Jan. 15, 1935. J. M. WOLFENDEN 1,987,727

COLLAPSIBLE CRATE

Filed May 5, 1933 2 Sheets-Sheet 1

Fig. 1.

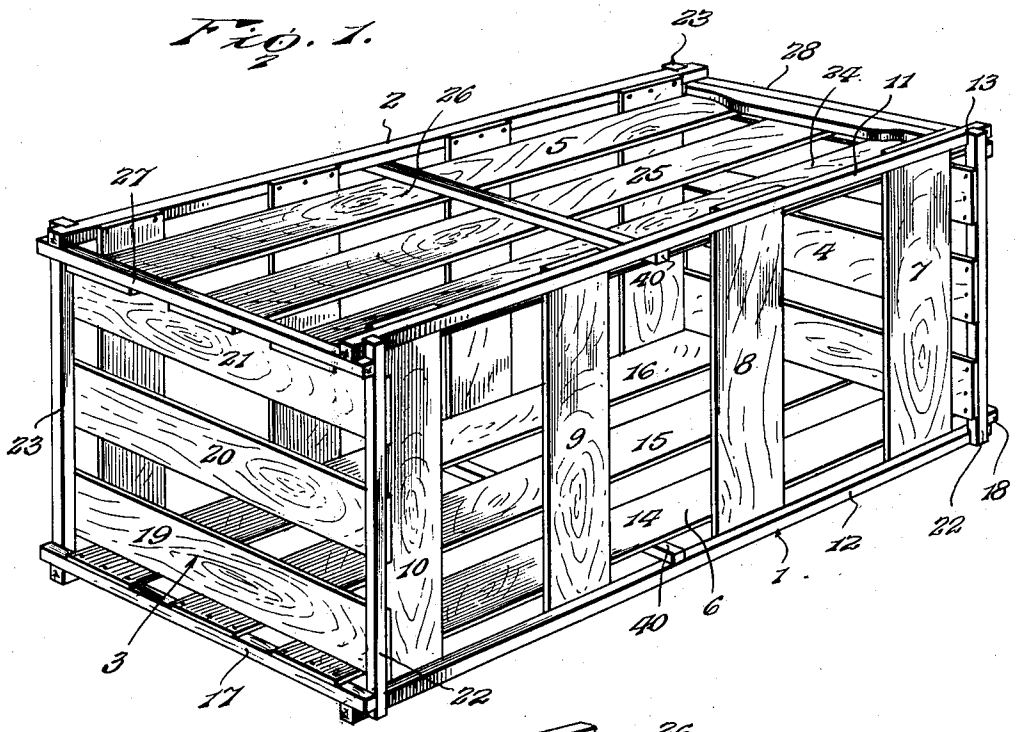
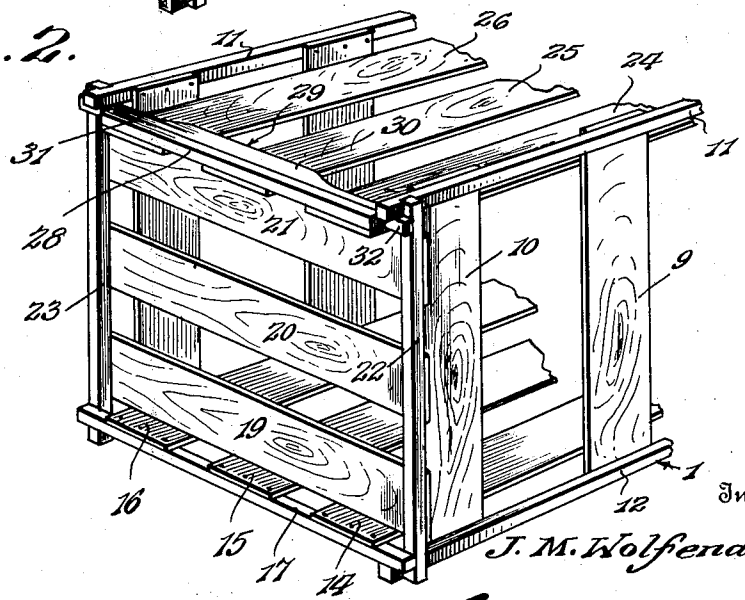


Fig. 2.



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Fig. 3.

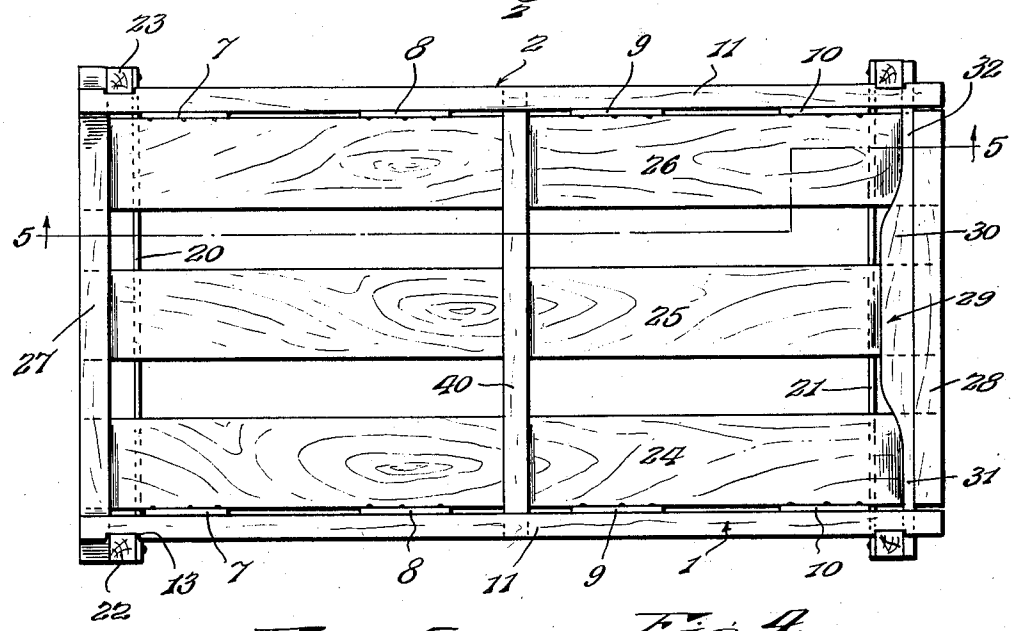


Fig. 5.

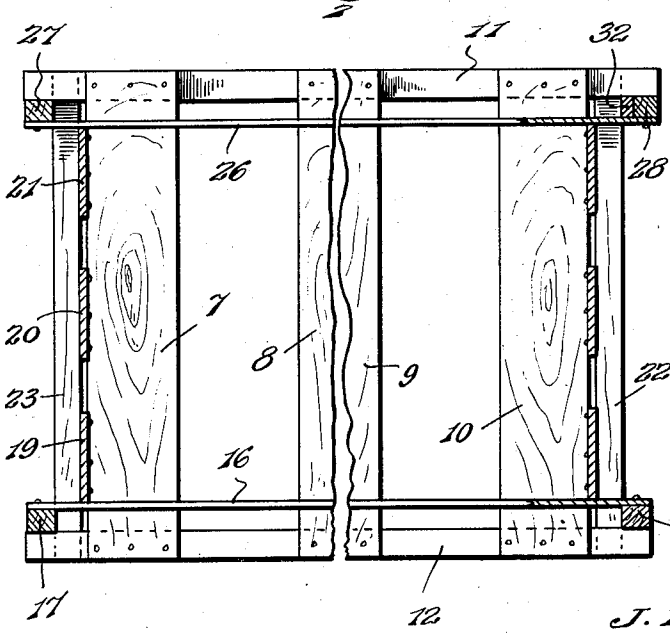
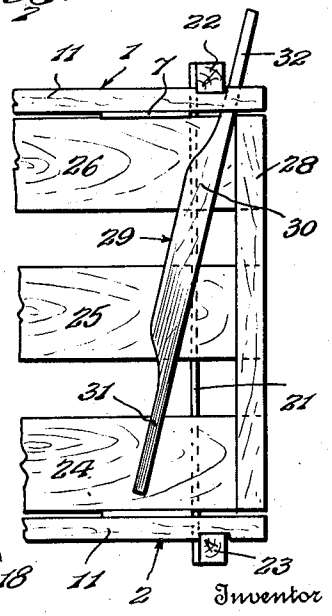


Fig. 4.



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UNITED STATES PATENT OFFICE

1,987,727

COLLAPSIBLE CRATE

John M. Wolfenden, Palatka, Fla.

Application May 5, 1933, Serial No. 669,575

1 Claim. (Cl. 217—43)

This invention relates to an improved collapsible crate.

It is an object of my invention to provide a collapsible crate which may be shipped from place to place in knock-down form and, when ready for use, may be set up quickly without the use of nails, screws, wire, or the like, and which will be very rigid in construction after setting up.

Another object of the invention is to provide a device of this character utilizing a key which is engaged with the end rail employed with the top of the crate for locking the top in closed position.

A further object of the invention is to provide a collapsible crate wherein the key employed in conjunction with the top will be provided with tapering ends so that a top of a given length may be utilized for either the bulge pack form of packing or the flat pack.

A further object of the invention is to provide a collapsible crate of such construction that, when storing away a number of crates, a flow of air will be permitted to circulate about the crates so that the goods carried therein may be kept fresh.

A further object of the invention is to provide a device of this character wherein the veneer, or thin strips of wood, employed will be disposed on the inner side of the rails so that strain upon the fastening devices used for fastening said veneer to said rails will be prevented.

And a still further object of the invention is to provide a device of this character which may be formed of wood, or light weight metal, or both, and which may be manufactured cheaply, and which will be very rugged when assembled.

Other and incidental objects of the invention, not discussed in the foregoing, will be apparent upon a reading of the following description and referring to the accompanying drawings forming a part of my application, in which drawings, Figure 1 is a perspective view showing my crate as it would appear in assembled form,

Figure 2 is a fragmentary perspective view showing one end of my crate and more particularly showing the locking key employed in locked position,

Figure 3 is a top plan view of my improved crate,

Figure 4 is a fragmentary top plan view showing the locking key in an unlocked position for removal from the crate, and

Figure 5 is a fragmentary vertical sectional view taken on the line 5—5 of Figure 3 and looking in the direction indicated by the arrows.

Referring now more particularly to the drawings, in the construction of my crate I employ side sections which are indicated in general by the numerals 1 and 2, end sections which are shown at 3 and 4, a top section 5, and a bottom section 6. The side sections of my crate are of identical construction and therefore a description of one of them will suffice for both. More specifically, a typical side section includes vertical strips 7, 8, 9 and 10, which are connected at their corresponding upper and lower end portions by means of a substantially square longitudinal top and bottom rails 11 and 12. As will be observed, the opposite corresponding ends of the top and bottom rails are adapted to project downwardly past the vertical strips 7 and 10 and said rails are formed with rectangular grooves, or sockets, 13. While I have shown the side portion as comprising four of the vertical strips, it should be understood that any suitable number can be employed, depending upon the size and strength of the crate. In this connection it is pointed out that while the vertical strips are preferably formed of wood, they may be formed of a light weight metal, or from other suitable material.

The upper and lower corresponding ends of the strips are tacked to the inner faces of the top and bottom rails 11 and 12. The bottom of my crate is defined by the bottom section 6 which comprises preferably three longitudinal spaced bottom strips 14, 15 and 16 and, when the crate is in assembled position as shown in Figure 1, the bottom section is so disposed that the outside edges of the strips 14 and 16 will be disposed adjacent the surfaces of the vertical strips of the side sections. Connecting the opposite corresponding ends of the strips 14, 15 and 16 are bottom cleats 17 and 18. The bottom cleats are preferably formed of wood and project past the outside edges of the strips 14 and 16 and are normally adapted to overlie the corresponding outer end portions of the bottom strips of the side sections. The strips are preferably tacked to the upper faces of the cleats.

The end sections 3 and 4 comprise the opposite ends of my crate and include horizontal spaced end strips 19, 20 and 21 which are preferably formed of the same material as the vertical and bottom strips. Connecting the opposite corresponding ends of the end strips 19, 20 and 21 are vertical cleats 22 and 23 and, as will be seen in the drawings, the end strips are connected to the inner faces of the vertical cleats 22 and 23. The inner surfaces of the strips, at opposite corresponding ends thereof, are adapted to abut the

end edges of the vertical strips of the side sections, and the cleats 22 and 23 are adapted to project above and below the lower and upper edges of the strips 19 and 21, respectively. The lower edge of the strip 19 is adapted to abut the upper surface of the strips 14, 15 and 16, near their corresponding outer end portions. The vertical cleats are adapted to project into the sockets 13 formed in opposite corresponding ends of the top and bottom rails 11 and 12. It will be seen, therefore, that the end sections will be firmly, but removably, locked in their proper position.

At this point it is emphasized that, as the vertical, end, and bottom strips are fastened to the inner faces of the rails and cleats, at their upper and lower corresponding ends, outward strain against said strips will not displace them from their position on the rails and cleats so that danger of losing part of the contents of the crate will be prevented. It is pointed out in this connection that the strips of my crate may be bowed outwardly to a considerable degree without danger of breaking so that a full bulge pack crate may be provided when desired. It is, of course, to be understood that the flat pack form may be utilized.

The top section 5 of my crate includes longitudinal spaced parallel strips 24, 25 and 26. The strips 24, 25 and 26 are connected at their upper corresponding ends by top cleats 27 and 28. The top cleat 27 is adapted to project beneath the corner formed by the meeting ends of the vertical cleats 22 and the top rail 11 and said cleat will be, when the crate is in closed packed condition, limited against upward displacement by the projecting ends of the rails 11. The strips 24, 25 and 26 are secured to the under face of the cleat 27 so that upward pressing of said top section, such as might be caused by an article in the crate, will not displace said strips from the cleats 27. The outside edges of the strips 24, 25 and 26, like the outside edges of the strips 14, 15 and 16, are adapted to abut the inner faces of the vertical strips. In view of this fact the side sections are prevented from collapsing inwardly. Connecting the upper corresponding ends of the strips 24, 25 and 26, as best seen in Figures 2, 3 and 4 of the drawings, is a top cleat 28 and this top cleat 28 has its opposite end terminating in the same vertical plane with the longitudinal outside edges of the strips 24 and 26. The cleat is disposed slightly past the vertical plane of the vertical cleats 22 and 23. Removably carried in overlying relation to the strips of the top section 5 is a key which is indicated in general by the numeral 29. The key is provided with a thickened central portion 30 and tapering opposite ends 31 and 32 which, as best seen in Figures 2 and 3, are adapted to project laterally past the top cleat 28 and are adapted to engage in front of the upper end portions of the vertical cleats 22 and 23. It will be seen that the key will also engage beneath the projecting ends of the top rails 11 and 12 so that, when the key is in locked position, the top section 5 will be limited against upward displacement. In larger crates, center cleats, such as shown at 40, are employed, so that undue sagging or bulging of the longitudinal strips will be prevented. Vertical cleats of the same construction as the cleats 22 and 23 may be employed and mounted medially of the width of the end sections, if desired, so that undue bulging of said end sections will be prevented.

When it is desired to remove the top of my crate, the thickened portion 30 is grasped and the key is shifted lengthwise until one of the ends 31, or 32, is freed from behind one of the vertical cleats. After this is done the key may be readily withdrawn for freeing the other end from the other vertical cleat so that the top section may be readily raised and free access gained to the interior of the crate.

Attention is directed to the fact that if desired, I may employ keys of different sizes with the tapering ends 31 and 32. The tapering end construction, of course, permits sufficient tension to be exerted on the vertical cleats and top cleats to prevent rattling and loosening of the parts.

It is further pointed out that inasmuch as the rails and cleats project outwardly past the outer surfaces of the strips, said cleats and rails will define spacing means so that, when the crate is packed along with many other crates of many types, air will be permitted to enter the interior of the crate and keep the contents thereof in a good condition. While I have shown my device as being provided with grooves 13, such grooves may be omitted if desired.

It is pointed out that after the crate has served its purpose in a given instance, it may be disassembled by removing the top section, and shifting the side sections inwardly for freeing the end sections. The side and end sections may then be pulled away and the several sections may be stacked and shipped to a new destination for use again.

My device is characterized by the utmost simplicity and highest utility value for the reason that no nails, screws, or the like, are employed when assembling it.

It is believed that a reading of the foregoing description will, when taken in conjunction with the drawings and the claim appended hereto, disclose that I have provided a highly efficient crate which may be manufactured with utmost facility and may be produced at a reasonable figure.

Having thus described my invention, I claim:

A collapsible crate comprising side walls, end walls, a top, and a bottom, said side walls each having longitudinally extending upper and lower rails having extended end portions, the bottom having transversely extending end rails provided with extended end portions resting upon the extended end portions of the bottom rails of the side walls, the end walls having vertically extending side rails having extended end portions overlapping outer side faces of the upper and lower rails of the side walls and fitting into recesses formed therein and the lower end portions of the vertical rails being overlapped by the extended ends of the lower rails of the end walls, the top wall having transversely extending end rails, one end rail of the top wall having extended end portions overlapped by ends of upper rails of the side walls and overlapping upper end portions of the side rails of the adjacent end wall, the rail at the other end of the top wall being disposed between extended ends of the top rails of the side walls and located outwardly beyond the adjoining end wall, and a bar constituting a securing key extending transversely across the top wall against the inner side face of the last mentioned end rail of the top wall and having end portions extending from opposite sides of the top wall and overlapping the extended upper end portions of the side rails of the adjoining end wall, the said key being slidable transversely of the top wall into and out of a securing position.

JOHN M. WOLFENDEN. [L. S.]