Nov. 27, 1934. W. O. BROWN 1,982,367

BOX OR CRATE

Filed Aug. 18, 1930 2 Sheets-Sheet 1

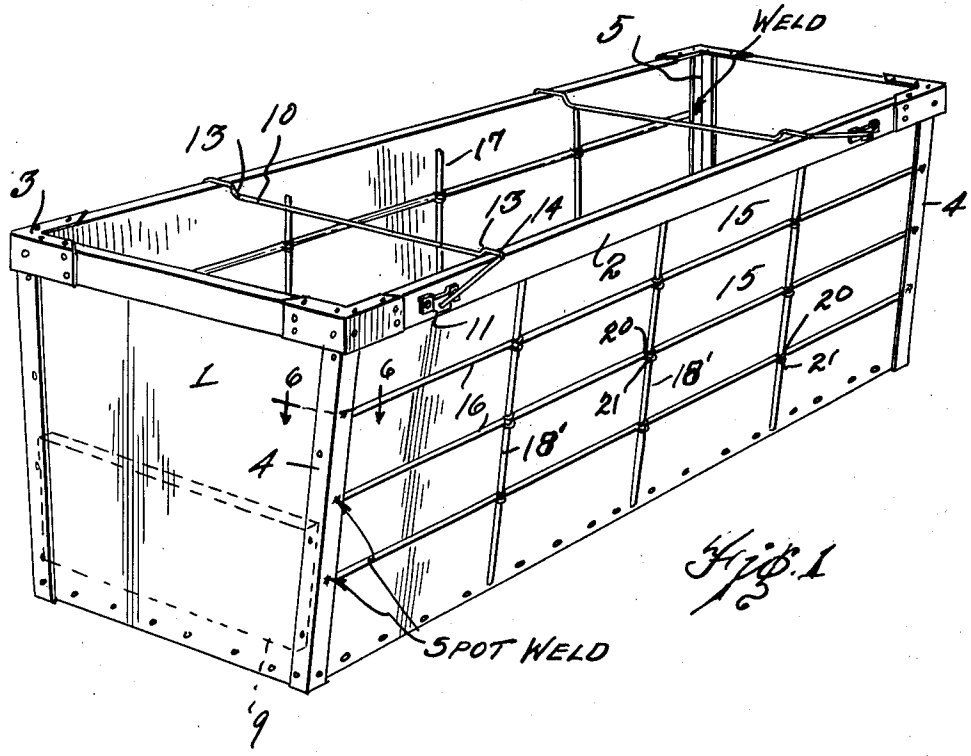


Fig. 1

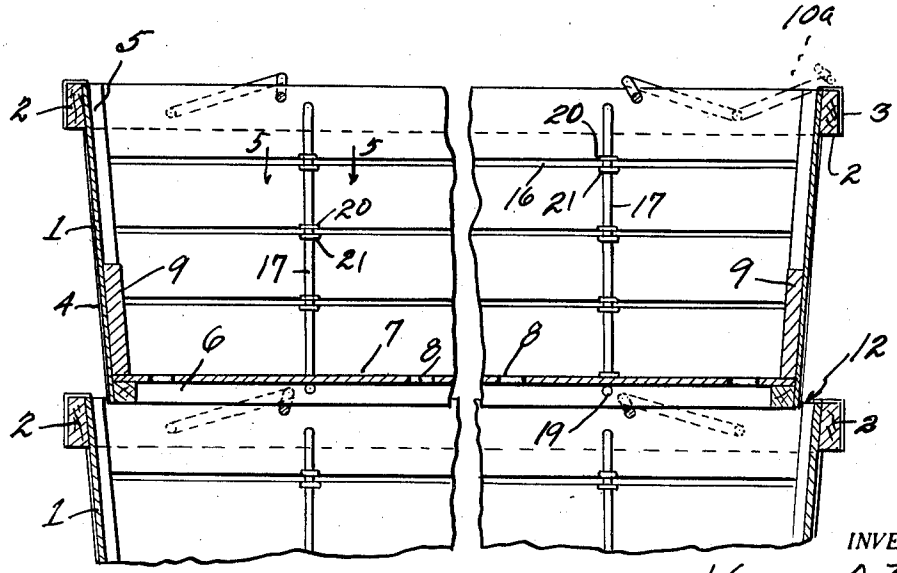


Fig. 2

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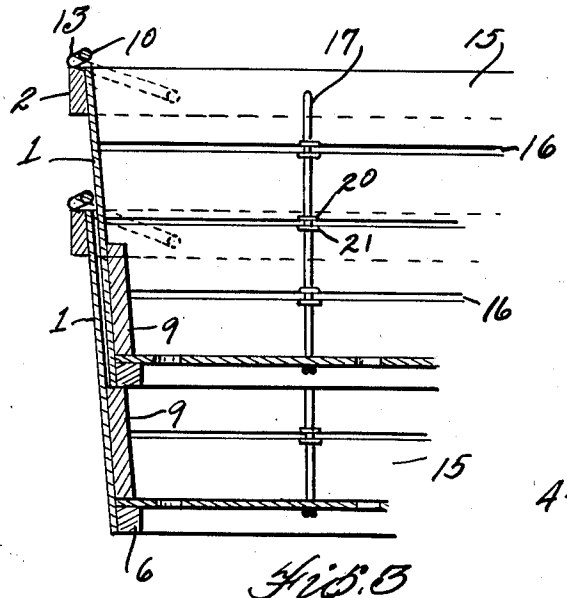


Fig. 3

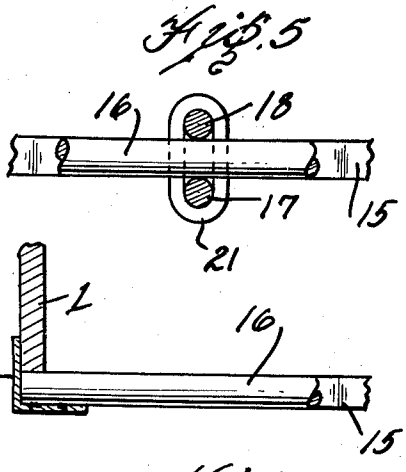


Fig. 5

Fig. 6

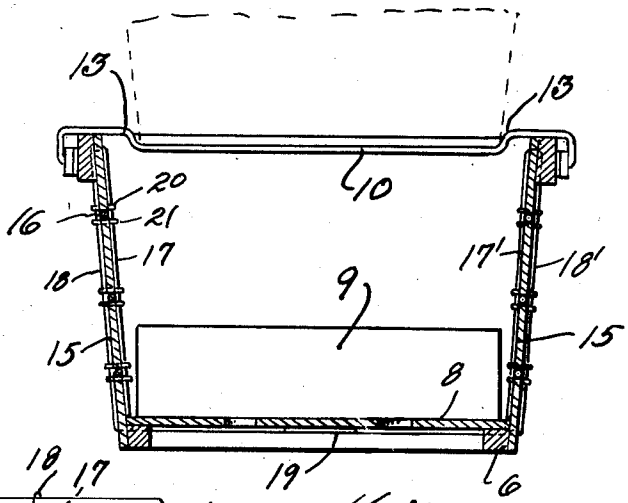


Fig. 4

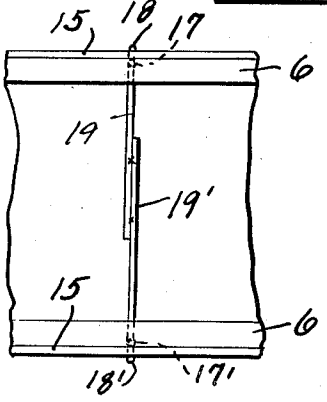


Fig. 7

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UNITED STATES PATENT OFFICE

1,982,367

BOX OR CRATE

Walter O. Brown, Detroit, Mich.

Application August 18, 1930, Serial No. 475,883

10 Claims. (Cl. 217—36)

This invention relates to boxes or crates, and the object of the invention is to provide a new construction of box of a light weight material such as plywood or veneer and of such strength and rigidity as to withstand ordinary handling without breakage or deformation.

A further object is to provide a box of such construction as to permit stacking in nested relation when empty whereby they occupy comparatively small space and in which relationship they are prevented from a wedging relation one with the other.

A further object and feature of the invention is to provide a box having tapered side and end walls permitting the same to be nested and means provided to limit the extent to which one box may be inserted into the other, and further to provide, in conjunction with the box, what I have termed stacking irons or bails whereby the boxes when filled may be stacked one over the other, the bottom of the upper box resting upon the bail of the lower box, thus providing a space between the bottom of one box and the top walls of the lower box ensuring ventilation, and with the stacking irons so constructed as to prevent lateral displacement of one box relative to the other thereby enabling the filled boxes to be readily transported in such stacked relation.

These and other objects and features of the invention are hereinafter more fully described and claimed, and the preferred form of construction of a box embodying my invention is shown in the accompanying drawings in which—

Fig. 1 is a perspective view of the box.

Fig. 2 is a vertical longitudinal section of two boxes in superimposed relation.

Fig. 3 is a transverse section showing two boxes in nested relation.

Fig. 4 is a transverse section of one box and indicating a second box in superimposed relation.

Fig. 5 is an enlarged detail showing the construction of the strengthening wires taken on line 5—5 of Fig. 2.

Fig. 6 is an enlarged section of a corner of the box taken on line 6—6 of Fig. 1.

Fig. 7 is a bottom view of the box showing the strengthening wires.

This box is intended for various uses and is particularly adaptable for use in the handling of fruit, groceries etc., and boxes of this character are particularly adaptable for use in stores to which goods are distributed from a central station and the boxes when empty are returned to the central station.

A feature of this invention is to provide a box that is of tapered form enabling the same to be nested when empty and thus a single wagon may pick up and return to a central point a great many more boxes than is possible with boxes of a form not capable of being nested.

Firstly, therefore the invention seeks to provide a tapered box and, in order to secure light weight, one made of plywood means being provided to prevent the boxes from becoming wedged together when nested and to enable the same to be stacked in superimposed relation when filled and thus filled boxes will occupy a small amount of space and the tapered box will provide for ventilation for which purpose the bottom of the box at least is provided with apertures. So far as these features of the invention are concerned, the side and end structures of the box may be of imperforate plywood such as is indicated by the end panels in Fig. 1. The box is provided with a top rail 2 extending entirely about the periphery of the box at the top with the corners reinforced by metal angle plates thus covering the upper edge and sides of the rails at the corners and the corners of the box are reinforced by the external metal angle 4 and the internal metal angle 5 between the flanges of which the side and end panels are secured. A rectangular frame 6 is provided the bottom 7 of the box which is apertured as at 8 for the purpose of ventilation. The end panels on the interior have a block 9 secured thereto and extending a distance above the bottom to provide a support for the bottom of a nested box as indicated in Fig. 3. The height of this member 9 is just sufficient to prevent the walls of the nested boxes from becoming wedged together.

When the boxes are filled they may be stacked in storage or in the merchant's place of business and the goods maintained open to ventilation by use of the stacking irons or bails 10. These are simply metal rods of a general U form the legs of which enter eyes 11 provided in the side rails 2 of the box and may fold inwardly to the position shown in Fig. 1 in which position the cross portion between the end parts extends transversely of the open top of the box. The irons may be folded outwardly to the position shown in the dotted lines at 10a in Fig. 2 in which position the cross bar rests on the end rail of the box. When the stacking irons or bails 10 are positioned as shown in Fig. 1, another box may be supported thereon shown in Figs. 2 and 4. This permits ventilation through the space 12 between the bottom of the upper box and the top of the lower box as will be understood from

Figs. 2 and 4. To prevent lateral displacement of the boxes when thus stacked the cross bars of the bails 10 are bent to provide shoulders 13, 13 adjacent each of the side walls of the box forming a loop like portion 14 engaging over the top of the side rails 2 shown in Fig. 1. These shoulders 13 are a distance apart slightly greater than the width of the box bottom and provide a means preventing lateral displacement of the upper box relative to the lower one. This enables the filled and stacked boxes to be transported by shop trucks or the like without the possibility of becoming displaced through jar and shock to which they are subjected in such transportation and further insures the boxes when stacked in a shipping room from accidentally being displaced and thus they are arranged in orderly appearance.

This, irrespective of the specific manner of construction of the side walls except that at least the side walls be tapered for the purpose stated, one of the objects of the invention is attained by use of the tapered wall box and stacking irons ventilation being provided by the apertures in the bottom of the box and the peripheral space 12 about the box at the top.

It is further desirable to secure a box of great strength and light weight. This may be attained by the construction shown in Fig. 1 in which the side walls are formed of slats 15, 15 of plywood which are spaced vertically and, in the said space between slats, a wire 16 is positioned having its ends welded to the metal corner portions 4 and 5 between which the said wire ends and slats are positioned. This arrangement securely ties the box longitudinally. To further strengthen the box utilizing the slat construction, I provide a series of wire loops having the legs 17 on the inner side of the slats forming one side wall and 18 on the outer side thereof and this wire 18 terminates in a portion 19 extending part way across the bottom 8 of the box as shown in Fig. 7. The opposite side wall of the box has a series of loops consisting of the portion 18′ on the exterior of the slats and 17′ on the interior. The end 19′ of the wire 18′ of each loop lies in side by side relation on the under side of the box with the end 19 and may be soldered thereto.

It will be noted that these wire ends 19 and 19′ on the under side of the box bottom are above the lower face of the bottom frame 6, this frame being notched to permit passage of the wires between the frame and the box 5 as will be understood from Figs. 2 and 4. These wire loops 17, 18 and 17′ and 18′ may be tied together by wire rings 20 and 21 above and below the longitudinal wires 16 which pass between the loops and also may be soldered at this point thus effectively tying the wires and slats together and providing a light plywood construction capable of withstanding comparatively great strains without distortion.

The side rails 2 heretofore mentioned have a tapered inner face in contact with the side and end walls and thus a greater width of rail is provided on the under side than at the top. This provides means to enable a person to grasp the box in handling the same.

The box is preferably made of plywood, fiber or like material and preferably reinforced at the upper edges by the heretofore mentioned side rails 2 which extend also across the end walls at the top. The essential features of the box and the iron are that the box shall be of tapered form having the inclined side and end walls preferably of panel like form and stacking irons of U shape having the legs inturned at the free ends for pivotal relation with the respective opposite side walls and adjacent the respective end walls so that in turning the irons inwardly the cross members of the irons are supported by the upper edges of the said side walls to which the irons are pivoted. The cross members of each iron are on opposite sides of a transverse center plane of the box when folded thereover and the legs lie on the outer face of the side walls to support the side walls from material bulging from the weight of superimposed loaded boxes resting upon the cross members of the iron. Preferably also these irons are depressed or have an offset portion 10 on which a second box may be stacked with the bottom thereof below the upper edge of the lower box whereby material lateral displacement is prevented, the said irons being further turnable to a position clear of the open top to permit the second box to be introduced thereinto in nesting relation.

From the foregoing description it will be evident that the various objects of the invention are attained; that a box is provided that is light in weight, that is readily handled when emptied or filled, and that is adaptable, when filled, to be stacked in superimposed relation and still provide for ventilation which is particularly advantageous when the boxes are filled with fruit as ventilation prevents sweating of the fruit and checks decay.

Having thus briefly described my invention, what I claim and desire to secure by Letters Patent of the United States is—

1. A box or crate of rectangular form having inclined sides and end walls, an open top, and a perforate bottom, the said box being formed with an external frame about the upper edge greater in thickness at its lower edge than at the top edge, a pair of bails pivoted to opposite side rails of substantially U form adapted when swung outwardly to have the cross portion thereof rest upon the upper edge of the end rails and when swung inwardly to rest upon the side rails and extending transversely of the open top of the box, said transverse portion being bent adjacent each side rail providing shoulders spaced to permit the positioning of a second box thereon between the said shoulders thereby supporting the box with its bottom in spaced relation with an under box to provide for ventilation.

2. A box or crate of rectangular form having an open top, inclined side and end walls and a bottom therefor less in width and length than the top, a pair of stacking irons of U form having the free ends of the legs pivotally secured to the opposite side walls respectively of the crate below the top edge and respectively adjacent each end adapted to be turned with the part between the two leg portions lying transversely of the box and resting upon the side walls thereof and with the leg portions lying practically in contact with the sides of the side rails or turned to position with the transverse portion of the irons resting upon the end walls substantially as and for the purpose described.

3. In a nesting box having an open top, sloping sides and ends, and a bottom less in area than the area of the open top, a frame surrounding the upper edge of the said sides and ends, and a stacking iron adjacent the top of the box and near each end thereof, said stacking irons each having their ends pivotally attached to the opposite side rails of the frame and being shiftable either to position to engage the bottom of a

similar box and support the same or to a position to rest upon the respective ends of the box and permit the boxes to be nested, said stacking irons each having a form to permit the bottom of a superimposed box to extend to position below the plane of the open top of a lower box.

4. In a nesting box having an open top, sides, ends, and a bottom less in area than the top, a frame surrounding the upper edge of the said sides and ends, longitudinally extending side members at the bottom of the box, and stacking irons pivotally supported by the side member of the upper frame adjacent the corners, said stacking irons being shiftable into a position to engage the bottom of a similar box and support the same and shiftable into position to rest upon the upper edge of the box ends to permit nesting of a similar box, said stacking irons being provided with seats adapted to receive the side members at the bottom of a superimposed box when in the first mentioned position.

5. A nesting box or crate of rectangular form having a bottom, side and end walls and an open top, a pair of stacking irons attached to the box and movable to position to rest upon the upper edge of the side walls of the box and extending transversely of the open top in relatively spaced relation thereon and individually in spaced relation with the respective ends of the box to provide a support for a superimposed box or moved to a position with the transversely extending portion thereof resting upon the upper edges of the said ends practically clear of said open top.

6. A nesting box or container of rectangular form having inclined side and end walls and a bottom less in width and length than the top, the top being open, a pair of stacking irons each consisting of a metal rod bent to the form of a U with the ends of the legs inturned for pivotal relation with the side walls of the box and the cross member thereof having an offset portion, said irons each having the legs thereof pivotally secured to the respective side walls on the outer face thereof and adjacent the respective end walls of the box and being turnable to position the cross member of each iron transversely of the box to rest upon the upper edges of said side walls with the offset portion below said upper edges of the side walls to provide a support for a second box or to a position clear of the open top to permit the second box to be nested therein.

7. A nesting container having an open top, inwardly sloping side and end walls and a bottom less in area than the top, a frame reinforcing the upper edge of the said side and end walls, a rail at the bottom of the box lying longitudinally of each side wall, a pair of stacking irons U shaped in form, the legs of both said irons being pivotally associated with the respective opposite side frames at points respectively adjacent opposite ends of the box, the legs of each of the irons being on the exterior of the side walls and the transverse portion connecting the legs of said irons each being shaped to provide a shoulder adjacent the inner faces of the respective side frames at the top when folded thereover, the said transverse portions of said irons when so folded lying on the upper edges of said side frames in spaced relation approximately equi-distantly from a transverse center plane of the box to support a second box with the bottom side rails engageable with the said shoulders to prevent lateral displacement of the second box, said irons further being turnable outwardly from such position to a position clear of the open top to permit a second box to be nested therein.

8. A nesting container of rectangular form having inclined side and end walls, and a bottom less in width and length than the top, the top being open, a pair of stacking irons U shaped in form, both said irons having the legs thereof pivotally secured to the respective opposite side walls of the box at points adjacent the respective end walls permitting the same to fold inwardly to position the cross members of the irons transversely of the box in equi-distantly spaced relation from a transverse center plane thereof, the cross members connecting the legs of the irons each having an offset portion extending below the upper edge of the box when folded thereover providing a support for a second box, said irons being foldable outwardly to position the cross members clear of the open top to permit a second box to be nested therein.

9. A box or crate of rectangular form having inclined side and end walls providing a bottom less in width and length than the top, the top being open, a pair of stacking irons U shaped in form, the two legs of both said irons each having inturned ends pivotally supported respectively to the opposite side walls of the box near the top and lying on the exterior face thereof and the cross portions of each of said irons when turned inwardly extending transversely of the box and supported by the respective upper edges of said side walls to provide a support for a second box at points approximately equi-distant from the respective ends thereof, said irons being turnable about the axis of the inturned ends to a position clear of the open top to permit a second box to be nested therein.

10. A nesting box or crate of rectangular form having a bottom, a pair of side walls, a pair of end walls and an open top greater in length and width than the bottom, a pair of stacking irons U shaped in form, the two legs of both irons being respectively pivotally associated with the respective opposite side walls near the top and adjacent the respective end walls, said irons being movable to position the portion connecting the legs thereof on the upper edge of the side walls of the box transversely of the open top on the same side of the transverse center plane of the box as its pivotal connection to thereby provide a support for a second box each side of its transverse center plane, or movable to a position to permit a second box to be nested therein.

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