July 8, 1924.

1,500,136

H. N. KNOWLTON

CRATE

Filed Aug. 1, 1923

Fig. 1

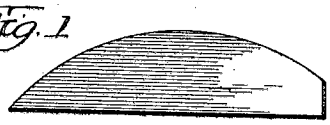


Fig. 2



Fig. 3

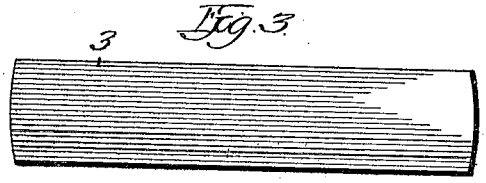




Fig. 4

Fig. 5.

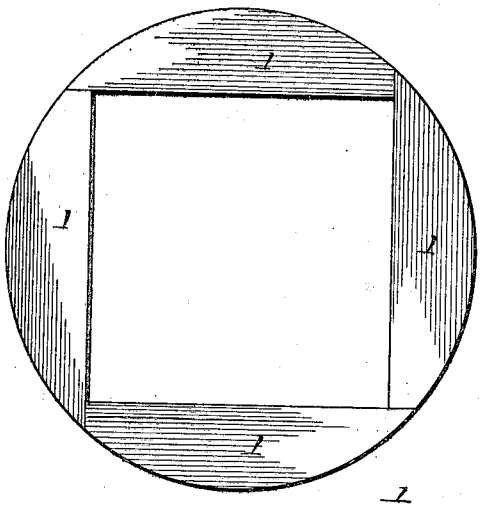


Fig 6.

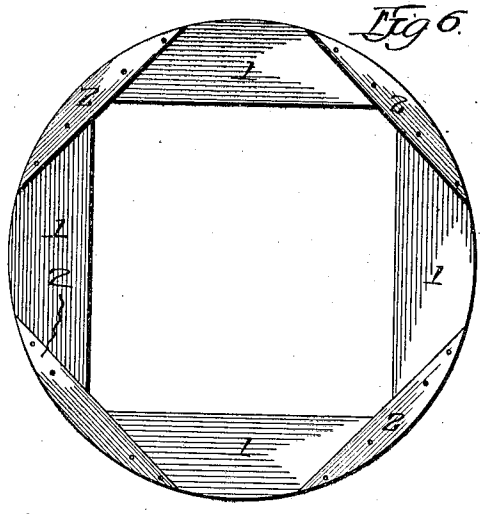


Fig 7

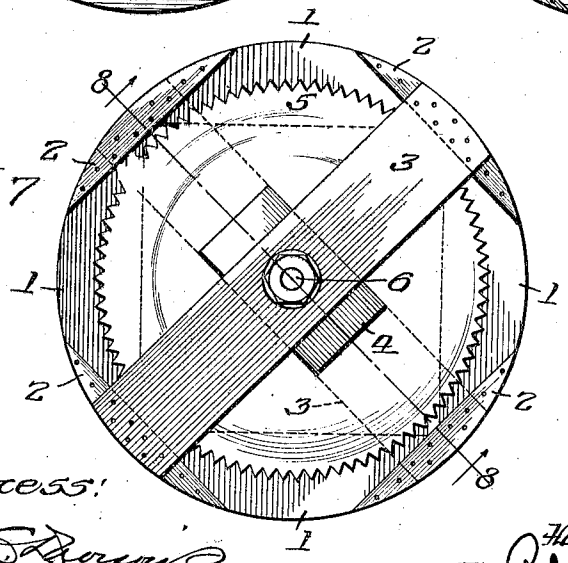
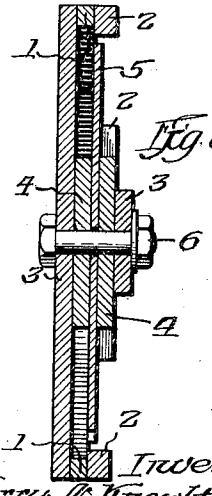


Fig. 8.



Witness:

Fred C. Brown

Inventor

Harry N. Knowlton

By Robert M. Sykes Atty.

Patented July 8, 1924. 1,500,136

UNITED STATES PATENT OFFICE.

HARRY N. KNOWLTON, OF CHICAGO, ILLINOIS, ASSIGNOR TO WEYERHAEUSER FOREST PRODUCTS, OF ST. PAUL, MINNESOTA, AN UNINCORPORATED ASSOCIATION.

CRATE.

Application filed August 1, 1923. Serial No. 655,090.

To all whom it may concern:

Be it known that I, HARRY N. KNOWLTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Crates, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

The present invention relates to crates and especially to wooden crates designed for the shipment of flat articles such, for example, as circular saws. The principal object of the invention is the provision of such a crate which may be constructed with an economical use of lumber and which will be thoroughly rigid and secure against accidental destruction.

In the drawings,—

Figures 1, 2, 3 and 4 illustrate pieces of which the crate is composed.

Figures 5 and 6 illustrate the crate in different states during assembly.

Figure 7 illustrates the completed crate, and

Figure 8 is a section on the line 8—8 in Figure 7.

The crate comprises a plurality of frame members or pieces fitted together edge-wise at their ends so as to form an open flat frame. In the preferred embodiment of the invention four such pieces 1 are used. The pieces 1 are duplicates of each other and each is formed as a segment truncated at one end so that the pieces may be fitted together with the squared end of one piece lying against the chord of the adjacent piece. The crate also comprises a plurality of pieces or abutments severally secured to the previously mentioned pieces across the joints of the latter and on the same side thereof. In the preferred embodiment of the invention such pieces or abutments are formed as segments 2 with their outer edges concentric with the outer edges of the pieces 1. The frame members 1 and the abutments 2 define an article receiving seat. The crate also comprises a plurality of braces arranged angularly to each other and disposed on opposite sides of the skeleton frame and having their ends secured thereto. In the preferred embodiment of the invention two braces 3 are used, one on each side of the skeleton frame, the braces being diametrically arranged at a right angle to each other and being secured to the pieces 1 and 2 at their ends. The ends of the braces 3 are formed on the arcs of a circle concentric with the outer edges of the pieces 1 and 2. In the preferred embodiment of the invention a block 4 is secured on the under side of the uppermost brace 3, that is, that brace lying on the side of the pieces 1 on which the pieces 2 are secured, and a similar block 4 is secured on the upper side of the other brace 3.

In assembling the crate the pieces 1 are fitted together in the form illustrated in Figure 5 and the pieces 2 are secured to the pieces 1 as illustrated in Figure 6, thereby forming a skeleton frame open at its center. One of the braces 3, to which has been secured a block 4, is then secured to the pieces 1 and 2 on the under side of the pieces 1, that is, on that side of the pieces 1 opposite the side on which the pieces 2 are secured. The article to be crated, such as a circular saw 5, is then placed flat-wise in the article receiving seat and on the upper sides of the pieces 1 where it will be peripherally enclosed by the pieces 2. The block 4 is then secured on the under side of the other brace and the brace is secured at its ends to the pieces 1 and 2 against the exposed sides of the pieces 2. The thus completed crate is formed by relatively few and narrow pieces of lumber but the pieces are so fitted and secured together that the crate, although open and light and comparatively inexpensive, is thoroughly rigid and practically incapable of accidental destruction or mutilation. The article, such as the circular saw 5, is firmly and securely held in place, being in effect clamped against the upper faces of the pieces 1 by the upper brace 3 and the block 4, while its peripheral edge is completely protected by the pieces 2. In some cases, such as the packaging of a saw or similar article which is exceedingly large, a bolt and nut 6 may be used if desired to lock the article to the crate at its center. I have found that the crate is perfectly satisfactory in all cases without such use of a bolt but of course it may be used if thought desirable.

Having described my invention, what I claim is:—

1. A crate, comprising a plurality of first pieces fitted together in the form of an open flat frame, a plurality of second pieces secured to the first pieces across the joints

of the latter, and braces disposed angularly to each other on opposite sides of the pieces and secured thereto at their ends, whereby an article may rest flat-wise on the first pieces between the braces and be enclosed peripherally by the second pieces.

2. A crate, comprising four truncated segmental pieces arranged in the form of an open flat frame with the squared end of each piece fitted against the chord of the adjoining piece, four segmental pieces secured to the truncated pieces across the joints of the latter, and two diametrically disposed braces arranged at a right angle to each other on opposite sides of the pieces and secured thereto at their ends, whereby an article may rest flat-wise on the truncated pieces between the braces and be enclosed peripherally by the segmental pieces.

3. A crate, comprising four truncated segmental pieces arranged in the form of an open flat frame with the squared end of each piece fitted against the chord of the adjoining piece, four segmental pieces secured to the truncated pieces across the joints of the latter, two diametrically disposed braces arranged at a right angle to each other on opposite sides of the pieces and secured thereto at their ends, whereby an article may rest flat-wise on the truncated pieces between the braces and be enclosed peripherally by the segmental pieces, and blocks secured to the inner sides of the respective braces and adapted to lie against the article.

4. A crate, comprising truncated segmental pieces arranged in the form of an open flat frame with the ends of the pieces fitted together, segmental pieces secured to the truncated pieces across the joints of the latter, and braces disposed angularly to each other on opposite sides of the pieces and secured thereto at their ends, whereby an article may rest flat-wise on the truncated pieces between the braces and be enclosed peripherally by the segmental pieces.

5. A crate comprising a skeleton frame made up of a plurality of frame members disposed end to end in angular arrangement in the same plane and defining a skeleton frame open at its center, a plurality of abutments disposed in a series around one side of the frame and defining therewith an article receiving seat, a brace extending across the seat and having its end portions lapping opposite abutments and secured thereto, another brace at the opposite side of the frame, and blocks secured respectively to the inner faces of the braces, there being a space between the blocks to accommodate an article to be contained within the crate.

6. A crate comprising a skeleton frame made up of a plurality of frame members disposed end to end in angular arrangement in the same plane and defining a skeleton frame open at its center, a plurality of abutments disposed in a series around one side of the frame and defining therewith an article receiving seat, a brace extending across the seat and having its end portions lapping opposite abutments and secured thereto, another brace at the opposite side of the frame and disposed at an angle to the first mentioned brace, and blocks secured respectively to the inner faces of the braces at the intersections thereof, there being a space between the blocks to accommodate an article to be contained within the crate.

7. A crate comprising a skeleton frame made up of a plurality of frame members disposed end to end in angular arrangement in the same plane and defining a skeleton frame open at its center, a plurality of abutments disposed in a series around one side of the frame and defining therewith an article receiving seat, a brace extending across the seat and having its end portions lapping opposite abutments and secured thereto, another brace at the opposite side of the frame, and a bolt extending through the braces and located at the center of the frame.

8. A crate comprising a skeleton frame made up of a plurality of frame members disposed end to end in angular arrangement in the same plane and defining a skeleton frame open at its center, a plurality of abutments disposed in a series around one side of the frame and defining therewith an article receiving seat, a brace extending across the seat and having its end portions lapping opposite abutments and secured thereto, another brace at the opposite side of the frame and disposed at an angle to the first mentioned brace, and a bolt extending through the braces at the intersection thereof.

9. A crate comprising a skeleton frame made up of a plurality of frame members disposed end to end in angular arrangement in the same plane and defining a skeleton frame open at its center, a plurality of abutments disposed in a series around one side of the frame and defining therewith an article receiving seat, a brace extending across the seat and having its end portions lapping opposite abutments and secured thereto, another brace at the opposite side of the frame and disposed at an angle to the first mentioned brace, blocks secured respectively to the inner faces of the braces at the intersections thereof, there being a space between the blocks to accommodate an article to be contained within the crate, and a bolt extending through the braces and the blocks.

In witness whereof, I hereunto subscribe my name this 30th day of July, 1923.

HARRY N. KNOWLTON.