No. 745,092. PATENTED NOV. 24, 1903.

J. O. BLACK.

COLLAPSIBLE CRATE OR BOX.

APPLICATION FILED JUNE 22, 1903.

NO MODEL.

Fig. 1.

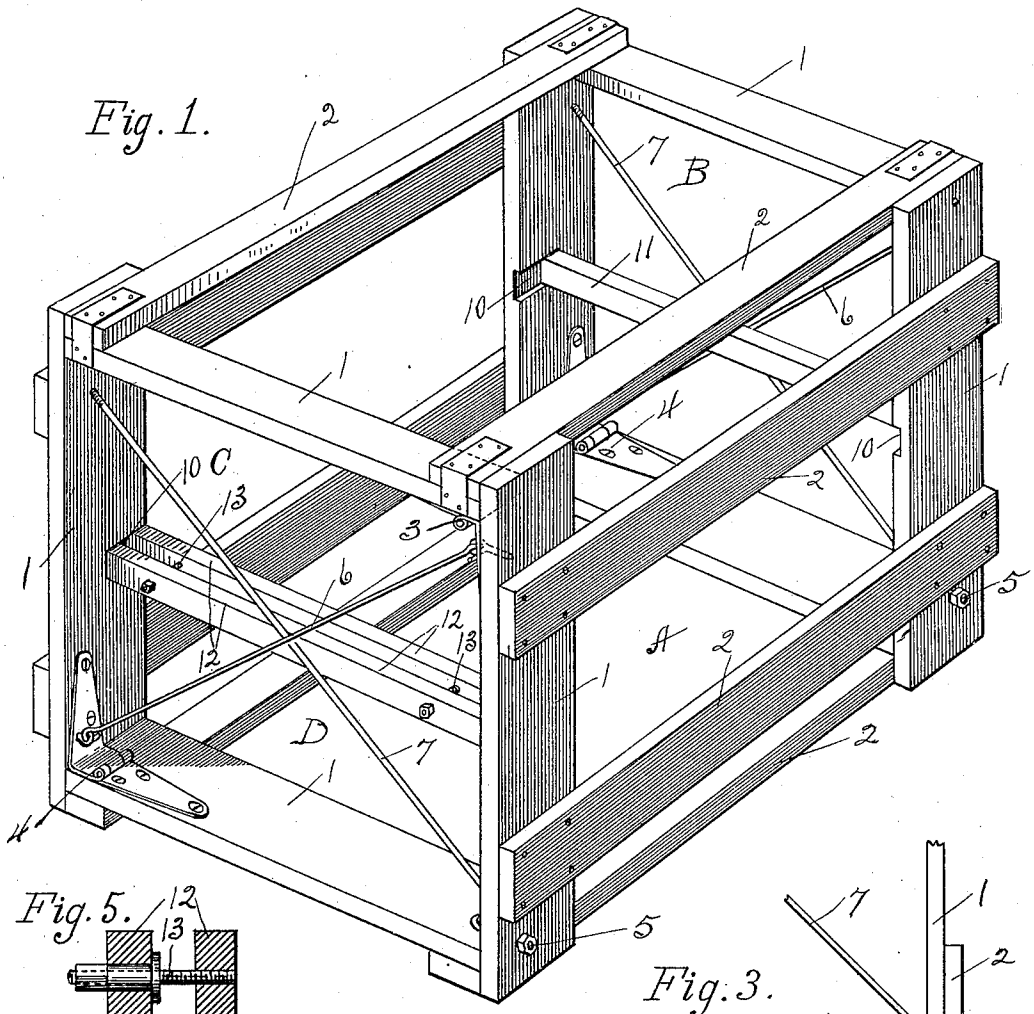


Fig. 5.

Fig. 3.

Fig. 2.

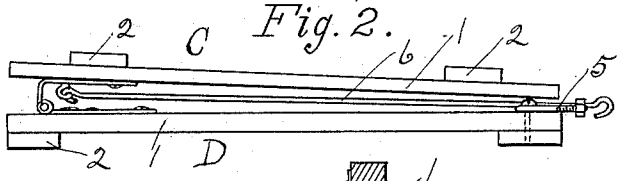


Fig. 6.

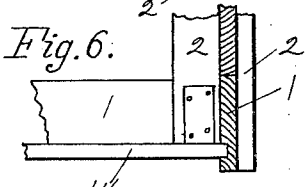
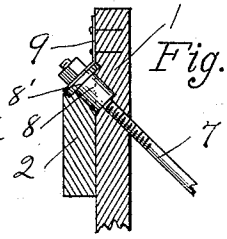


Fig. 4.



WITNESSES:

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No. 745,092. Patented November 24, 1903.

UNITED STATES PATENT OFFICE.

JOHN OLIVER BLACK, OF TOLEDO, OHIO.

COLLAPSIBLE CRATE OR BOX.

SPECIFICATION forming part of Letters Patent No. 745,092, dated November 24, 1903.

Application filed June 22, 1903. Serial No. 162,613. (No model.)

To all whom it may concern:

Be it known that I, JOHN OLIVER BLACK, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Collapsible Crate or Box; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to collapsible or knock-down packing-boxes or crates for packing furniture and other heavy or bulky articles for shipping; and its object is to provide an improved device of this class that is strong, durable, and simple in construction and operation, and capable of being folded into a compact form for storing or reshipping.

The invention is fully disclosed in the following specification, of which the accompanying drawings form part, in which—

Figure 1 is a perspective view of my improved crate. Fig. 2 is a view showing two of the sides folded together. Fig. 3 is a detail of the lower right-hand corner of Fig. 1. Fig. 4 is a vertical sectional detail of the upper left-hand corner of Fig. 1, illustrating the mode of tightening the diagonal braces. Fig. 5 is a transverse sectional view of one of the end adjusting-strips, showing the manner of adjusting the same; and Fig. 6 is a detail plan view of one of the corners of my crate, illustrating the manner of inclosing the ends and sides thereof to form a box.

In Fig. 1 of the drawings, A, B, C, and D represent the four skeleton sides of my improved crate, each having the transverse pieces 1 and the longitudinal pieces 2. The sides A B and C D have their joining edges connected at diagonally opposite corners by the hinges 3 and 4, respectively, said hinges having their pivotal points slightly offset to adapt them to be compactly folded, as shown in Fig. 2. To adapt the meeting edges of the sides A D and B C to be held in proper relation to each other when the crate or box is set up, as shown in Fig. 1, no hinges being provided at those points, I employ the bolts 5, one or more of which are secured to one of the meeting edges at the corners of each of said parts and pass through apertures provided in the other meeting edge and may be either threaded to receive a nut, as shown in the drawings, or left smooth to form dowel-pins.

An important feature of my invention consists of the diagonally-crossed braces or rods 6 and 7, located at either end thereof and by means of which the separate parts A B and C D of my crate are rigidly held together when set up. The rods 6 6 have their ends removably secured to suitable hooks or other retaining means provided on the hinges 3 and 4, and the rods 7 7 are secured at one end in a similar manner adjacent to one of the angles of the crate or box and have their other ends threaded and passed through suitable apertures provided adjacent to the diagonally-opposite angles or corners to engage with the tightening-nuts 8, as shown in Fig. 4. The nuts 8 are partly sunk within an enlarged portion of the apertures through which the rods 7 pass, being retained therein by means of brackets or guards 9 engaging with the flanged portions 8′ thereof, and have their squared ends projected to adapt them to receive a key or wrench. When the rods 7 are tightened by the turning of the nuts 8, the corners engaged thereby are caused to be drawn toward each other and the rods 6 to be tightened by a corresponding receding movement of the corners to which they are attached, thus causing the rods 6 and 7 to be drawn taut and the crate or box to rigidly engage the articles being packed.

In order to adapt my crate to receive articles of varying lengths or sizes and to tightly engage the same and prevent an endwise movement thereof, I provide the grooved recesses 10 on the inner sides of the vertical pieces 1 at either end of the crate, as shown in Fig. 1, and loosely insert therein the single backing-strip 11 at one end and the double or adjustable strips 12 at the other end of the crate, the said double strips 12 being connected and adapted to be forced away from or toward each other by means of the bolts 13, the nuts thereof passing through and engaging with the inner side of the outer strip, as shown in Fig. 5, to cause the inner strip 12 to have the desired movement when said nut is

turned. The crated article is thus caused to be tightly held between the strips 11 and 12 when the strip 12 is properly adjusted with relation thereto. While I have shown and described the strips 11 and 12 as being removably secured within the grooves 10, it will be apparent that they may be made rigid to or secured in any other suitable manner to the vertical pieces 1.

If desired, the sides, top, and bottom of my device may be made solid instead of in skeleton and end boards 14 secured within suitable cleats or grooves provided in extended portions of the sides A and C, as shown in Fig. 6, thus forming a closed box.

It is obvious that such changes in the form, proportion, and minor details of construction of the parts as fairly fall within the scope of my invention may be made without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A collapsible crate having two separable parts comprising hinged portions, a set of diagonally-crossed rods at either end thereof and connecting said separable parts, tightening means provided on one of said rods in each set for causing said rods and frame to become rigid, substantially as described.

2. A crate or box having two of its diagonally opposite corners hinged and its remaining corners removably secured together, diagonally-crossed rods connecting said corners, one pair of said rods having one of their ends threaded and provided with nuts adapted to engage the outer portions of the frame of said crate or box and cause said rods to be drawn rigid when turned in one direction, substantially as described.

3. A collapsible crate or box having the meeting edges of two of its diagonally opposite corners pivotally connected and the meeting edges of its remaining corners removably secured together, rods connecting the diagonally opposite corners at each end of said crate or box, part of said rods having one of their ends threaded and provided with nuts adapted to engage the frame of said crate or box and cause the sides thereof and said rods to become rigid when said nuts are turned, substantially as described.

4. A collapsible crate or box having the meeting edges of two diagonally opposite corners hinged and its remaining meeting edges removably secured together, diagonally-crossed rods connecting said opposite corners, one of said rods at each end of said crate or box having one end threaded and passed through an aperture adjacent to one of said corners, and a flanged nut sunk within an enlarged portion of said aperture and adapted when tightened to cause two of said corners to recede and two to contract, substantially as described.

5. A collapsible crate or box having the meeting edges of two diagonally opposite corners hinged and the meeting edges of its remaining corners removably secured together, diagonally-crossed rods connecting the opposite corners at each end of said crate or box, one end of two of said rods threaded and passed through apertures in said crate or box, flanged nuts engaging with said threaded portions, and members secured to said crate or box and engaging with said flanges for preventing the removal of said nuts, substantially as described.

6. The combination in a collapsible crate having the meeting edges of two diagonally opposite corners hinged and its remaining meeting edges removably secured together, of a set of diagonally-crossed rods at either end of said crate connecting said opposite corners, nuts non-removably secured to one of the sides of said crate and adapted to engage with two of said rods and when tightened to cause two of said opposite corners to contract and two to recede, substantially as described.

7. A collapsible crate having two of its diagonally opposite meeting edges hinged and its remaining meeting edges removably secured together, rods connecting said diagonally opposite edges at the ends of said crate, nuts non-removably secured to the frame of said crate engaging two of said rods, and transverse pieces 11 and 12 secured therein, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

J. OLIVER BLACK.

Witnesses:
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