Nov. 17, 1936. N. TUFTS ET AL 2,061,414

NESTING BOX

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FIG.1.

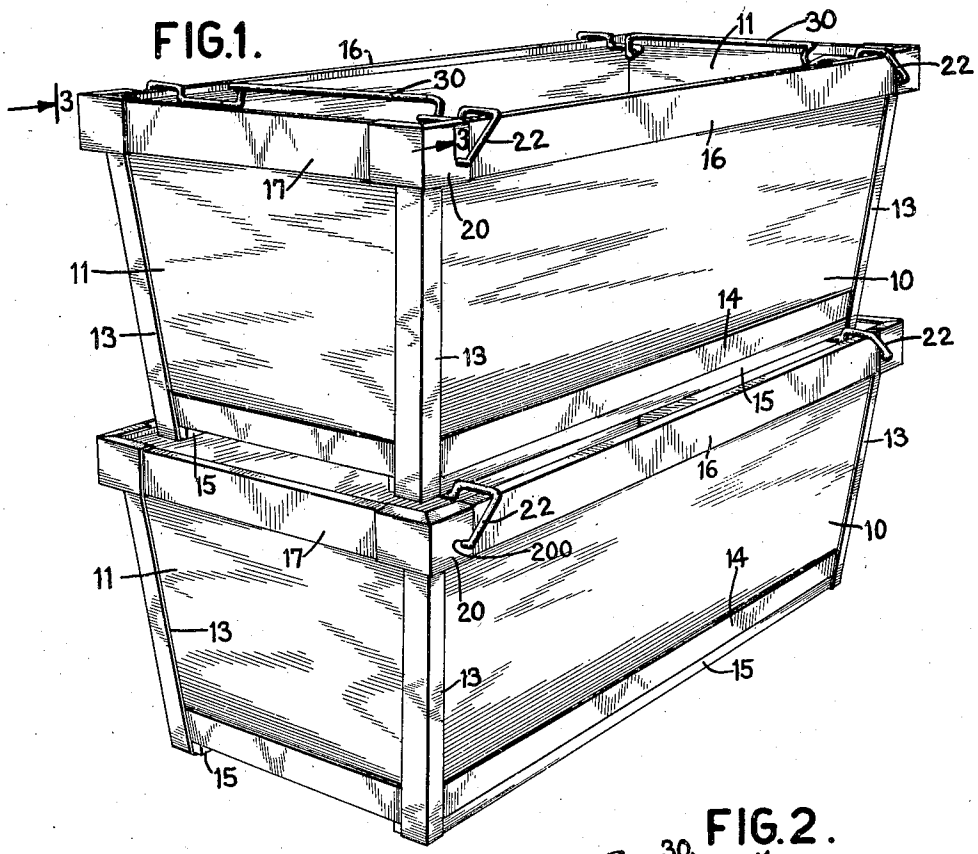
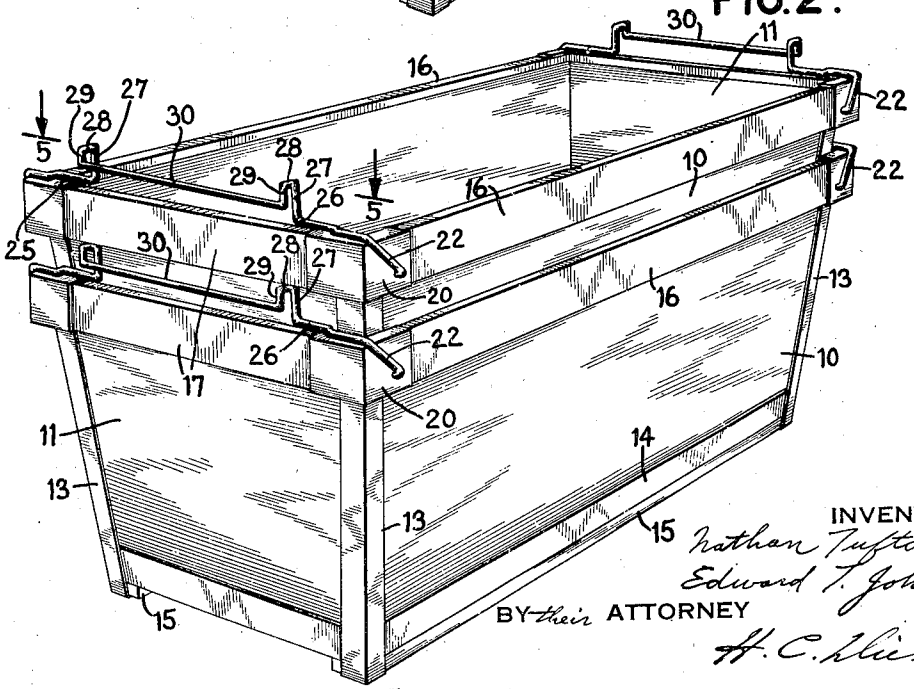


FIG.2.



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FIG.3.

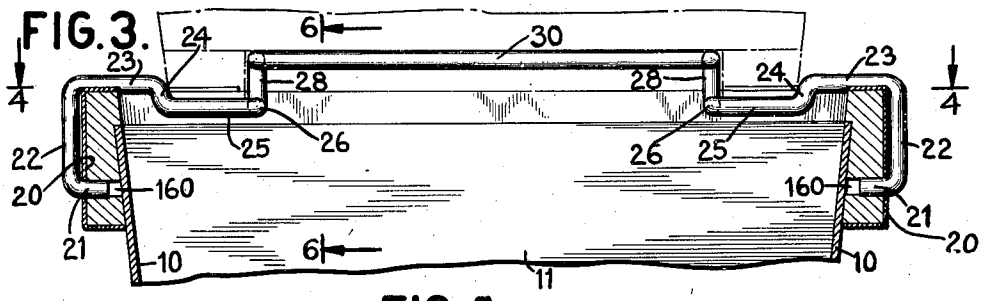


FIG.4.

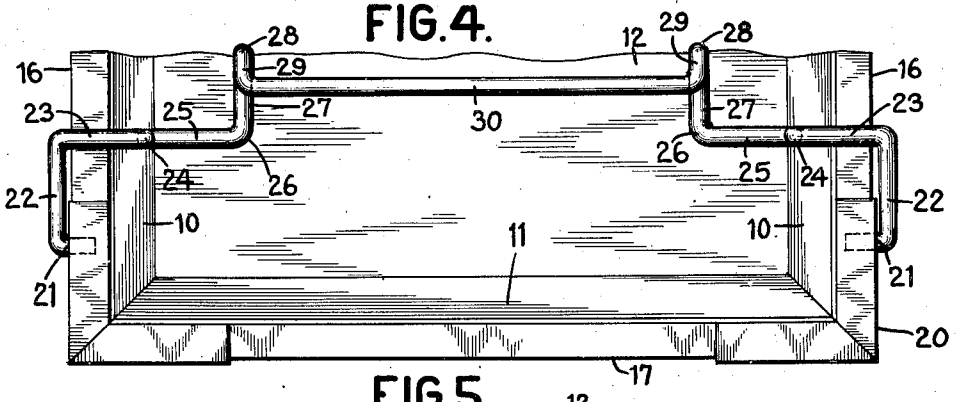


FIG.5.

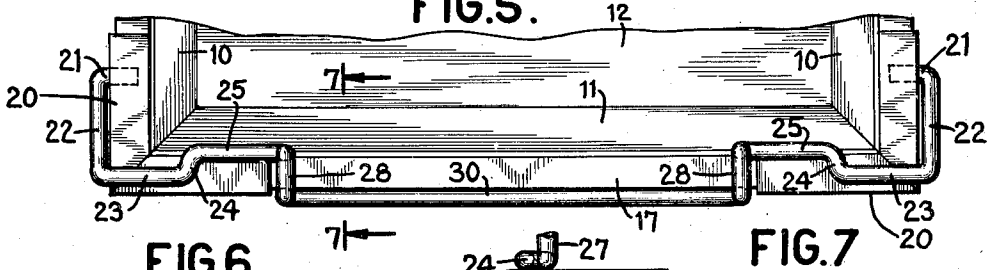


FIG.6.

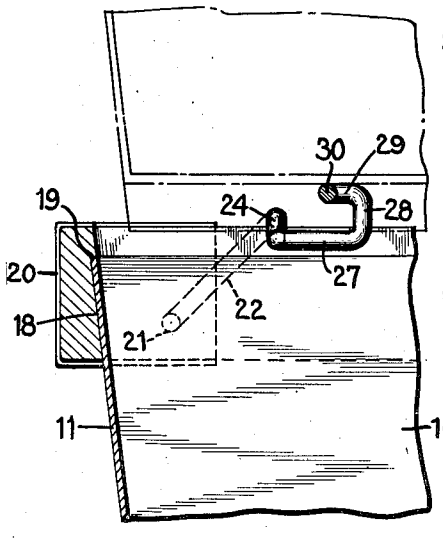
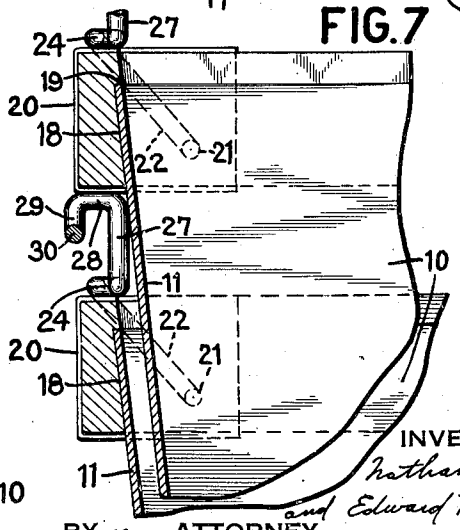


FIG.7



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NESTING BOX

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Application April 15, 1931, Serial No. 530,244

12 Claims. (Cl. 217—13)

This invention relates to nesting containers such as boxes formed of wood or sheet material of various sorts or a combination of both. It has particular reference to the provision of suitable devices for enabling boxes of this character to be stacked either when loaded or in a nested condition when empty.

A feature of the invention is in the provision of a metal bar or bail pivoted adjacent each of the ends of a box near its upper edge and adapted to be shifted either into a position in which it will permit a series of similar boxes to be stacked, one on the other while loaded, or into a position in which nesting of the boxes will be permitted. The construction is such that when the bars or bails of a series of similar boxes are in the second position, they will cooperate with shoulders near the upper edges of the box next above to hold the boxes of the series in properly spaced relation. The bails are preferably formed of iron and may be designated "stacking irons".

The boxes particularly contemplated by the present invention are of a type embodying a series of rails forming a stiffening frame encircling the top edges of the box and a plurality of runners along the bottom of the box. The stacking irons or bails are pivotally supported by metal reinforcing elements provided at the corners of the top frame member and they are adapted to be swung out into the planes of the end walls of the box, having portions at this time resting upon the upper edges of the end top rails. When swung into their other positions the bails have a portion resting upon the longitudinally extending top rails and they then provide suitable seats for the runners of the box next above so as to prevent lateral movement of one box relative to another.

A further feature of the improved form of stacking iron is its availability as a handle for separating and lifting the boxes whether they are in nested relation or arranged one on top of the other in loaded condition. Furthermore, if the boxes are provided with lids the irons may be utilized to retain the lids on the boxes. Thus the relatively simple, unitary member provided at each end of a box serves a multiplicity of purposes. It constitutes a very inexpensive means of accomplishing the various results specified and at the same time is neat, compact and light, all of which are desirable characteristics.

With these and other features and advantages of the invention in view, one illustrative form of the same will now be described in detail in conjunction with the accompanying drawings, in which:

Fig. 1 is a perspective view showing a pair of boxes provided with the present improvements in stacked relation as when loaded.

Fig. 2 is a perspective view of the boxes shown in Fig. 1 but in nested relation.

Fig. 3 is a partial, transverse, sectional view taken through the box adjacent one end along the line 3—3 of Fig. 1.

Fig. 4 is a partial plan view of the box as shown in Fig. 3.

Fig. 5 is a view similar to Fig. 4 but with the stacking iron shown in the other of its positions.

Fig. 6 is a vertical, sectional view of a portion of the box and is taken along the line 6—6 of Fig. 3, and

Fig. 7 is a vertical, sectional view taken along the line 7—7 of Fig. 5 illustrating a portion of a pair of boxes in nested relation.

It will be understood that the drawings in this case serve to illustrate simply one suitable form of box embodying the present improvements. The box shown is particularly adapted for the shipment of bananas, being very sturdy and rugged but relatively light. It may be readily used for shipment, loaded in one direction and empty in the other, over a long period of time. Obviously, the features of the invention are applicable as well to boxes adapted for other uses.

The box may consist primarily of longitudinally extending side walls 10 and end walls 11 formed of plywood, veneer wood, or laminated boards or fibreboard, or other suitable sheet material commonly employed in the construction of boxes. In order to permit nesting of a group of boxes, the walls are preferably tapered inwardly from the top toward the bottom 12 of the box. The bottom may be formed of any suitable material, which may be either the same as or different from the material employed in the walls of the box. At the four substantially vertical corners, the end walls may be reinforced and held together in any suitable way, as by the provision of metal angle members 13 which may be nailed, riveted or otherwise secured to the walls. Similar connections and reinforcements may be provided between the walls and the bottom of the box as by the use of angle members 14. Beneath the lower leg of each of the angle members 14 there is preferably provided a longitudinally extending runner 15, formed of wood, or other suitable material, and adapted to bear the weight of the box and the contents thereof. The corner members 13 are preferably extended downwardly to a sufficient extent to encompass the outer corners of the runners.

Along the upper edges of the side and end walls of the box there may be provided suitable reinforcing members such as rails 16 and 17 fitted together at the four corners, as by mitering the ends, to form a rectangular frame. These rails may suitably be formed of wood having their inner surfaces partially cut away and inclined along the portion 18 to correspond with the angle of inclination of the walls of the box. A shoulder 19 may be provided at the upper end of the surface 18 and adapted to fit over the upper edges of the walls to protect the same. To assist in binding the corners of the frame formed by the members 16 and 17 and to afford a further reinforcement at these corners, there is preferably provided a metal corner member 20 at each of the joints between the side and end rails. These corner elements may be of any suitable form, preferably having bent-over portions cooperating with the upper and lower edges of the rails 16 and 17. They may be secured in any suitable way, as by means of nails, staples, rivets or the like.

Coming now to the principal feature of the invention, there is provided at each end of the box a rod or bar suitably bent to form a bail, in the manner to be presently described in detail, and adapted to extend from one side of the box to the other across each end. These bails will be referred to as stacking irons, although they perform a variety of functions, as has been previously explained. At their extreme ends the stacking irons are provided with inturned portions 21 adapted to be passed through openings 200 in the corner elements 20 at the opposite sides of the box. The ends 21 of the irons also extend into aligned openings 160 formed in the side rails 16. At substantially right angles to the extensions 21 there are provided arms 22 adapted to swing in a vertical plane through an arc of approximately 90°. At substantially right angles to the arms 22 there are provided inwardly extending portions 23 carried at all times in a horizontal position or parallel to the bottom of the box. A short offset portion 24 formed as a continuation of each of the portions 23 extends at substantially a right angle to the latter. When the iron is in the position shown in Fig. 2, the offsets 24 lie in a horizontal plane, while when the iron is shifted into the position shown in Figs. 1 and 3, the offsets are disposed substantially vertically. A horizontal portion 25 extends inwardly from the ends of each of the offsets, this portion being in the same horizontal plane as the portion 23 when the iron is in the position of Fig. 2 but being in a lower plane when the iron is in the position of Fig. 3. At the end 26 of each of the portions 25, a right angled bend is provided to form a section 27 which, with the iron in the position of Fig. 2, extends substantially vertically but in the position of Figs. 3 and 4 extends substantially horizontally. Another right angled bend at the end of each section 27 provides portions 28 which, in the position of Fig. 2, are substantially horizontal and extend outwardly from the end wall of the box, while in the position of Figs. 3 and 4 they extend vertically. Still another right angled bend at the end of each portion 28 serves to provide portions 29 which, in the position of Fig. 2, are substantially vertical and in the position of Figs. 3 and 4 are substantially horizontal. A final right angled bend at the end of each of the portions 29 serves to provide a continuous horizontal portion 30 which joins the bent formations at the opposite sides of the iron and thus completes the bail. The portion 30 is parallel in direction to the portions 21, 23 and 25 and is at all times maintained in a horizontal position, or parallel to the bottom of the box.

Referring now to Figs. 1 and 3, it will be seen that when the stacking irons are rocked inwardly toward the middle of the box, the portions 23 will be supported by the upper edges of the rails 16 and the portions 25 form suitable seats adapted to receive the bottoms of the runners 15 of the next box above in a series of stacked boxes. At the same time the substantially vertically disposed portions 24 and 26 serve to confine the opposite edges of the runners and thus prevent any lateral displacement of the upper box with relation to the lower box. The main horizontal portions 30 of the irons may at this time cooperate with and provide support for the bottom member 12 of the box above. Now, when the stacking iron is rocked outwardly through an angle of about 90° into the position shown in Figs. 2, 5 and 7, the portions 23 will rest upon the upper edges of the rails 17 or the inturned portions of the corner elements 20 to prevent any further movement of the iron. The portions 28, which at this time will be horizontally disposed, serve to cooperate with the shoulders presented by the lower edges of the members 17 and thus hold the upper of a pair of nested boxes in a predetermined spaced relation with respect to the lower box. The extent of separation between the undersurface of the rail 17 of the upper box and the upper surface of the corresponding rail of the lower box will depend upon the length of the portions 27 of the irons. These portions should be made of sufficient length to provide ample spacing of the nested boxes to permit the insertion of the fingers between the adjacent rails and thus permit the boxes to be readily separated. It will be noted that when the stacking irons are in the second position mentioned, the portions 30 may be grasped and serve to provide suitable handles for the lifting of the boxes. The portions 30 may similarly serve as lifting handles for the uppermost box of a stack when the irons are in the position indicated in Fig. 1. Due to the vertical disposition of the portions 27 when the boxes are nested, there will be little or no tendency to distort the irons by virtue of the weight of the upper boxes resting upon the irons.

Various other features and advantages of the construction disclosed herein will be apparent to those skilled in the art. While one admirable illustrative form of the invention has been disclosed in considerable detail, it will be understood that various features of the construction may be modified without departing from the general spirit and scope of the invention.

What we claim is:

1. In a nesting box having sides, ends and a bottom, a frame surrounding the upper edge of said sides and ends, and members attached to said frame adjacent the corners, said members being so mounted as to be shiftable into a position within the area of the top of the box and having portions adapted when so shifted to engage the bottom of a similar box and support the same, and said members being arranged to be shiftable into another position to permit nesting of a similar box and being so shaped as to engage the frame of the nested box when in such other position before the wedged condition is reached.

2. In a nesting box having sides, ends and a bottom, a frame surrounding the upper edge of

said sides and ends, and members attached to said frame adjacent the corners, said members being so shaped and arranged as to be shiftable into a position within the area of the top of the box and having portions adapted when so shifted to engage the bottom of a similar box and support the same, and said members being arranged to be shitfable into another position to permit nesting of a similar box, the members when shifted into the second position having portions resting upon the upper edge of the frame and other portions adapted to engage the frame of a nested box to support the same before the wedged condition is reached.

3. In a nesting box having sides, ends, and a bottom, a frame surrounding the upper edge of said sides and ends, corner reinforcements at the corners of said frame, and a bail at each end of said box, said bails having their ends attached to said corner reinforcements and being so shaped and arranged as to be shiftable either into a position to engage the bottom of a similar box and support the same or into a position to engage the frame of a similar box in nested relation to support the latter before the wedged condition is reached.

4. In a nesting box having sides, ends, and a bottom, a frame surrounding the upper edge of said sides and ends, corner reinforcements at the corners of said frame, longitudinally extending runners at the bottom of said box, and a bail at each end of said box, said bails having their ends attached to said corner reinforcements and being so shaped and arranged as to be shiftable either into a position to engage the bottom of a similar box and support the same or into a position to engage the frame of a similar box in nested relation to support the latter before the wedged condition is reached, said bails being provided with depressed seats adjacent their ends adapted to receive the runners of the box above when the bails are in the first mentioned position.

5. In a nesting box having sides, ends, and a bottom, a frame surrounding the upper edge of said sides and ends, longitudinally extending runners at the bottom of said box, and members attached to said frame adjacent the corners, said members being so shaped and arranged as to be shiftable into a position to engage the bottom of a similar box and support the same, and said members being so mounted as to be shiftable into another position to permit nesting of a similar box and having portions arranged to engage the frame of the nested box before the wedged condition is reached, the members being provided with depressed seats adjacent their ends adapted to receive the runners of the box above when the bails are in the first mentioned position.

6. A stacking iron for boxes which comprises an angularly bent rod having pivot portions at the ends adapted to be attached to a box, portions adjacent the ends adapted to rest upon the upper edge of the box, and portions forming a pair of seats intermediate the ends depressed below said second mentioned portions adapted to receive the runners at the bottom of a box resting on the iron, and a portion between said seats disposed out of axial alinement therewith.

7. A stacking iron for boxes which comprises an angularly bent rod having pivot portions at the ends adapted to be attached to a box, portions forming depressed seats intermediate the ends adapted to receive the runners at the bottom of a box resting on the iron, and a portion adapted to engage and support the bottom of such a box between the runners.

8. A stacking iron for boxes which comprises an angularly bent rod having inwardly bent portions at the ends adapted to be attached to a box, portions forming depressed seats intermediate the ends adapted to receive the runners at the bottom of a box resting on the iron, and a portion adapted to engage and support the bottom of such a box between the runners, said portion being so shaped as to serve as a handle by which the box to which the iron is attached may be lifted.

9. In a nesting container having inwardly sloping sides and ends, a bottom, and a shoulder adjacent the top at each end, a rockably mounted stacking iron at each end arranged to be shifted to either of two positions, said iron having portions bent at substantially a right angle to each other, one of said portions being adapted to engage and support the bottom of a similar container above it when said iron is in one position, and the other portion being adapted to engage and support the shoulder of a similar container when the iron is in another position.

10. In a nesting container having inwardly sloping sides and ends, a bottom, and a shoulder adjacent the top at each end, a rockably mounted stacking iron at each end arranged to be shifted to either of two positions, sections of said iron adjacent the ends being arranged to engage either the upper edges of the sides of the container or the upper edge of the end of the container depending upon the position of the iron, said iron having portions bent at substantially a right angle to each other, one of said portions being adapted to engage and support the bottom of a similar container above it when said iron is in one position, and the other portion being adapted to engage and support the shoulder of a similar container when the iron is in another position.

11. In a nesting container having sloping sides and ends, a bottom, and shoulders adjacent the top at the ends, a stacking iron attached to the sides adjacent each end of the container, said irons being arranged to swing into either of two positions, said irons having sections adapted to engage with different portions of the upper edges of the container depending upon their positions to either permit stacking of a series of similar containers or the nesting of such containers, portions of said irons being arranged to engage the shoulders of a container above to support the latter when in nested relation before the wedged condition is reached.

12. In a nesting tapered box having sides, ends and a bottom and stop means thereon, members pivotally supported by the sides of the box adjacent each end, said members being so shaped and arranged as to be adapted to be swung into position to engage the bottom of a similar box and support the same, and said members being so shaped and arranged as to be adapted to be swung into another position to permit nesting of a similar box within said box, portions of said members being arranged to engage the stop means on said nested similar box to support the same before the wedged condition is reached.

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