2 Sheets. Sheet 1.

J. Felber.

Mortising Machine.

No. 82,816 Patented Oct. 6, 1868.

Fig 1.

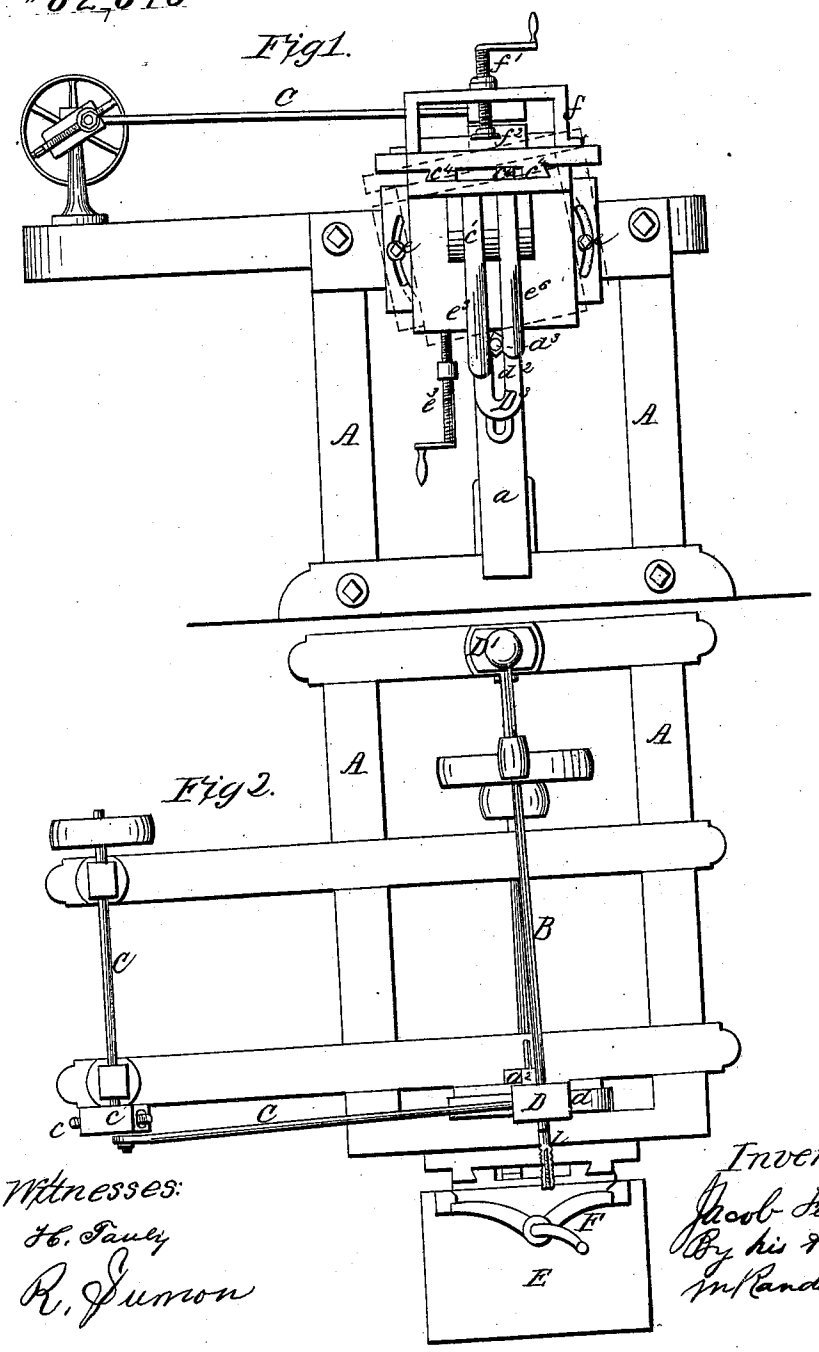

Fig 2.

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R. Dumon

Inventor:
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By his Attys
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2 Sheets-Sheet 2.

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Fig 3.

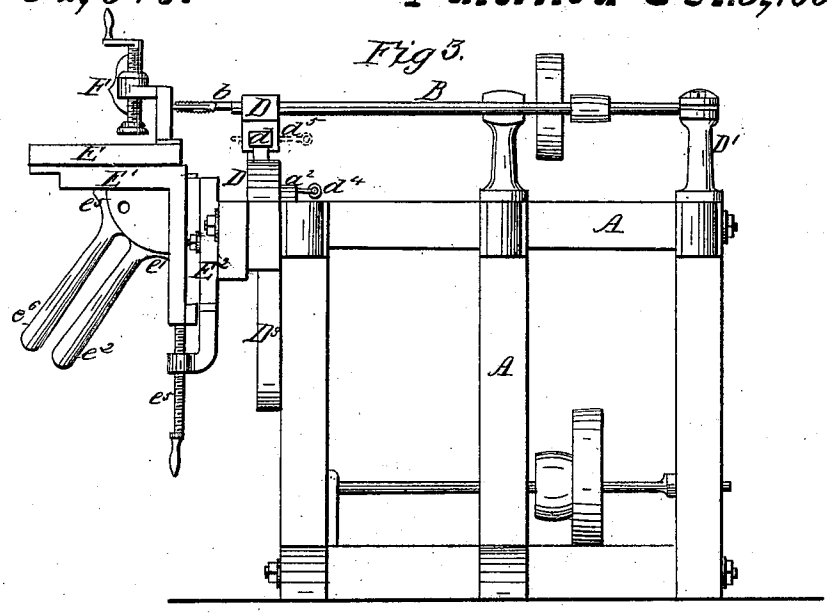


Fig 4.

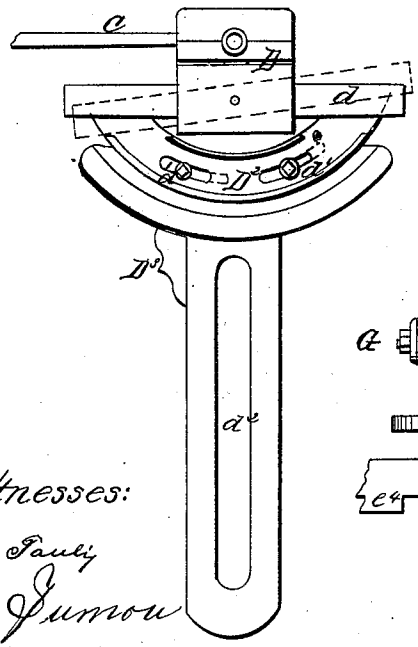


Fig 5.

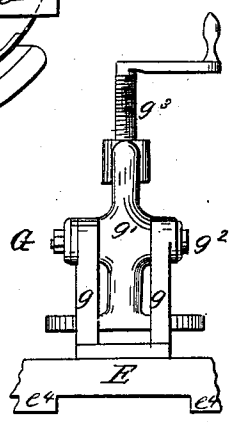
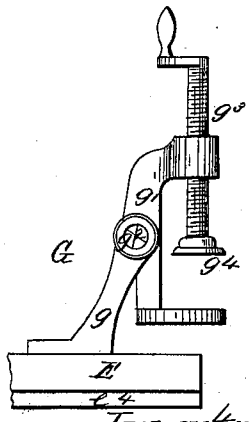


Fig 6.



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JACOB FELBER, OF ST. LOUIS, MISSOURI.

Letters Patent No. 82,816, *dated October* 6, 1868.

IMPROVEMENT IN MACHINES FOR MORTISING, SLOTTING, AND DOVE-TAILING.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JACOB FELBER, of St. Louis, in the county of St. Louis, and State of Missouri, have made certain new and useful Improvements in Machines for Mortising, Slotting, and Dove-Tailing; and I do hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This machine is especially adapted to operating the slotting-tool covered by patent of William Zimmerman.

It consists of a frame, on which bearings are provided for two rotating arbors, one of which carries the tool in its end, and has a compound motion, which consists of a rotary motion about its axis, and a pendulous motion of its tool-end, the latter motion being imparted to it by means of an adjustable crank-wrist, attached to the other arbor, and a connecting-rod. The pendulous motion of the said tool-arbor is for the purpose of giving the required length to the slot or mortise, and the length of the stroke may be adjusted to a great nicety by means of the adjustable wrist, which imparts the motion to it. The line of motion given to the pendulous end of the arbor may be straight, either in a horizontal, vertical, or diagonal plane, or it may be in a curved line, described from any desirable radius.

The article which is to be mortised, slotted, or dove-tailed, is to be secured to an adjustable table, which is capable of an adjustable vertical or lateral motion. The clamp, by means of which the stuff is to be secured to the said table, is to be capable of securing the stuff thereto, either in a horizontal plane, or at any angle of inclination desired. The screws, by means of which the stuff is secured to the table, have a compound right-and-left motion, so as to operate expeditiously.

To enable those skilled in the art to make and use my improved machine, I will proceed to describe its construction and operation.

Figure 1 of the drawings is a front elevation of the machine.

Figure 2 is a plan.

Figure 3 is an end elevation.

Figure 4 is a sectional elevation, showing the arrangement for changing the direction of the slot or mortise.

Figure 5 is a front elevation of table and clamp used for diagonal mortising.

Figure 6 is an end elevation of the table and clamp shown in fig. 5.

The frame A, which supports the operative parts of the machine, furnishes bearings in its top face for the two rotating arbors B and C. The arbor B carries in its forward end the tool *b*, which cuts the mortise or slot. This tool is a peculiar device of itself. It consists of a grooved cylinder, constructed in such a manner as to present serrated cutting-edges, that cut the chips up into very fine particles, that may then be very easily removed from the mortise. The forward end of the tool is provided with cutting-edges, that enable it to bore directly into the piece to be mortised, and then the cutting-edges, which are provided on the sides of the tool, enable it to cut its way laterally into the wood in whatever direction may be desirable.

The arbor B should have a very rapid motion about its axis, and the tool-end of it should also have a pendulous motion, either in a straight or curved line, for the purpose of giving the proper length, direction, and form to the mortise, as will be hereinafter more fully explained. This pendulous motion is imparted to the arbor B by means of the crank *c* and pitman C′ attached to the arbor C. The crank *c* may be regulated, by means of the screw *c′*, to any required length of stroke. The inner end of the pitman C′ is coupled to the sliding box D, which carries the tool-end of the arbor B. The arbor B has globe-bearings in both of its bearing-boxes, D and D¹, and this enables it to revolve freely on its axis at the same time that it has a pendulous motion. The box D is fitted to a sliding rail, *d*, which forms the top edge of the segmental plate D², and this plate is secured by means of the screw-bolts *d*¹ to the top edge or end of the pendulum-guide D³. This pendulum-guide consists of a vertical arm and a T-shaped head.

A slot, *d*², in the vertical arm, extends nearly its entire length, and permits the pivot-pin *d*³ to be moved up or down, as occasion may require, to lengthen or contract the stroke of the said pendulum-guide. A similar

vertical slot is provided in the post a, which is a portion of the frame A, for the operation and vertical adjustment of the pin d^3. A collar in the centre of the said pin, and a nut on the back end of it, afford the means of securing it rigidly to the post a at any required elevation, while the nut on the front end serves to keep the pendulum in the proper place on the pin. There is a separate ferrule for each of the pieces a and D^3, and the bolt or pin d^3 passes through both of them, which thus furnish bushings for it.

When the tool b is desired to travel in a straight line, in a horizontal plane, so as to cut a straight mortise, the pin d^4 is to be passed through the lug a^2 on top of the frame A, as shown in fig. 3, and into a hole made in the pendulum-guide D^3 for its reception. This secures the said pendulum-guide in a fixed position, and allows the box D to slide back and forth on the rail d, as it is operated by the crank c and pitman C′, thus enabling the tool b to travel in a reciprocating horizontal motion, and thereby cutting a straight horizontal mortise or slot.

Should it be desirable to cut a diagonal mortise, the segmental plate D^2, which carries the rail d, may be adjusted to the pendulum, (now become a fixed support,) at any required angle of inclination, by means of the adjusting-bolts d^1, as is clearly indicated by dotted lines in fig. 4.

Should it be desirable to cause the tool b to travel in a curved line, so as to cut a curved mortise, as is frequently required in furniture or cabinet-work, the pin d^4 is to be removed from the lug a^2, and inserted through holes prepared for it in the box D and plate D^2, as is most clearly shown at d^5 in fig. 3. The box D then becomes securely fixed to the pendulous guide D^2 D^3, and as it is moved forward and backward by means of the crank c, as clearly described, the tool b will describe an arc of a circle, the radius of which will be equal to the distance between the axes of the arbor B and pin d^3, and this distance may be increased or diminished, as circumstances may require, by the vertical adjustment of the pin d^3, as has already been explained.

The stuff to be mortised is to be placed on the table E, and there clamped fast by either the clamp F or G, as will be presently explained. The table E rests on the bed-plate E^1, and this bed-plate in turn is sustained by the face-plate E^2, which is secured to the face of the machine-frame A. The face-plate E^2 is adjustable in a diagonal direction, by means of the screw-bolts e, as shown by the dotted lines in fig. 1. The bed-plate E^1 is attached to the face-plate E by means of dove-tailed ways placed between them and the cogged sector e^1, which is provided with a lever or handle, e^2, and has its axle provided with bearings in the said bed-plate, gears into a cogged rack, (not shown,) on the face of the plate E^2, and affords a means of raising or lowering the table E by simply raising or depressing the lever or handle e^2. This arrangement may be useful when the width of the mortise being cut is to be increased beyond the size of the tool cutting it.

A set-screw, e^3, attached to the frame A, below the said bed-plate E^1, will be convenient for adjusting and regulating the vertical position of the table. The table E rests on the bed-plate E^1 by means of the intervening dove-tailed ways e^4, and on these ways the said table has an adjustable lateral feed-motion. This motion is imparted to it by means of the cogged sector e^5, which is provided with a lever or handle, e^6. This sector, like the one marked e^1, has the bearings of its axle provided in the bed-plate E^1. It gears into a cogged rack, the end of which is seen at e^7 in fig. 1, and which is attached to the bottom of the table E. By raising or lowering the outer end of the lever e^6, the sector e^5 actuates the table E, which is advanced toward or retreated from the tool b in this manner, so as to cause it to feed into the stuff, in the desired manner, until the desired depth of the mortises is reached.

The clamp F, by means of which the stuff is to be secured to the table E, consists of the metallic frame f and the screw f^1. This clamp is only to be used when the mortise or slot is to be cut into the stuff in a direction parallel with one of its faces. The screw is operated by a crank on its upper end, and it has a washer, f^2, on its lower end, into which washer screw-threads are cut for the reception of the small threads cut on the lower end of the screws, which are made at an opposite angle from those threads of the screw which find their bearings in the frame f. By means of these compound threads of the screw f^1, a quick motion is given the clamp, the same as the motion is given in most letter-presses.

When diagonal mortising is required, the clamp G is to be used, and the clamp F is then to be removed. The arrangement of the clamp G is best seen in figs. 5 and 6. It consists of a metallic stand, g, which is bolted to the table E, and a diagonally adjustable clamp-frame, g^1, which is to be adjusted at any required angle of inclination, and then fixed in position by means of the screw-bolt g^2, which passes through both it and the frame g. The clamp-screw g^3 and its washer g^4 are similar in every respect to the above-described screw f^1.

Having thus described my invention, what I claim, is—

The combination of the arbor B, pivoted by ball-and-socket bearing at D^1, and guided by ball-and-socket bearing in the sliding head D, with said head D, the segmental plate D^2, pendulum D^3, its slot d^2, and the pivot-pin d^3, when operating substantially as and for the purpose set forth.

JACOB FELBER.

Witnesses:

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GEO. W. HERBERT.