

(No Model.)

2 Sheets—Sheet 2.

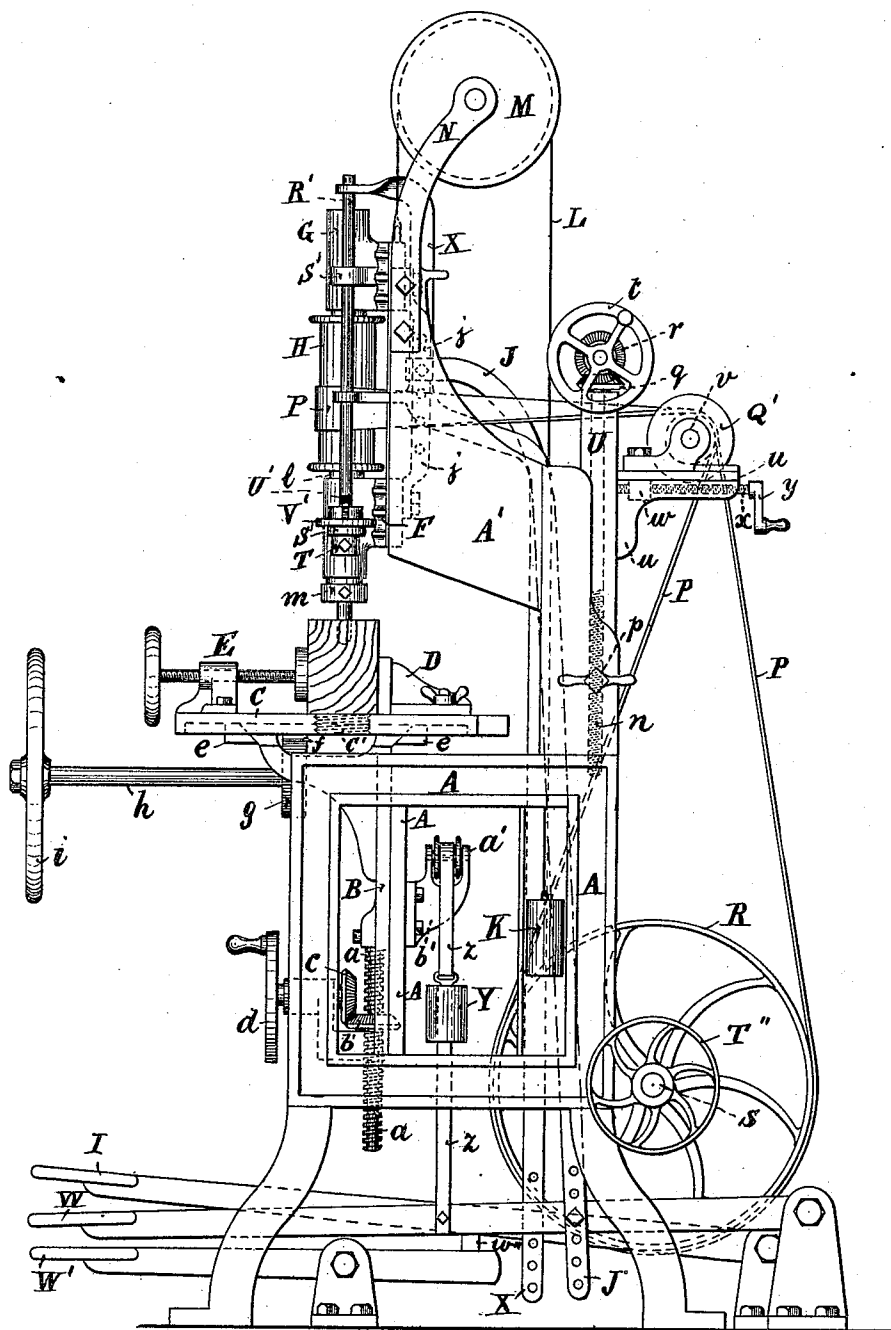
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MACHINE FOR MORTISING, BORING, MOLDING, ROSETTE CUTTING, &c.

No. 345,010.

Patented July 6, 1886.

FIG. 2^A



Witnesses.

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MACHINE FOR MORTISING, BORING, MOLDING, ROSETTE-CUTTING, &c.

SPECIFICATION forming part of Letters Patent No. 345,010, dated July 6, 1886.

Application filed July 27, 1883. Serial No. 102,118. (No model.)

To all whom it may concern:

Be it known that I, REYNOLDS T. WHITE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Machines for Mortising, Boring, Molding, Rosette-Cutting, &c., of which the following is a specification.

My invention relates to improvements in wood-working machines, and combines in one a mortising-machine, boring-machine, variety-molder, inside-panel molder, rosette-cutter, sash-pulley, and hub-mortising machine; and the invention consists of a rotary cutter, the spindle of which is supported in bearings on a supplementary frame which slides in grooves on the main frame, and operated by a treadle and weight, the material to be operated upon being placed on a table or support which is adjustable as to height and capable of being moved backward and forward by means of a cog-wheel gearing into a rack on the under side of the table. A means for holding a chisel to cut square-end mortises is arranged beside the revolving spindle, and is forced down by means of a treadle and raised by a weight. Means are also provided for keeping taut the belt driving the revolving spindle.

In machines of this class in common use the spindle that carries the working-bit usually runs through sleeves in solid bearings, so that when the bit is brought down upon the stock it (the bit) is at considerable distance from the solid bearings, thus rendering it liable to spring or vibrate and cause it to make an uneven mortise, whereas in my present machine, the spindle being made to run in solid bearings, and the frame that carries said bearings, are all brought down in one solid body, as it were, the bit extending up into the bearings, and thereby insuring a rigid and steady action of the bit without any spring or vibration.

Referring to the accompanying drawings, Figure 1 is a front view of a machine embodying my invention. Fig. 2 is a side view. Fig. 2^a is also a side view, somewhat enlarged, showing the bit brought down into the stock. Fig. 3 is a plan or top view of the same. Fig. 4 is a back view of a portion of the machine. Figs. 5, 6, and 7 are respectively plan or top view,

front view, and side view, of the pulley-stile holder.

A A' is the main frame. Near the front of the lower portion, A, is fitted, so as to slide up and down freely, a frame, B, which carries a table, C. The frame B is raised and lowered as required by means of a screw, *a*, fixed to said frame and passing through a thread in the bevel-wheel *b*, to which motion is imparted from a hand-wheel, *d*, through bevel-wheel *c*, and when in the desired position is clamped to the frame A by the bolt *a'*. The top of the frame B is provided with beveled edges, over which fit lugs *e*, on the under side of the table C; or on the top of the frame may be provided beveled projections, and the bottom of the table formed to correspond, so that the table can be laid on; also, on the under side of the table C is a rack, *f*, into which gears the pinion *g*, carried by a spindle, *h*, one end of which is fitted with the hand-wheel *i*, so that by turning the hand-wheel *i* the table C is moved backward or forward.

On the top of the table C is a rest, D, which is adjustable as to its position on the table, and a clamping device, E, the object of these being to firmly hold the material to be operated upon.

In the center of the table C is a circular removable piece, C', (shown in dotted lines in Fig. 2,) which may be screwed or otherwise secured to the table. This piece is removed when required to bore through the material or when used for molding.

On the inner sides of the face of the upper portion, A', of the main frame are cut beveled grooves, into which fit the edges, correspondingly formed, of a sliding frame, F, a filling-piece being inserted between the two edges on one side, which filling-piece can be tightened up by means of screws *k*, thus compensating for any wear of the beveled edges. The sliding frame F is provided with bearings G, that carry a spindle, *l*, on which is mounted between the bearings a pulley, H. The lower end of the spindle *l* is provided with a boss, *m*, onto or into which is secured the tool required for the work to be done.

The sliding frame F, and with it the spindle *l*, is brought down to its work by means of a treadle, I, and connecting-bar J, which latter

is secured to a bar, *j*, on the back of the frame F, holes being provided in the bar *j* for adjusting the position of the bar *J* thereon. The frame F is brought up, or to its normal position, by means of weights K, attached to one end of bands L, the other end being connected to the top of frame F, after passing over guide-pulleys M, which are carried by standards N, secured to the main frame A'.

- 10 F'' F'' are stops secured to the frame A' by means of set-screws passing through slots in said stops, which are adjusted according to the thickness of material to be operated upon and the depth of mortise it is required to cut.
- 15 A stud or bolt-head, F''', on the sliding frame F, coming in contact with the stops F'', limits the travel of the sliding frame F.

The pulley H is driven by the belt P, which passes over two idle-pulleys, Q Q', and thence round pulley R on shaft S, one end of which is fitted with fast and loose pulleys T' T''; or three pulleys may be employed, so as to obtain a reverse motion when required. This arrangement being well known needs no further description.

- 25 The idle-pulleys Q Q' are adjustable both vertically and horizontally in the following manner: At the back of the main frame A (see Fig. 4) is fitted so as to slide freely a frame, U, which frame is raised or lowered by means of a screw rod, *n*, on each side passing through a nut, *p*, secured to the frame A', the upper ends of the screw-rods *n* being fitted with bevel-wheels *q*, that gear into bevel-wheels *r* on shaft *s*. The shaft *s* being turned by the hand-wheel *t*, an upward or downward movement is imparted to the frame U.

- On each side of the frame U are brackets *u*, provided on their upper surface with wedge-shaped projections, on which slide the brackets or bearings *v*, carrying the shaft V, on which the idle-pulleys Q Q' are mounted. The bearings *v* are held in position on the brackets *u* by means of a bolt, which passes through a slot in the bracket *u* and through the bearing *v*, and secured by a nut. The head *w* of the bolt forms a nut for the screw *x* to work in, so that by turning the cranks *y* the bearings *v* are drawn out or pushed in, as required for tightening the belt P.

When desired, the frame U may be raised and lowered by a hand-lever, instead of screws and bevel-gear.

- On the sliding frame F, by the side of the revolving spindle *l*, and on the same central line with it, is mounted a rod, R', free to slide in guides S'. At the lower end of the rod R' is fitted a chisel-holder, T, which can be turned half-way round by means of the catch U', which takes into notches in the plate V', to hold it in position according to the end of the slot that is to be squared. The chisel-holder rod R' is depressed by means of the treadle W, through connecting-bar X, and is raised to its normal position by means of weights Y, which is connected to the treadle W by means of a strap,

z, the strap *z* passing over the pulley *a'*, supported in the bracket *b'*, bolted to the frame A. Should the chisel, when forced down, become fixed in the material, it is released by pressing the foot upon the auxiliary treadle W', the end of which is provided with a projection or boss, *w''*, to bear against the treadle W, so as to force said treadle W up, thereby releasing the chisel.

Instead of the sliding frame F being raised by means of the belt L and weight K, it can, if desired, be raised by means of a spring, as shown in dotted lines in Fig. 1, in which case a screw-rod, L', is secured to the top of the frame F, and passes through a spring, K', secured at each end to the sides of the frame A', the required tension being obtained and regulated as required by means of a nut, M'.

Figs. 5, 6, and 7 show a pulley-stile holder, to be attached to the table C of the machine when required to cut mortises in pulley-stiles, and consists of a frame, *c'*, provided with front and back feet, *d' e'*, for attaching to the table C, the front feet fitting over the bolt-holes of the clamp E and the back feet over the bolt-holes of the rest D, which are both removed when the pulley-stile holder is used, and the bolts that held them down are now employed to secure the pulley-stile holder onto the table C. The frame *c'* is formed on its inner upper sides with beveled edges, into which fit the beveled edges of a sliding frame, *d''*, at the back of which is a rest, *e''*, against which the material is pressed by means of a clamp, *f'*, that slides on the inside of the sliding frame *d''*, and is operated by the hand-wheel *h'* and screw *g'*, the screw *g'* passing through a boss, *i'*, on the front of the sliding frame *d''*. A lever, *k'*, is pivoted to one side of the frame *c'*, and passes through a slot in the other side. It is there bent forward and provided at its end with a handle, *l'*. To the lever *k'* near the handle is hinged a pawl-lever, *p'*, the pawl taking into a notch in the adjustable gage-plate, *q'*, on the side of the frame *c'*, until released and pushed forward, when it enters a notch in the fixed plate, *r'*. The lever *k'* is connected to the sliding frame *d''* by means of a bar, *m'*, so that when one slot has been cut in the pulley-stile and the bit withdrawn the handle *l'* of the lever *k'* is pushed forward until the pawl enters the notch in the fixed plate *r'*, when the pulley-stile is in the proper position for the second slot to be cut.

The operation of the machine is as follows: The idle-pulleys Q Q' being adjusted so as to tighten the belt P, and the table C adjusted according to the thickness of the material to be operated upon and the depth of mortise desired, the material is then laid upon the table C, and clamped between the rest D and clamp E, and the treadle I depressed until the bit has cut to the full depth, when the hand-wheel *i* is turned, which moves the table C, and with it the material operated upon,

until a slot the desired length has been cut, when the treadle I is released and the sliding frame F is drawn up to its normal position by means of weights K. If round-end mortises only are required, the material is now taken off the table C; but if square-end mortises are required the table is moved so as to bring one end of the slot under the chisel carried by the holder T. The treadle W is then depressed and the chisel forced down into the end of the mortise, cutting out the round corners, thus leaving the end square. The table is then shifted so as to bring the other end under the chisel. Should the chisel become stuck in the stock, the foot is placed on the treadle W' and depressed, when the other end being thrown up the projection or boss w'' comes in contact with and forces up the treadle W, bar X, and with them the chisel-holder T, thereby drawing the chisel out of the stock.

When required as a boring-machine, the circular piece C' in the center of the table C (shown in dotted lines in Fig. 2) is removed, so as to allow the bit to pass quite through the stock.

When used as a rosette-cutter, a cutter of the desired form is secured to the boss m on the end of the revolving spindle l, which is brought down to cut the stock by depressing the treadle I, as before described, and when one rosette has been cut, the material is fed forward by turning the hand-wheel i, so as to have the rosettes the desired distance apart.

When used as a variety-molder, the rest D and clamp E are removed from the table C, and also, if necessary, the circular piece C', so that the collar can pass down and allow the knives to come close to the table, the material being fed by hand.

When used as an inside-panel molder, the rest D and clamp E are dispensed with, so as to allow the material to be moved freely about by hand.

When used for mortising pulley-stiles, the rest D and clamp E are removed, and the attachment shown in Figs. 5, 6, and 7 is fixed to the table C and operated as before described.

What I claim as my invention is—

1. The frame A, provided with brackets N, on which are mounted pulleys M, over which are passed belts P, secured at one end to the sliding frame F, and provided at the other ends with weights K, in combination with the bar j and adjustable rod J, and lever I, for im-

parting a vertical motion to the frame F and spindle l, substantially as shown and described.

2. In combination with the frame A, the brackets or bearings v, carrying the shaft V, on which are mounted the pulleys Q Q', the brackets or bearings v being adjustable both vertically and horizontally, vertically by means of hand-wheel t on shaft s, upon which are mounted bevel-gears r, that are in gear with bevel-wheels q, mounted upon a screw-threaded shaft, n, held so that it can be caused to revolve and work in a nut, p, so as to raise or lower the frame U, that carries the brackets or bearings v, and horizontally by means of levers y on the ends of screw-rods x, that work in nuts w on the underside of the brackets or bearings v, substantially as shown and described.

3. In a mortising-machine, the combination, with the spindle l, of the sliding rod R', working in guides S and carrying a square chisel, the rod or bar X, and treadle W, for bringing the chisel down to the material, and the band z, secured at one end to the treadle W, and having a weight, Y, at the other end for raising the rod, the band z passing over a pulley, a, secured in suitable bearings on the back of the frame A, substantially as and for the purposes described.

4. In combination with the table C, a pulley-stile holder consisting of a frame, c', provided with feet d' e', for attachment to the table C, and provided with beveled edges on its upper sides, into which fit a sliding frame, d'', provided at its back with a rest, c'', and at its front with a boss, i', through which a screw, g', passes, provided at one end with a hand-wheel, h', and at the other end with a clamp, f', that slides on the inner edges of the frame d'', and a lever, k', for moving the frame d'', said lever being provided with a spring-pawl, p', that enters a notch in the gage-plate q', so that the material can be shifted to bore the slots a proper distance apart, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

REYNOLDS T. WHITE.

Witnesses:

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