(No Model.)

G. E. DAVIS.

Chair Seat.

No. 238,491. **Patented March 8, 1881.**

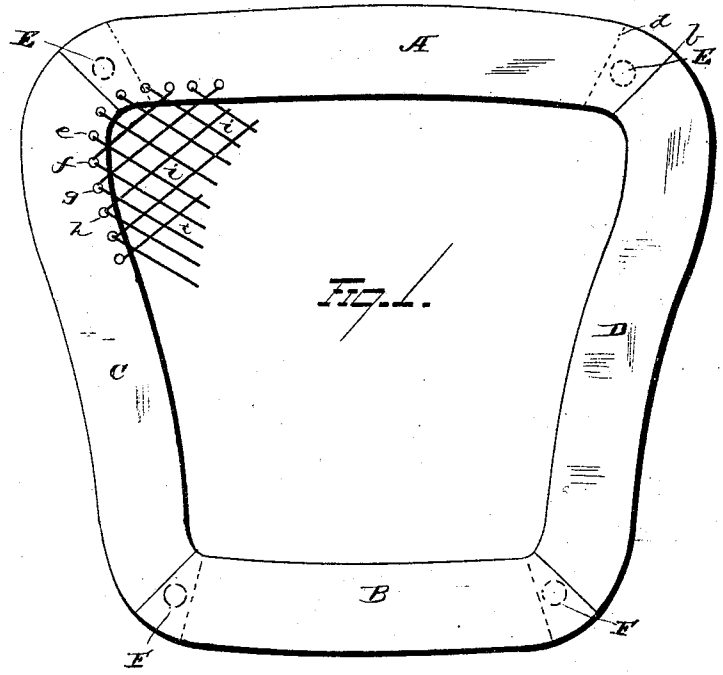


Fig. 1.

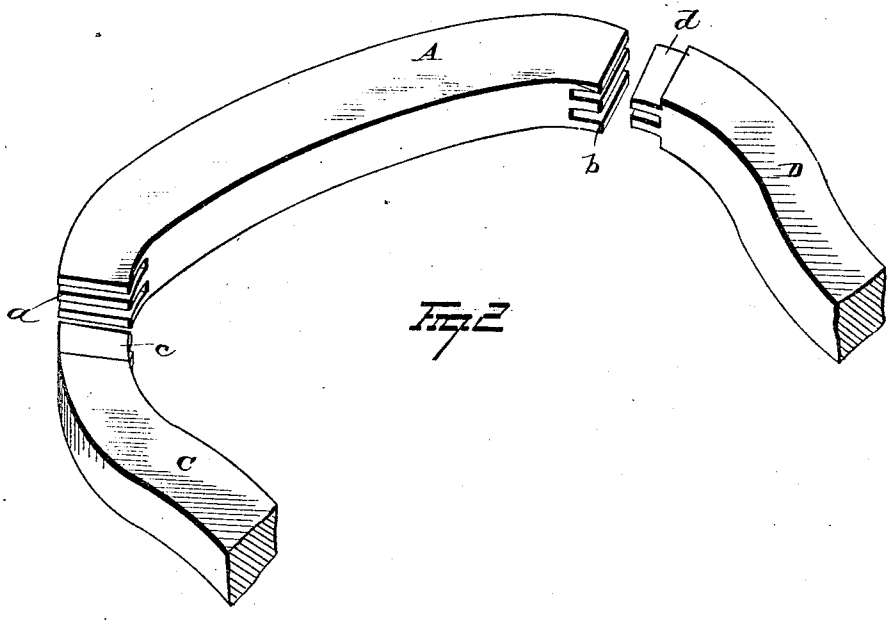


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE E. DAVIS, OF FORT MADISON, IOWA, ASSIGNOR TO HIMSELF AND FORT MADISON CHAIR COMPANY, OF SAME PLACE.

CHAIR-SEAT.

SPECIFICATION forming part of Letters Patent No. 238,491, dated March 8, 1881.

Application filed April 17, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEO. E. DAVIS, of Fort Madison, in the county of Lee and State of Iowa, have invented certain new and useful Improvements in Chair-Seat Frames; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in chair-seat frames, the object being to provide a novel means whereby the four pieces of an ordinary chair-seat frame may be inflexibly secured together in such a manner that it will not, when so constructed, be weakened by the insertion of the chair legs or posts at the point of juncture, that it may withstand the straining tendency of the flexible caning, and that it may be capable of passing uninjured through the various wrenches and strains to which all chairs of this character are subjected.

Heretofore it has been almost the invariable custom to connect the frame-work of chair-seats by a dowel-pin joint, and this construction has been found inefficient and ineffectual for several reasons, among which the three following may be recited as of paramount importance:

First, the liability of the front frame-piece to crack and split when the chair legs or posts are inserted is very great. The holes formed for their reception being, of necessity, at or very near the dowel-joint connection, the joint will be thereby weakened, and the front piece, perforated, as it is, horizontally for the insertion of the dowel-pins and vertically for the insertion of the chair legs or posts, these holes being very near each other, will be very liable to, and indeed almost invariably does, crack, rendering the chair useless.

Second, the joint formed by the dowel-pin connection is generally a square joint, the side pieces being straight and cut off square at each end, therefore at right angles to the directions of the fiber of the wood, while the front and back pieces of the frame are cut off substantially in the direction of and parallel with the fiber of the wood; and as it has been found impracticable to insert more than two dowel-pins into the front frame-piece of the chair, as the insertion of a greater number would too seriously imperil the strength of the same, glue is resorted to for the purpose of giving additional strength and to further consolidate the two pieces. But here another trouble arises, for glue, of whatever character it may be other than aiding to retain the dowel-pins in the holes into which they fit in the side pieces, is practically of no value, for it is well known that glue will not adhere in firm connection to a piece of wood cut transversely to its fiber, as I have before mentioned the side pieces are, and however thoroughly it may incorporate itself into and with the front piece, which is cut off in a line parallel with the grain of the wood, if it does not adhere with equal firmness to the side pieces, as I know it does not, its value as a binding power further than with regard to retaining the dowel-pins is practically gone.

Third, the joint formed in this old construction is a square joint, and a joint of this kind is the very one the least adapted for its purpose here, as it is directly open to the majority of strains and wrenches to which a chair is the most subject, all of which have a direct tendency to loosen the front and back pieces of a chair-seat frame, but particularly the front pieces, both of which front and back pieces are secured to the side pieces by a square joint. The inner edges of the frame-pieces are perforated with small holes, through which the cane-strands are passed, and as a matter of course the greatest strain will come on the front piece, and, although the leverage is slight, the strain on the several strands, taken collectively, will exert a very strong and marked force, tending to raise the outer edge of the upper face of the front frame-piece and depress the inner edge of the same. This strain will, in itself alone, in a short time weaken the square-joint connection and loosen the dowel-pins. Another frequent cause of breakage and defect in chairs constructed with square joints is the vertically-tilting strain caused by tipping back in them, at the same time resting the feet on the front rounds. The chair-legs, thus unsupported and pressed inwardly, will

naturally tend to pull the dowel-pins from their sockets, and results very often in splitting the front piece of the chair-seat frame.

Chairs have also been constructed (though comparatively few) with square mortise-and-tenon joints. However, the joints being made with only one tenon, and the surface presented to the glue being but little greater, this latter variety is open to nearly all the objections of strain, &c., to which the first-mentioned and more common form is subject.

Having thus pointed out the most important defects in the present mode of construction, I will now proceed to describe in detail and show how I have overcome these difficulties and defects in the art of chair-making.

In the accompanying drawings, Figure 1 is a plan view of my improved chair-seat completed, with the cane seat woven in and the holes bored for the insertion of the chair-leg. Fig. 2 shows the parts forming the seat separated, but in their relative arrangement as regards each other, and represents the manner of cutting the tenons and sockets.

A and B represent the front and back pieces of a chair-seat frame, and C and D the side pieces thereof. The front piece, A, is mortised at both ends, *a b* representing the mortises. Into these mortises fit, in snug connection, the tenons *c d*, formed on the front ends of the side pieces, C D. It is preferred to cut the mortises *a b* rather deep and the tenons *c d* correspondingly long, so that the two pieces may become very closely incorporated with each other, and also to present a greater side surface to the glue. When these mortised and tenoned ends are driven together they will form a miter-joint; and both pieces being cut diagonally to the grain of the wood forming them, the glue will adhere with equal tenacity to both surfaces presented and form an exceedingly strong joint, where, in the old construction, as it would only adhere to one of the two adjoining frame pieces, its presence added but little to the usefulness and strength of the chair. By this arrangement of long tenons and deep mortises, presenting a large surface to the adhering action of glue, and the manner of cutting the frame-pieces diagonally to the grain of the wood and forming a miter-joint, the two pieces joined become so incorporated with each other that a hole for the reception of the chair-leg may be bored, as at E and F, directly at the point of juncture without impairing the value and strength of the connection and without any danger of cracking either of the pieces. Small holes *e f g h* are made in the inner edges of the frame-pieces for the insertion of the cane-strands *i i*.

It will be seen that while in the old form, where the square connection is used, any weight on the cane exerted a strain on the front piece, tending to turn it and weaken the joint, this trouble is well obviated by the miter-joint, for here the greater the strain placed on the cane the firmer is the front piece held in place. Again, the vertically-tilting strain caused by tipping back in the chair, and all other strains and wrenches to which a chair is ordinarily liable, were incurred in the old construction where the joint was so situated and so formed as to be directly open to be influenced by all these strains and wrenches; but in the miter-joint connection the joint is unaffected, being diagonal to the line through which the strain is exerted.

The back piece, B, is secured to the side pieces, C D, in precisely the same manner in which the front piece is attached, and hence it needs no more description than reference to the drawings.

I have shown and described the front piece, A, as being mortised at each end, and the tenons which are inserted therein being formed on the end of the side pieces. This arrangement may, if desired, be reversed, and the front piece, A, be formed with tenons and the side pieces, C D, mortised.

I would have it understood that I do not limit myself to the exact construction described herein, but hold myself at liberty to make such slight changes and alterations as are within the spirit and scope of my invention.

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

A chair-seat frame composed of end pieces and side pieces connected by tenons and mortise equal in width to that of the seat-frame, and formed diagonally to the grain of the wood, and holes for the chair-legs formed at the joints in the seat-frame, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of April, 1880.

GEORGE E. DAVIS.

Witnesses:
W. E. HARRISON,
JNO. H. KINSLEY.