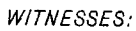


H. HAWLEY.
KNOCKDOWN BOX.

Patented Apr. 9, 1895.



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HENRY HAWLEY, OF CULPEPER, VIRGINIA, ASSIGNOR OF ONE-FOURTH TO
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KNOCKDOWN BOX.

SPECIFICATION forming part of Letters Patent No. 537,035, dated April 9, 1895.

Application filed August 6, 1894. Serial No. 519,574. (No model.)

To all whom it may concern:

Be it known that I, HENRY HAWLEY, of Culpeper, in the county of Culpeper and State of Virginia, have invented a new and useful Improvement in Knockdown Boxes, of which the following is a specification.

My invention is an improvement in shipping boxes and particularly in that class of such boxes known as knock down boxes, and the invention consists in certain novel constructions, combinations and arrangements of parts as will be hereinafter described and pointed out in the claims.

In the drawings—Figure 1 is a top view, and Fig. 2 is a side view of my box when adjusted for use. Fig. 3 is an edge view of the box when folded or knocked down. Fig. 4 is a detail perspective view illustrating one of the corners. Fig. 5 is a perspective view of a corner portion of one of the ends. Fig. 6 is a cross section illustrating the sockets or recesses in the faces of the sides to receive the heads of the bolts, and Fig. 7 is a sectional view illustrating the pivot of one of the headed studs, as will be hereinafter described.

The sides A of the box and its ends B and C, that is to say, the top and bottom may be of wood or other suitable material and may be paneled, battened and braced or otherwise formed as may be desired. In their upper and lower edges the sides A have notches *a* which receive projections on the metallic corner pieces presently described and at the ends of the sides A midway between their edges I provide projecting joint pieces D for engagement by interlocking joint pieces on the ends B and C. Such pieces D and their co-operating pieces are only needed in the large sizes of boxes to prevent any opening being forced at such points. The sides A interlock longitudinally at their edges being provided at such edges with longitudinally interlocking portions E preferably joint pieces F and G, the former having tenons *f* and the latter mortises *g* to receive said tenons to lock the adjoining sides together. At their meeting edges the sides are formed one with a rib or tongue H to lap along the meeting side so the sides will form a close joint when interlocked. This construction of joint forms at the corners of the box longitudinal recesses and the joint pieces have their outer ends inwardly deflected so

that the interlocking portions of said joints fit practically within such corner recesses and form no substantial projection beyond the intersecting planes of the box sides.

I have shown three joint pieces at each side but manifestly the middle one will not be needed in small boxes and in large boxes the number of joint pieces may be increased if necessary. The end joint pieces at both edges of the sides A are provided with clamp screws I having heads *i* and spread or swaged at their points *i'* so they cannot be screwed entirely out of the joint pieces, being thus protected from detachment and loss. The faces of said end joint pieces are ribbed or roughened at J to increase the hold of the hooks engaged with the screws of said joint pieces as presently described.

In practice the edges of the sides are united by interlocking the tenoned joint pieces of one with the mortised joint pieces of the other such interlocking being effected by forcing such sides together longitudinally after the tenons and mortises have been properly aligned as will be understood from the drawings. When the sides have been united forming a hollow square I apply the ends which are constructed alike so the description of one will answer for both. Upon the several corners of the ends I provide corner pieces K which overhang such ends and form recesses or seats K' for the corners of the sides. These corner pieces within their recesses K' have rounded rib like portions *k'* which enter the notches *a* of the sides and aid in furnishing a rigid joint between the sides and ends.

To the two outer side faces or corners if preferable of the corner pieces I secure adjustably the connecting links L which operate to bind the end pieces in place when the box is adjusted for use and also to bind the parts together when knocked down or folding. These links L are secured at one end to the corner pieces by bolts M passed through slots *m* in the links so the links can be adjusted both pivotally and longitudinally on the bolts M, and these bolts M may be tightened to secure the links in any desired adjustment, ribbed or roughened surfaces being provided at *m'* to enable a better fastening of the links when screws M are tightened. These links are provided at or near their free ends with inter-

locking portions which may be studs N on the links of one end piece to enter openings n in the links of the other end piece or such interlocking parts may be hooks or similar contrivances. I also provide the links with openings L' to receive the clamp screws I of the end joint pieces of the sides when the box is set up for use.

To support the links L out of pendent position when desired I prefer to provide the corner pieces with swelled or projecting portions L² upon which the links rest when turned back. When the box is set up for use these links by engaging the clamp screws I and being clamped thereby operate efficiently to bind the ends in place. When the box is knocked down which may be readily done by releasing the several clamp bolts or screws; detaching the links, and detaching the several interlocking parts, and taking apart the sides and ends may be compactly stored as follows: One of the ends is placed on the floor or other support inner face uppermost and one of the sides is placed thereon outer side down and the several sides are then piled in such position upon each other. One or both of the end pieces and all the sides are provided with sockets O to receive the heads of the clamp screws I when the parts are thus rested upon each other. On top of the pile is placed the other end piece inner side down. The connecting links are now interlocked by fitting the projection of one into the opening of the other and the securing screws of said links are tightened, the links thus serving to bind the several parts of the box as knocked down firmly together.

On the ends I provide sliding joint pieces D' which interlock with the joint pieces D upon the sides being movable upon the ends into and out of engagement with the said pieces D and held by a clamp D² in any of its adjustments. As before suggested the parts D and D' may be omitted from small boxes. In use the box when properly set up forms a strong securely united case for any character of goods and when it has reached its destination can be easily taken apart, compactly folded and securely fastened together for return to the shipper.

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

1. A knock down box comprising the sides having between their adjacent edges external longitudinal grooves, the joint pieces secured to the outer faces of said sides and having approximately right angular inwardly deflected portions projecting into the corner recess and provided within said recess with interlocking portions substantially as set forth;

2. A knock down box comprising the detachable sides the end links connected with the ends and provided at their free ends with interlocking portions and between said ends with portions engaging bearings on the sides,

all substantially as and for the purpose set forth.

3. A knock down box composed of the sides and the end piece having projecting corner pieces overhanging and extended beyond the meeting edges of said end at the corners thereof forming recesses adjacent to said meeting edges in which the sides fit and fastenings for said end piece consisting of links carried by the corner pieces substantially as set forth.

4. In a knock down box, the combination of the sides, the end piece, the corner pieces and the links connected adjustably with the corner pieces and engaging the sides substantially as set forth.

5. A knock down box composed of the sides detachably united, the ends, and links connected at one end with said ends and interlocking at their free ends whereby such links may bind the ends and the interposed sides firmly together when the box is knocked down substantially as set forth.

6. In a knock down box, the sides provided near their ends with clamps combined with the ends having links engaging said clamps when the box is adjusted for use and provided near their free ends with interlocking portions whereby when the box is knocked down said links may be joined or united and utilized to bind the whole together substantially as set forth.

7. In a knock down box, the combination with the side having a bearing and the end having a clamping screw turned in its edge of the connecting link having a slot through which such screw passes whereby the said link may be adjusted longitudinally or may be swung in a plane at right angles to that of the end to which it is secured, and ribbed or roughened surfaces between the said connection and the end to which it is clamped, substantially as set forth.

8. In a knock down box the combination of the sides having bearings the ends of the connecting links engaging the bearings of the sides and provided near their free ends with interlocking portions and connections between such ends and links whereby the latter may be adjusted pivotally thereon and longitudinally in a direction at right angles to the plane of such end substantially as set forth.

9. The combination in a knock down box of the sides provided with the projecting joint pieces having interlocking tenons and mortises; the clamp screws near the ends of said sides the end pieces and the connecting links carried by said ends and arranged to engage said clamps such links being provided near their free ends with interlocking portions substantially as set forth.

10. The combination of the side pieces provided in their ends with notches the ends, the corner pieces secured to and overhanging such ends forming recesses receiving the notched ends of the sides and provided with

portions entering such notches, and the links secured to said corner pieces and adapted to secure the ends substantially as set forth.

11. In a knock down box the combination of
5 the sides provided at one edge with a rabbet and at the other edge with a corresponding tongue, the interlocking joint pieces at the edges of said sides, the joint pieces at the ends of said sides, the ends, the sliding joint pieces
10 upon said ends and interlocking with the end joint pieces of the sides, the corner pieces and the connecting links substantially as set forth.

12. A knock down box composed of the ends and sides, the sides and one of the ends being provided in their faces with sockets receiving 15 the projecting heads of the bolts on the sides, when the box is knocked down and the connecting links carried by said ends and adapted to secure the ends and sides together substantially as set forth.

HENRY HAWLEY.

Witnesses:

BURNETT MILLER,
L. WISE JENNINGS.