

(No Model.)

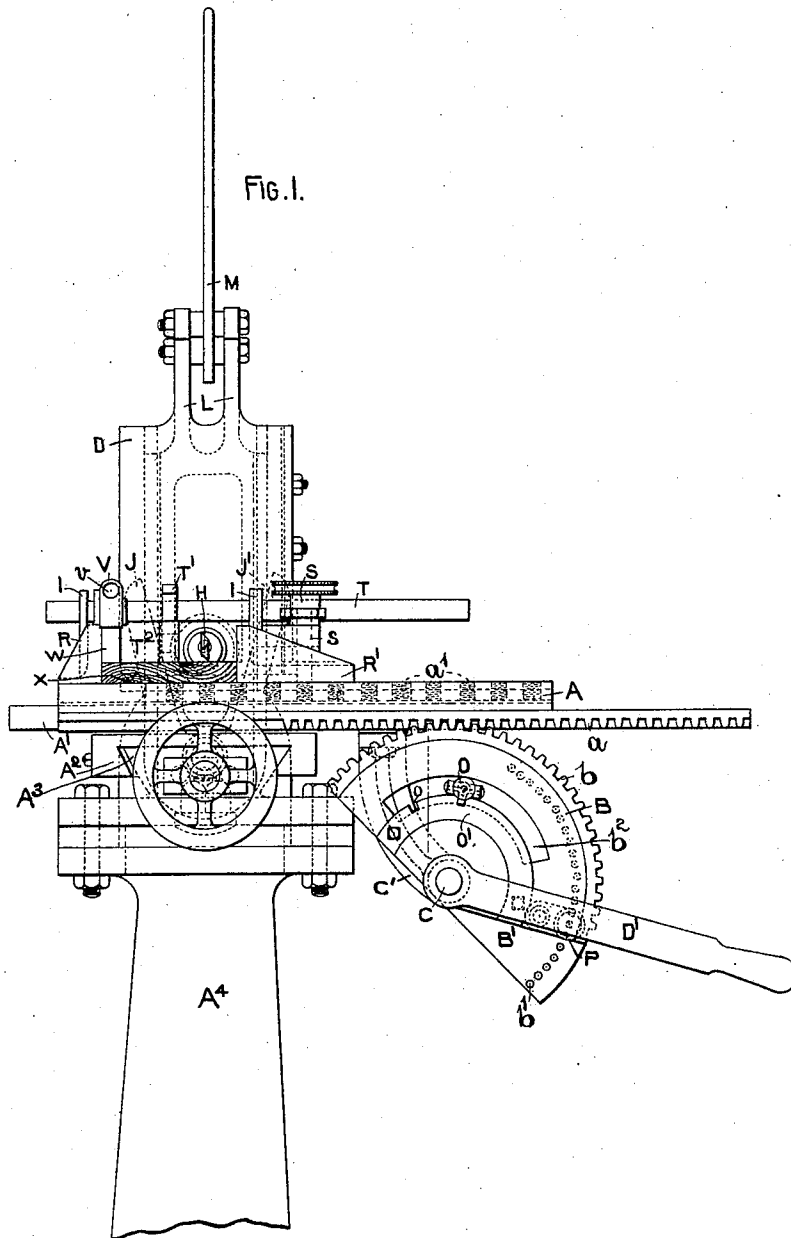
J. R. RICKARD.

4 Sheets—Sheet 1.

MACHINE FOR CUTTING DOVETAILS, &c.

No. 576,614.

Patented Feb. 9, 1897.



WITNESSES:

William H. Barnes.
Alfred H. Broad

INVENTOR.

James Reed Rickard
per Robert S. Phillips.
Attorney.

(No Model.)

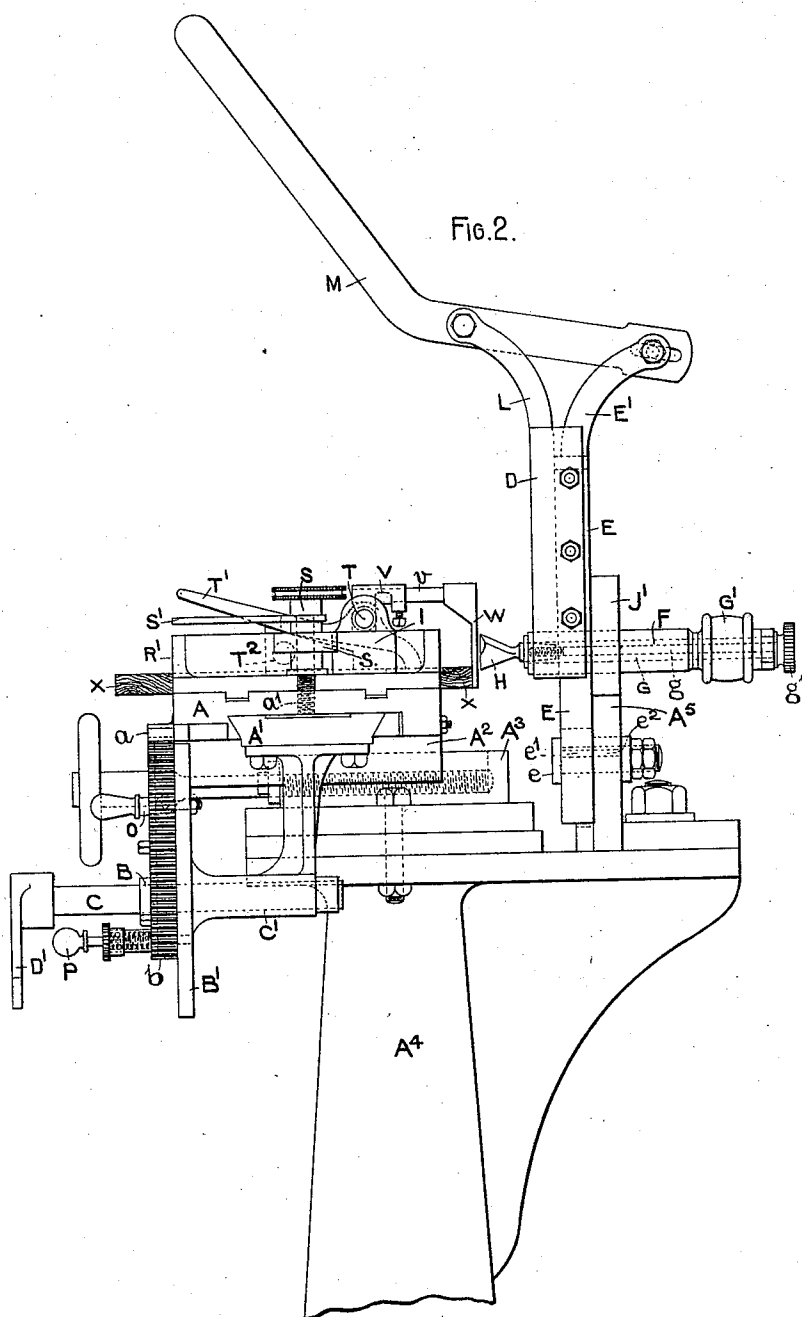
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4 Sheets—Sheet 2.

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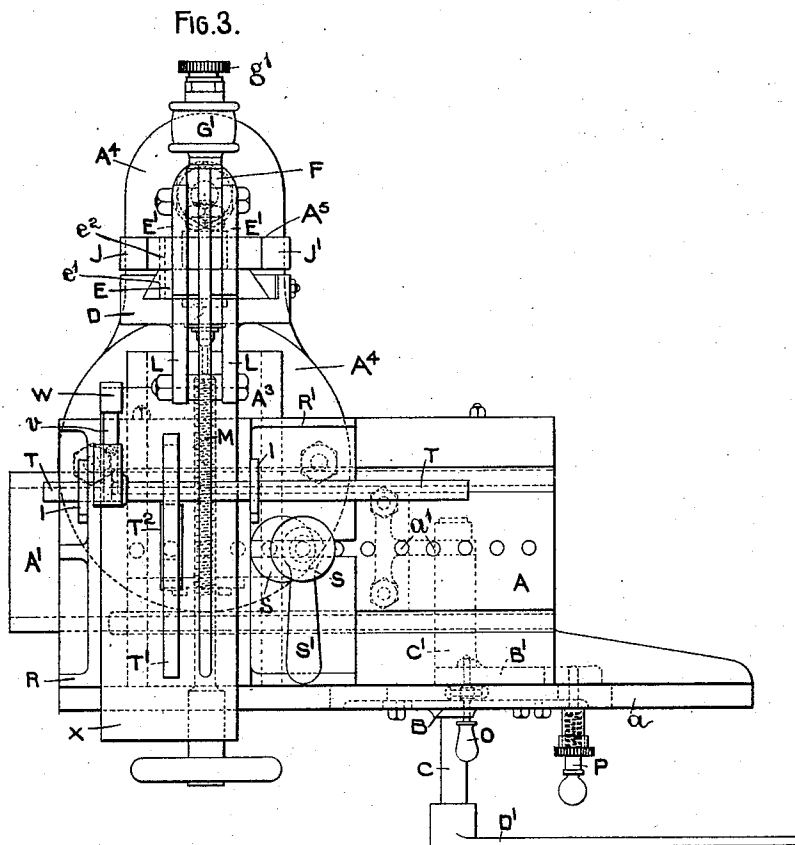
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WITNESSES:

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FIG. 4.

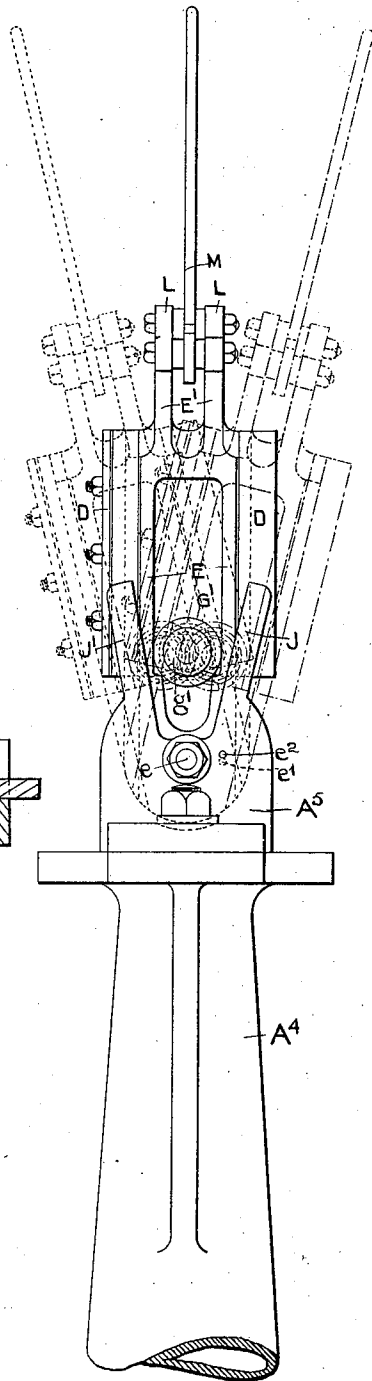


FIG. 6.

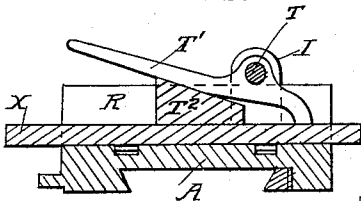
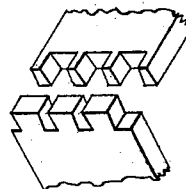


FIG. 5.



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UNITED STATES PATENT OFFICE.

JAMES READ RICKARD, OF LONDON, ENGLAND.

MACHINE FOR CUTTING DOVETAILS, &c.

SPECIFICATION forming part of Letters Patent No. 576,614, dated February 9, 1897.

Application filed March 16, 1896. Serial No. 583,300. (No model.) Patented in England January 17, 1895, No. 1,124.

To all whom it may concern:

Be it known that I, JAMES READ RICKARD, a subject of the Queen of Great Britain, residing at Lambeth, London, in the county of Surrey, England, have invented a new and useful Machine for Cutting Dovetails, Miters, and the Like, (for which I have obtained a patent in Great Britain, No. 1,124, bearing date of January 17, 1895,) of which the following is a full and complete specification.

My invention relates to a machine for cutting dovetails, miters, and the like in which a traversing table adapted to carry the piece of wood operates in conjunction with a slide carrying a revolving cutter-bit, the object being to obtain a machine that will cut dovetails, miters, and the like rapidly and correctly and which is simple and inexpensive to manufacture.

In the accompanying drawings, which illustrate my invention, Figure 1 is a view in front elevation of the machine. Fig. 2 is a view in side elevation thereof. Fig. 3 is a view in plan thereof. Fig. 4 is a broken view of the back of the machine, showing the way in which the slide carrying the cutter is swung over to the required angle to cut the female parts of the joint. Fig. 5 is a perspective view of male and female dovetails cut by this machine, illustrating how they fit together. Fig. 6 is a cross-section through the table, showing the clamping-lever and wedge.

The machine, which may be mounted on any suitable stand, consists, essentially, of a table A, mounted to slide transversely on a bed A', carried by a saddle A², adapted to slide at right angles to the table A on a bed A³, carried by the stand or pedestal A⁴ of the machine. The table A is operated by means of a rack and quadrant, the rack *a* being formed on or fixed to the table and the quadrant B being mounted on a suitable spindle C, carried by a bearing-bracket C', attached to the bed A'. The quadrant B is operated by means either of a lever-handle D' or by a hand-wheel attached to the spindle C. The saddle A² is operated by means of a hand-wheel, screwed spindle, and nut in a manner similar to the slide-rests of lathes. Immediately behind the table A is a saddle D, mounted to slide on a bed-plate E, pivoted at *e* to a vertical plate or bracket A⁵, fixed to

the stand or pedestal A⁴. The saddle or slide D carries a bearing F, in which is mounted a spindle G, adapted to be driven by means of a pulley G', mounted on its back end, motion being communicated to the said pulley by a band from any convenient source of power, a suitable tensioning device of any known construction being used for keeping the driving-band taut in any position that the pulley G' may assume. The spindle G for carrying the cutter-bit H is made hollow, and its front end is coned to receive the tapered shank of the cutter, which is drawn up into it by means of a threaded rod *g*, adapted to be passed through the axle from the opposite end thereof and to be threaded into the screwed end of the cutter-bit by means of the milled head *g'*, as shown in Fig. 2 of the accompanying drawings.

Formed on or fixed to the plate or bracket A⁵ are two arms J and J', forming by and between them a fork, against the sides of which the bearing F bears when the bed-plate E, together with the saddle or slide D, is pushed over into either of the positions shown by dotted lines in Fig. 4. The angles which the forked arms J and J' form with the vertical plane must be made to correspond with the angle to which the sides of the female part of the dovetail are to be cut. This may be effected either by pivoting the two arms together at their base, and providing them with any suitable locking device, or by providing for the ready detachment of the said arms from the plate or bracket A⁵, so that another pair of arms forming a different angle may be readily substituted. I prefer this latter arrangement, for as it is customary to cut the sides of the female parts of dovetail joints at a given angle the variation of the angle of the arms J and J' is seldom necessary.

The saddle or slide D is traversed up and down either by means of a hand-lever M, fulcrated to an arm L, formed on or attached to the saddle or slide D and acting on an arm or bracket E', formed on or attached to the bed-plate E, as shown by Figs. 1, 2, 3, and 4 of the accompanying drawings.

Behind the toothed quadrant B is a fixed plate B', carried by the bearing-bracket C'. If the pitch of the dovetails is a constant one, the quadrant B is locked to the fixed plate

B' by means of a spring-controlled pin, such as P, mounted on the quadrant B and engaging with equidistant holes *b'* in the plate B', but if the dovetails are intended to be cut at an uneven pitch, to imitate hand-work, the quadrant B is locked to the fixed plate B' by a catch, such as O, pivoted to the plate B' and adapted to engage with irregularly-spaced notches *o*, formed in an interchangeable plate O', fixed to the quadrant B, a suitable slot *b*² being formed in the quadrant B for the catch O to pass through.

The table A carries a clamp for holding the wood, which consists, essentially, of a fixed bracket R and a sliding bracket R', adapted to be adjusted with respect to the table A to clamp the piece of wood to be cut by means of an eccentric *s*, mounted loosely on a pin S, adapted to be screwed into the table A in one of a series of holes *a'* therein. The eccentric *s* is operated by a lever S', and after the piece of wood is firmly clamped the pin S is tightened by means of its milled head to lock both the eccentric *s* and the bracket R' in position.

On each of the brackets R and R' are formed or fixed bearing-brackets I, in which is loosely mounted a round bar T, which carries a gripping-lever T' for gripping and holding the piece of wood X to be cut down on the table. This lever T' is loosely mounted on the bar T, and its front edge is jammed tightly down upon the piece of wood X by pushing a wedge T² under its rear end. On the bar T is also loosely mounted a socket V, in which is adjustably mounted a bar *v*, carrying at its free end a finger W, which forms a stop for adjusting the front edge of the piece of wood to be cut according to the depth of the dovetails. After the piece of wood is clamped in position the socket V is turned backward on the bar T, so as to bring the finger W out of the way of the cutter-bit when the table is traversed.

To cut the male part of the dovetail joint, the bed-plate E, with its slide D, is placed in a truly vertical position and is locked in that position by means of a pin adapted to be passed through the holes *e'* and *e*², formed in the bed-plate E and the plate or bracket A⁵, respectively. The cutter-bit H used is of the shape shown by Fig. 2 of the accompanying drawings, having three cutting edges—viz., the front cutting edge and the two side cutting edges, which are cut at an angle with the front cutting edge as will produce the desired dovetail. After the saddle A² has been traversed on the bed A³ toward the plate E as far as it will go the front edge of the wood X is in its proper position with respect to the cutter to cut the dovetails of the required depth. The saddle or slide D, carrying the cutter-bit H, is then brought down until it has passed through the wood and cut the male part of the dovetail. The saddle or slide is then raised

again and the bed A is traversed to bring the piece of wood into the position for cutting the next dovetail by either of the means hereinbefore described, the movements being repeated until all the parts are cut.

The female portions of the dovetail are cut in the following manner: The bed-plate E, together with the saddle or slide D, and consequently the cutter-bit H, is rocked on its pivot *e* into one of the positions shown in dotted lines in Fig. 4. The cutter-bit has parallel side cutting edges and a front cutting edge at right angles to the said side edges, as shown in Fig. 2. After the wood to be cut has been brought sufficiently far under the cutter-bit the slide D is brought down and will be guided in an angular direction by reason of one or other of the forked guides J and J', the angle corresponding to the angle of the female portion of the dovetail. As soon as the cutter is clear of the wood the slide D is raised and the bed-plate E is pushed over to the side until the bearing F is resting against the other guide. The cutter-bit is again depressed, thus cutting the other side or wall of the dovetail. The table A is then traversed, as hereinbefore described, to the position for the next dovetail to be cut, and so on.

It will be understood that instead of cutting first one side or wall of the female portion of the dovetail and then shifting the slide carrying the cutter-bit so as to cut the other side or wall, as above described, all of the sides or walls having one angle may be cut first by traversing the bed A and then all the other sides or walls having the opposite angle may be cut.

What I claim is—

1. In a dovetailing-machine, the combination, with a stationary plate and two arms J and J' carried thereby and forming a V-shaped guide, of an oscillatory plate E, a pin *e* pivoting the plate E to the said stationary plate at a point below the apex of the V-shaped guide, a saddle provided with a bearing engaging with the said arms, said saddle being slidable on the plate E, and a revoluble spindle journaled in the said bearing and provided with a cutter-bit for cutting dovetails, substantially as set forth.

2. In a dovetailing-machine, the combination, with a slidable table for supporting the work, and a toothed rack secured thereto; of a stationary plate provided with equidistant holes, a second stationary plate provided with irregularly-spaced notches, an oscillatory toothed quadrant gearing into the said rack, and two separate locking devices carried by the said quadrant and arranged to engage with the said holes and notches respectively, substantially as set forth.

JAMES READ RICKARD.

Witnesses:

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WILLIAM H. JAMES.