A. O. HUBBARD.

FOLDING BOX.

APPLICATION FILED JUNE 29, 1915.

1,320,758.

Patented Nov. 4, 1919.

3 SHEETS—SHEET 1.

Fig 1.

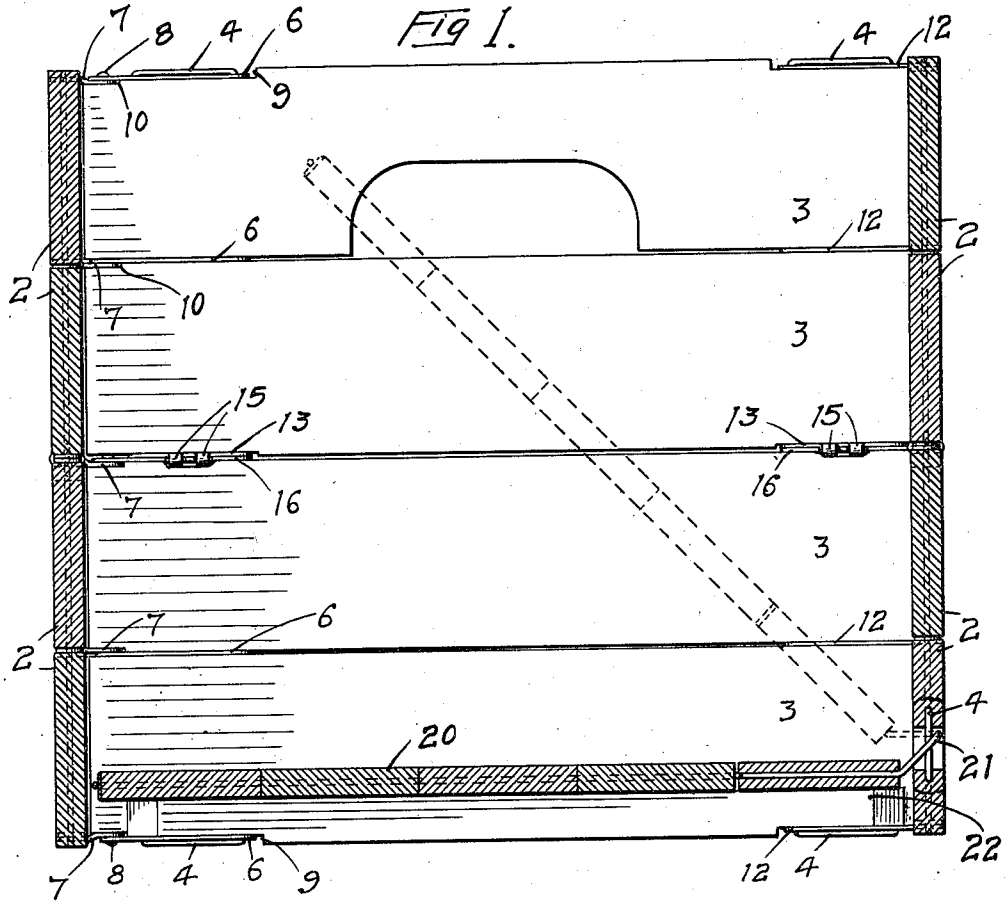
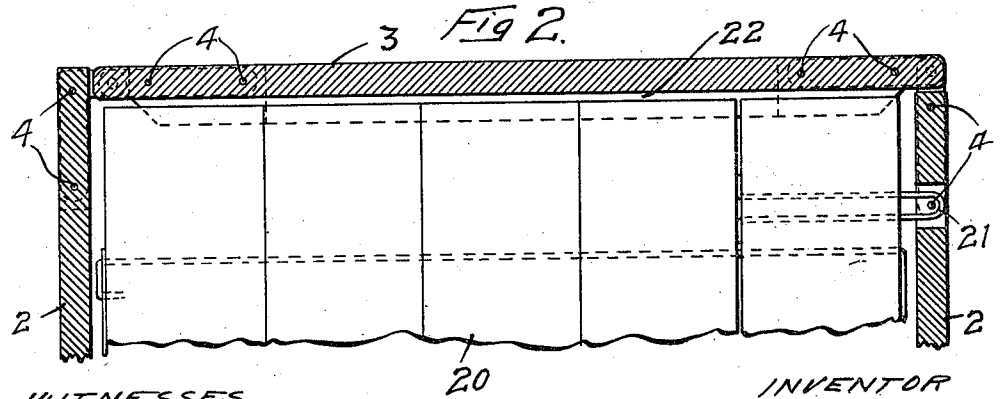


Fig 2.



WITNESSES

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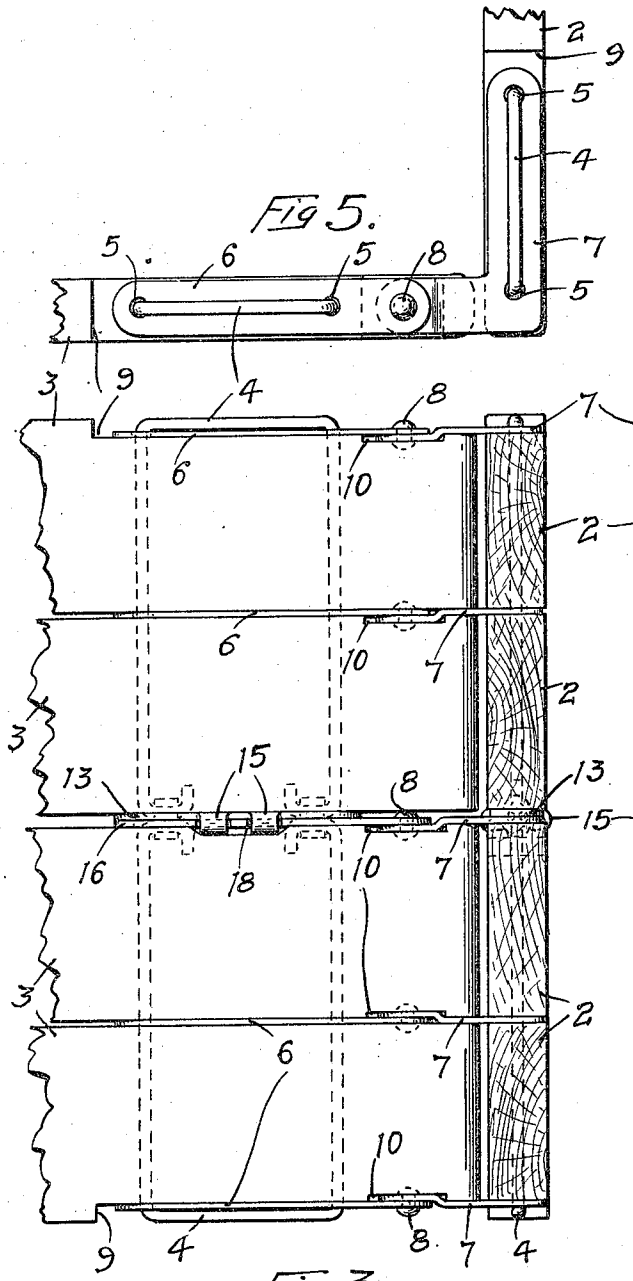


Fig 3.

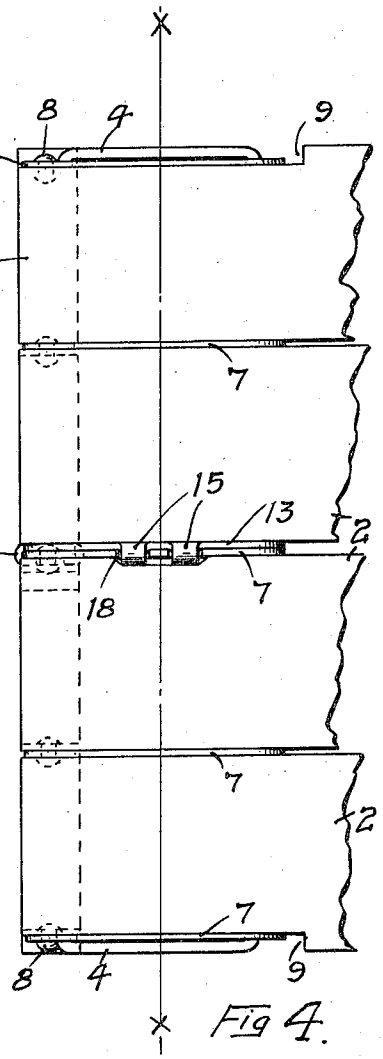


Fig 4.

Fig 5.

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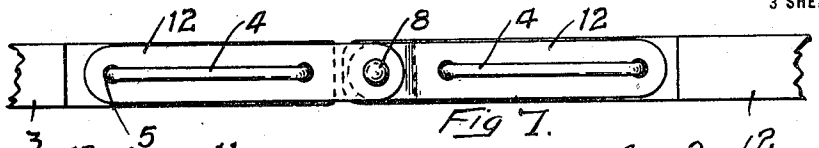


Fig 7.

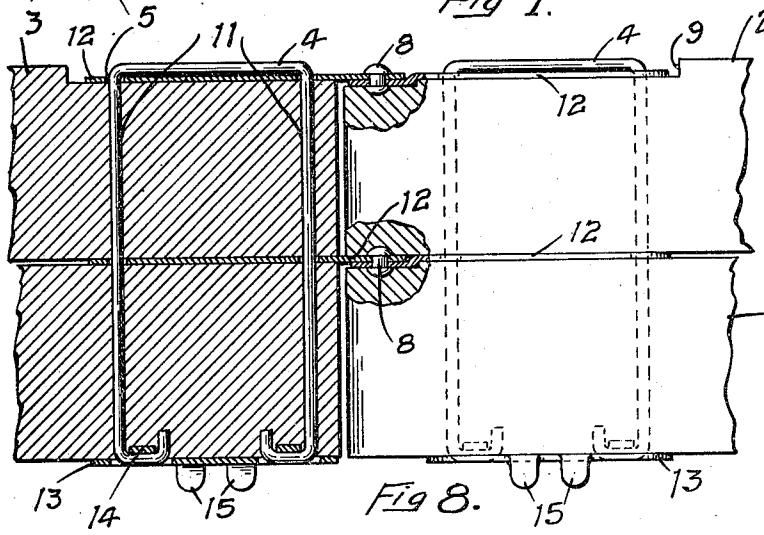


Fig 8.

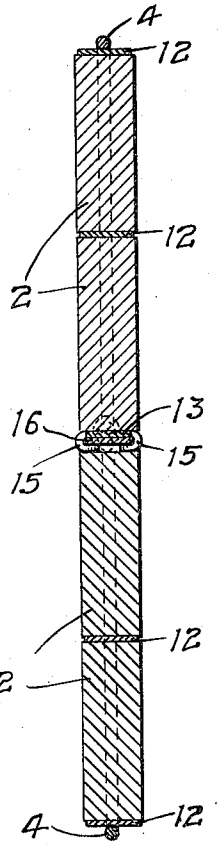


Fig 6. x-x

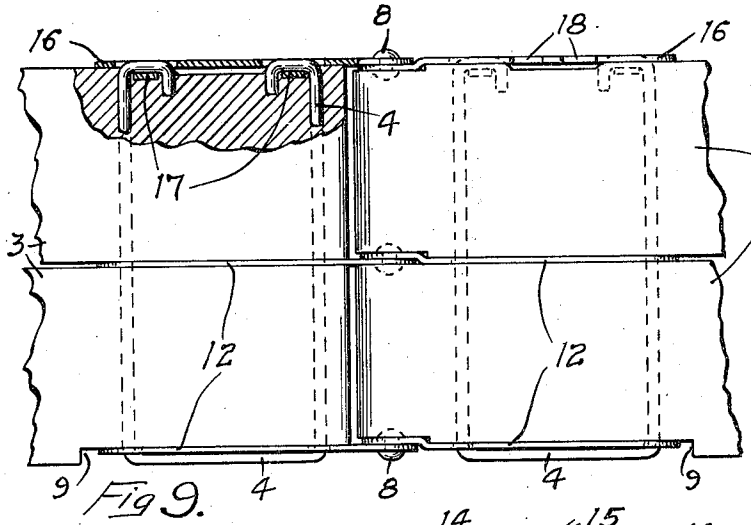


Fig 9.

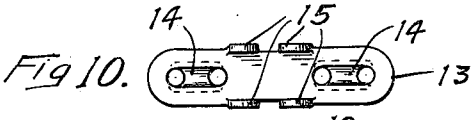


Fig 10.

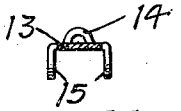


Fig 12.

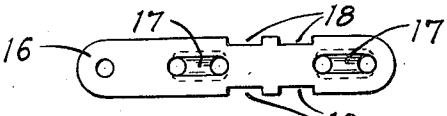


Fig 11.

WITNESSES

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UNITED STATES PATENT OFFICE.

ARTHUR O. HUBBARD, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO PUFFER-HUBBARD MANUFACTURING CO., OF MINNEAPOLIS, MINNESOTA, A CORPORATION.

FOLDING BOX.

1,320,758. Specification of Letters Patent. Patented Nov. 4, 1919.

Application filed June 29, 1915. Serial No. 37,012.

To all whom it may concern:

Be it known that I, ARTHUR O. HUBBARD, citizen of the United States, resident of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Folding Boxes, of which the following is a specification.

My invention relates to folding boxes similar to the one shown and described in Letters Patent of the United States, granted to me June 28, 1898, No. 606,459.

I have found in the manufacture of the box shown in my patent that the shrinkage of the wooden slats forming the walls of the box will allow the hooked ends of the lacing wires to protrude and catch on the floor, and even break or seriously damage the box.

The primary object of my present invention, therefore, is to provide a construction in which only the looped portions of the lacing wires lap at the top and bottom of the box, the ends thereof being embedded in the inner walls where they cannot possibly catch on the floor or any other object.

A further object is to provide a box construction in which a given height of the box lacing wires will be only approximately one-half the length of those shown in my patent above referred to, and consequently the shrinkage of the slats will be less noticeable.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a transverse sectional view of a folding box embodying my invention,

Fig. 2 is a horizontal sectional view through one end of the box,

Fig. 3 is an elevation of one corner of the box, showing my improved manner of mounting the lacing wires therein,

Fig. 4 is a similar view, looking at the corner from the other side of the box,

Fig. 5 is a detail view, showing the manner of hinging the walls of the box together,

Fig. 6 is a sectional view on the line *x*—*x* of Fig. 4,

Fig. 7 is a top view, showing the manner of securing the hinge plates together at the diagonally opposite corner from the plates illustrated in Fig. 5,

Fig. 8 is a view, partially in section, showing the manner of mounting the lacing wires in the upper section of the box,

Fig. 9 is a similar view of a portion of the lower section of the box, showing the abutting plates and clips for securing the sections together,

Figs. 10 and 11 are detail views of the locking plates in which the ends of the lacing wires are anchored,

Fig. 12 is a transverse sectional view through the plates illustrated in Fig. 10.

In the drawings, 2 and 3 represent respectively the comparatively narrow strips or pieces composing the sides and ends of the box. These may be of any suitable material, a plurality of narrow pieces being preferably utilized in each wall, not only for the purpose of making the box stronger at the corners, but to enable the manufacturer to utilize what ordinarily would be considered as waste lumber.

I have found in the manufacture of this type of box that the wooden strips will shrink more or less, causing the hooked ends of the lacing wires to project a considerable distance at the top and bottom sufficiently to catch on the floor or the bottom of a delivery wagon or truck, resulting frequently in complete breakage or serious damage to the box walls.

I therefore provide lacing wires 4, U-shaped substantially, in form, and fitting into holes 5 provided in hinge plates 6 which are secured to angle hinge plates 7 by suitable means, such as rivets 8. These hinge plates are provided at the corners and an offset or angle is formed on the hinge plates 7 to provide sufficient space between the walls of the box, when folded to receive the hinged bottom plate. Recesses 9 are provided in the edges of the slats to receive these hinge plates and the looped portions of the lacing wires, so that the wires will be flush substantially with the outer edges of the slats. Depressions 10 are also preferably provided to receive the lapping ends of the hinge plates and the heads of the rivets.

The box is formed preferably in two sec-

tions, an upper and a lower, each having its walls preferably composed of two slats placed edge to edge, though of course this number may be increased or decreased at will. The lacing wires are threaded through holes 11 formed in the slats and included in the thickness thereof, the wires at the corners diagonally opposite from the hinge plates 7 passing through hinge plates 12 which are pivotally connected with plates on the abutting wall slats corresponding to the plates shown in Fig. 5. Hinge plates corresponding to those shown in Figs. 5 and 7 are also interposed between the abutting edges of the wall slats at the diagonally opposite corners, as indicated in Figs. 3 and 8.

On the lower edge of the bottom slat of the upper section I provide a plate 13 having loops 14 upwardly pressed therefrom into which the ends of the lacing wire are thrust and bent inwardly to lock the plate securely against the edge of the slat. This construction is plainly shown in Fig. 8, where the wire ends are illustrated as thrust through the openings in the plate and then bent upwardly and driven into the slat until the ends are concealed and only the smooth rounded portions of the hooked ends are exposed at the bottom of the section and the looped portion of the lacing wire at the top of the section. The middle portion of the plate 13 is preferably provided with clips or ears 15. The upper edge of the lower section of the box has a plate 16 forming one member of the hinge at that point, with downwardly pressed loops 17 formed therein to receive the upper ends of the lacing wire of the lower section, said ends being bent through the loops and forced into the slat in substantially the same manner as described with reference to Fig. 8. Between these loops 17 recesses 18 are formed in the edges of the plate 16 to receive the lugs 15, which are bent on both sides of the plate 16 in under said plate and lock the plates 13 and 16 and the upper and lower sections of the box securely together.

The box being made in sections, with independent lacing wires in each section, there will be less looseness of the slats resulting from shrinkage of the wood than where the lacing wires extend through all the slats from the top to the bottom of the box.

A further advantage resulting from a box of this construction lies in the fact that should one of the sections become damaged, they may be separated and a new section substituted in place of the broken one, thereby avoiding the necessity of discarding the entire box.

I prefer to employ the means herein shown and described for locking the sections together, but do not confine myself entirely to this means, as some suitable locking device having the functions of the one herein shown may be substituted therefor and still be within the scope of my invention.

The bottom 20 of the box is hinged at 21 and rests, when the box is unfolded, upon ledges 22 provided on the lower slats of the end walls.

I claim as my invention:

1. A folding box composed of horizontally divided upper and lower sections having side and end walls, opposing plates mounted in abutting edges of said sections for locking them together, and metallic fastening means passing through said plates and said sections respectively.

2. A folding box composed of upper and lower sections, each comprising comparatively narrow slats or boards, plates mounted on the upper edge of the lower section and the lower edge of the upper section and having means for interlocking with one another, and metallic fastening means for securing the slats of said sections together and interlocking with said plates.

3. A folding box composed of upper and lower sections, each having walls made up of slats or boards, lacing wires U-shaped substantially in form, passing through the slats of said upper and lower sections, plates having loops formed therein for interlocking with the ends of said lacing wires and one plate having means for engaging the opposing plate for locking them together.

4. A box composed of upper and lower sections, plates secured to the opposing edges of said sections between the inner and outer surfaces thereof, one of said plates having recesses therein, the other plate having lugs formed thereon to enter said recesses for locking said sections together.

5. A folding box composed of upper and lower sections, each comprising slats hinged together at the corners of the box, substantially U-shaped lacing wires passing through said slats, plates mounted on the opposing edges of said upper and lower sections and having loops formed therein to receive the ends of said lacing wires for locking said plates on said sections, and one plate having lugs formed thereon for engaging the edges of the opposing plate.

6. A box composed of horizontally divided upper and lower sections, seated one upon the other, the walls of said sections being composed of comparatively narrow slats, and lacing wires passing transversely through said slats for securing them together, means mounted on the abutting edges of the adjacent slats of said sections and interlocking with one another for securing one section upon the other, said lacing means passing through said interlocking means respectively for securing them to the edges of said sections.

7. A box having its four walls composed of comparatively narrow slats divided into upper and lower sections, and lacing wires passing through the slats of said sections respectively for securing them together, and means having relatively folding members for interlocking one with the other interposed between the abutting edges of said sections for permanently securing them together.

In witness whereof, I have hereunto set my hand this 17th day of June, 1915.

ARTHUR O. HUBBARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."