumer. The packages are of sufficient rigidity to withstand the rough handling to which they may

3

normally be subjected in the course of shipping.

Having reached their ultimate destination for sale of the merchandise to the consumer, access to the under-trays is impossible until the proprietor removes the topmost tray, and this he won't do until the contents thereof have been sold or nearly sold. In this manner, the purchasers are prevented from turning over the contents of the stack in an effort to select the choicer items, but must confine such practice to the contents of a single tray.

In the matter of shipping perishable goods, ventilation becomes an important factor. This is readily provided for in the instant invention, by designing the trays so that the end walls 9 are of greater height than the side walls 7, thereby creating side spaces 31 in the stack when assembling the trays one upon the other.

A tray suitable for the aforementioned purposes may be formed from the blank of Figure 2. Said blank comprises a rectangular central section 33 to constitute the bottom 5 of the finished tray. Said central section is defined by score lines 35 and 37, and is bounded at each end by an end wall forming section 39, and at each side by a side wall forming section 41.

Each end wall forming section in turn is scored lengthwise by a pair of spaced, parallel and centrally disposed score lines 43 and 45 dividing each end wall forming section into an inner end wall section 47 which forms the inner end wall 11 of the finished tray, an outer end wall section 49 which forms the outer end wall 9 of the finished tray, and an intermediate bridging wall section 51 joining the two.

Each side wall forming section of the blank is scored lengthwise by the centrally disposed score line 53 to provide, when folded along such score line, a side wall of double thickness.

At each end of each inner half of the side wall forming sections and integrally formed therewith, is an end wall reinforcing tab 55 defined from the side wall forming section 41 by a score line 57. Such end wall reinforcing tab is itself provided with a pair of parallel score lines 59 and 61 of slightly less spacing than the spacing of score lines 43 and 45 in the end wall forming sections. Each of these end wall reinforcing tabs is further provided with an edge notch 63 between the spaced score lines.

In assembling the aforementioned blank, the side wall forming sections are lifted along the score lines 37, following which, the end wall reinforcing tabs are folded along their respective score lines 59 and 61 and swung into the positions to be occupied by the end walls. The end wall forming sections are then folded over the intumed reinforcing tabs, and the outer half of each side wall forming section then turned inwardly into the tray to hold the folded end wall forming sections in position. A blank substantially as described and the tray formed therefrom, constitute the subject matter of Patent No. 2,163,117 of June 20, 1939, for Tray, in which patent I appear as a joint inventor.

In adapting such tray to the present invention, I provide the blank with a slit opening 19 at each end of the central section 33, and a similar slit opening 17 in the bridging wall section 51 of each end wall forming section. Upon assembling such blank in the manner previously indicated, the slitted openings at each end will arrive in alignment in the finished tray and thus adapting the tray for assembling in stacks as previously described.

4

A modified form of stacking tray may be assembled from the blank of Figure 5, which corresponds in its major features to that of Figure 2. The difference between the two lies in the fact that the tabs 65 of the modified blank are of reduced length so as to create short reinforcing walls 66 which reach only to the slot 19, whereby the threading of the locking strips will not be complicated, as by the necessity of passing the same through the slots 63 of the first blank when in its assembled condition.

In the tray stack of Figure 1, the locking strips are turned under the bottom tray of the stack and turned inwardly at the top for enhancing the weight supporting ability of these strips. Accordingly, the strips must pass through the bottom of the lowest tray to achieve this feature.

In the case of light packs or where the stack may involve but two or so loaded trays, the adhesive strip 29 may be relied on to support the weight of suspended trays, leaving to the locking strips 67, the function of holding the trays in alignment against shifting. When such is the situation, the locking strip need not pass through the bottom of the lowest tray nor turn in at the top, but may terminate within the end walls of the bottom and top trays as indicated in Figure 7.

The cover 69 is preferably formed with depending flaps 71 at the ends thereof, which flaps are held against the ends of the tray stack by the applied adhesive strip 29. Such flaps may terminate alongside the uppermost tray or may extend down to and including the lowermost tray.

While the embodiments of the invention illustrated and described in detail, represent preferred embodiments, it is apparent that other tray designs may lend themselves to stacking in the general manner indicated, namely through the use of locking strips, which locking strips, furthermore, need not be separate elements but could be integrally united across the bottom of the stack.

I, accordingly, do not desire to be limited to the details illustrated and described, except as may be necessitated by the appended claims.

I claim:

1. A unitary assembly of box trays comprising a plurality of individual box trays each having a bottom, side walls and end walls, the end walls each having a slit passage therethrough; said trays being stacked in close supporting relationship one upon another with the slit passages at corresponding ends of the trays in alignment; and means for holding said stacked trays in a unified assembly, said means including strip material passing up through the said aligned slit passages.

2. A unitary assembly of box trays comprising a plurality of individual box trays each having a bottom, side walls and end walls, the end walls and said bottom having aligned slit passages therethrough; said trays being stacked one upon another with the slit passages at each end of the stack in alignment; and means for holding said stacked trays in a unified assembly, said means including strip material passing up through the aligned passages at each end of the stack and terminating in exposed tabs folded inwardly of the uppermost tray, and a cover laid across said uppermost tray.

3. A unitary assembly of box trays comprising a plurality of individual box trays each having a bottom, side walls and end walls, the end walls

5

being of greater height than the side walls and each including an inner end wall and an outer end wall joined along their upper edges, each said end walls at the upper edge thereof and said bottom having aligned slit openings there-through forming a vertical slit passage through such end wall; said trays being stacked one upon another with the slit passages at each end of the stack in alignment; and means for holding said stacked trays in a unified assembly, said means including strip material engaging the bottom of the stack and passing up through the aligned passages at each end of the stack and terminating in exposed tabs folded inwardly of the uppermost tray, a cover laid across the end walls of said uppermost tray and said inwardly folded tabs of said strip, and means holding said cover in pressure engagement with said uppermost tray end walls and said inwardly folded tabs.

4. A unitary assembly of box trays comprising a plurality of individual box trays each having a bottom, side walls and end walls, the end walls being of greater height than the side walls and each including an inner end wall and an outer end wall in spaced relationship to each other and joined by a bridging wall, said bridging wall and said bottom having aligned slit openings therethrough forming a vertical slit passage through such end wall, said trays being stacked one upon another with the slit passages at each end of the stack in alignment; and means for holding said stacked trays in a unified assembly, said means including strip material en-

6

gaging the bottom of the stack and passing up through the aligned passages at each end of the stack and terminating in exposed tabs folded inwardly of the uppermost tray, a cover laid across the end walls of said uppermost tray and said inwardly folded tabs, and means holding said cover in pressure engagement with said uppermost tray end walls and said inwardly folded tabs, said means including adhesive tape encircling said stacked trays in the median plane of said strip material.

WIL EVANS.

REFERENCES CITED

- 15 The following references are of record in the file of this patent:

UNITED STATES PATENTS

	Number	Name	Date
20	23,031	Kinsey	Feb. 22, 1859
	835,161	Lyman	Nov. 6, 1906
	1,411,678	Walker	Apr. 4, 1922
	1,490,973	Hodgson	Apr. 22, 1924
	1,501,314	Dailey	July 15, 1924
25	1,957,153	Smiley	May 1, 1934
	2,161,639	Schmidt	June 6, 1939
	2,163,117	Evans et al.	June 20, 1939
	2,344,804	Crosby	Mar. 21, 1944
30	2,468,951	Barter	May 3, 1949

FOREIGN PATENTS

	Number	Country	Date
	103,653	Sweden	Feb. 3 1942