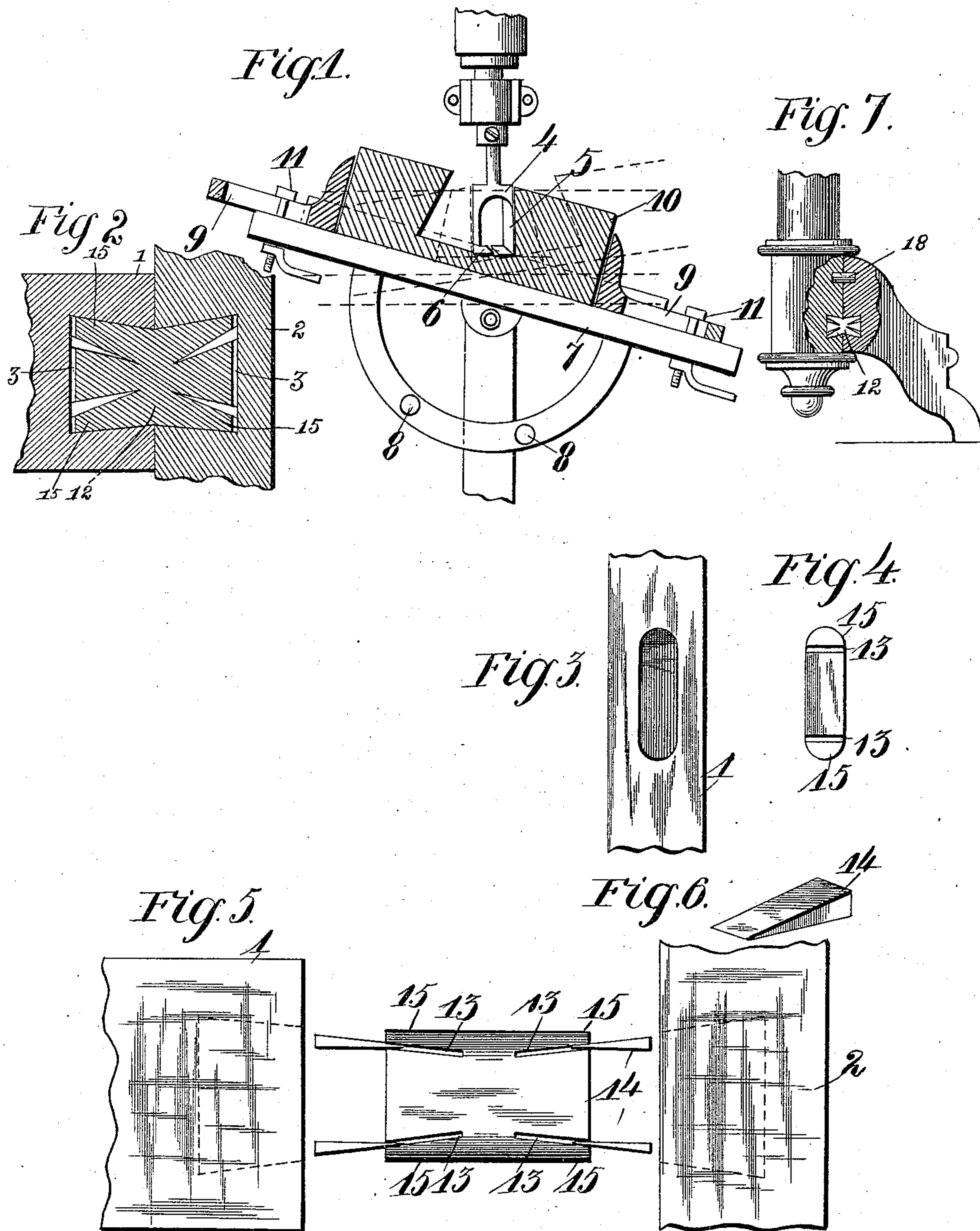


(No Model.)

M. J. ANDRUS.  
DOWEL PIN.

No. 456,391.

Patented July 21, 1891.



Witnesses  
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# UNITED STATES PATENT OFFICE.

MARION J. ANDRUS, OF ST. LOUIS, MISSOURI.

## DOWEL-PIN.

SPECIFICATION forming part of Letters Patent No. 456,391, dated July 21, 1891.

Application filed January 20, 1891. Serial No. 378,423. (No model.)

*To all whom it may concern:*

Be it known that I, MARION J. ANDRUS, of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Methods of and Means for Unit-

ing Parts in a Structure, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in dowel-pins; and it consists in the novel features hereinafter more fully described, and designated in the claims.

In the drawings, Figure 1 is a front elevation of a device for making dovetailed mortises and showing the material in position to be worked upon. Fig. 2 is a sectional view of the parts united by my improved joint. Fig. 3 is a top plan view of a mortise formed in a piece of wood. Fig. 4 is an end view of a tenon, showing slits formed therein. Fig. 5 is a side elevation of my invention, showing the parts detached; and Fig. 6 is a perspective view of a wedge which I employ in carrying out my invention. Fig. 7 shows my invention as applied to a piano or organ stool.

Referring to the drawings, 1 and 2 indicate parts of a structure which are to be united, and 3 indicates exteriorly-converging mortises which are formed in said parts or pieces. Said mortises diverge from the exterior of the parts toward the center of the parts to be united, thereby forming dovetailed mortises.

In order that the manner in which I prefer to form the mortises for my improved joint may be fully understood, I have shown and will now proceed to describe a machine for that purpose. I do not, however, herein lay any claim thereto. Said mortises are formed in pieces to be joined by means of a routing-bit 4, provided on its sides with laterally-cutting edges 5 and terminally-cutting edges 6, which effect an incision when applied to a piece of wood equally as well in a lateral direction as a vertical in said piece of timber. Said bit is adapted to be revolved by any ordinary or suitable mechanism constructed for that purpose, and is adapted to reciprocate in a vertical direction.

7 indicates an oscillating base on which the material to be worked is placed. Said base

oscillates in two directions, the extent of which is regulated by stops 8.

9 represents adjustable guiding and retaining blocks, which retain and hold the piece of wood 10 in its proper position on the oscillating base 7. Said adjustable guideways 9 are secured to base 7 by means of adjustable bolts 11.

By the construction as herein set forth it is readily perceived that block 10, secured as hereinbefore stated, can be adjusted at a suitable angle relative to the cutting-edges of bit 4, thereby forming a dovetailed mortise of any desired dimensions and angles.

12 indicates a dowel-pin, by means of which the parts to be secured are united. Said dowel-pin is provided with slits 13, which slits converge toward the center of said dowel-pin.

14 indicates a wedge by which the ends of dowel-pin 12 are laterally extended. Said wedges are of the shape of an isosceles triangle and approximately about the length of slits 13, and when placed in slits 13 and driven or compressed in said slits when dowel-pin 12 is in its normal position they will extend laterally the part 15 of said dowel-pin, thereby throwing the ends in a diverging form corresponding in size to the dovetailed mortises 3, and thereby will prevent said dowel-pins from being withdrawn from the dovetailed mortises, and consequently will hold the parts in which said dowel-pin is placed in a firm and rigid manner and position.

Having given an explicit description of my invention, I will now proceed to describe the method of uniting the parts of the structure, of forming the appropriate mortises in said parts, and the construction of the dowel-pin by which said parts are united.

To be specific in forming the mortises, the operator should place the material in which the mortise is to be formed on the oscillating base 7 and secure and adjust it therein by means of the guiding and retaining pieces 9 and bolts 11. The bit 4 can then be brought in contact with the material. The oscillating base, and consequently the material secured thereon, can be adjusted at any desired angle, thereby forming a dovetail at any desired angle. In Fig. 3 a top plan view of one of these mortises is shown.



To prepare the dowel-pins 12, which is effected by cutting out a bar of any desired dimensions by any suitable mechanism, is the next step. Said bar is usually provided on its lateral faces with rounded surfaces, and it is also provided at its ends with a slit or pair of slits. Said slit or slits should converge toward the center of the dowel-pin, which, when wedge 14 is driven therein, will extend the parts 15 of dowel-pin to a greater extent than if the slits were formed in the dowel-pin in a straight and parallel direction to the lateral faces of said tenon, which must necessarily result in increasing the contact between the parts 15 and the side of the mortises in which said dowel-pins are placed.

After the mortises have been formed as hereinbefore described, and also the dowel-pins have been constructed as hereinbefore stated, to unite the parts—for instance, 1 and 2—the mortises 3 are placed with the contracted portions facing each other. The dowel-pin 12, with wedges 14 inserted in the slits thereof, is then placed in said mortises, and by the application of force to parts 1 and 2 the said parts are driven together, and consequently the wedges 14 will be compressed and driven in slits 13, thereby extending the parts 15 and filling up the diverging portion of the mortises, thereby effecting a firm and rigid unison between said parts.

My invention is essentially useful in secur-

ing the legs of a piano or organ stool to the base of said stool, as shown in Fig. 7, wherein 18 indicates an ordinary dowel, which is placed near the upper portion of the leg, and 12 my improved tenon situated in its appropriate dovetailed mortise, formed, respectively, in the base and leg of said stool.

Having fully described my invention, what I claim is—

1. As a new article of manufacture, the herein-described dowel-pin, consisting of a rectangular block provided with converging slits in each end thereof, substantially as described.

2. As a new article of manufacture, the herein-described dowel-pin, consisting of a rectangular block provided with rounded edges and with converging slits in each end thereof, substantially as described.

3. The herein-described joint, consisting of parts 1 and 2, provided with mortises 3, reduced at their openings, a rectangular dowel-pin 12, having rounded edges and converging slits in its ends, and wedges adapted to enter said slits and spread the ends of the pin, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MARION J. ANDRUS.

Witnesses:

CHAS. G. ANDRUS,

EDWARD EVERETT LONGAN.