No. 779,955. PATENTED JAN. 10, 1905.

A. W. MILLER.

MORTISING MACHINE.

APPLICATION FILED DEC. 12, 1903

2 SHEETS—SHEET 1.

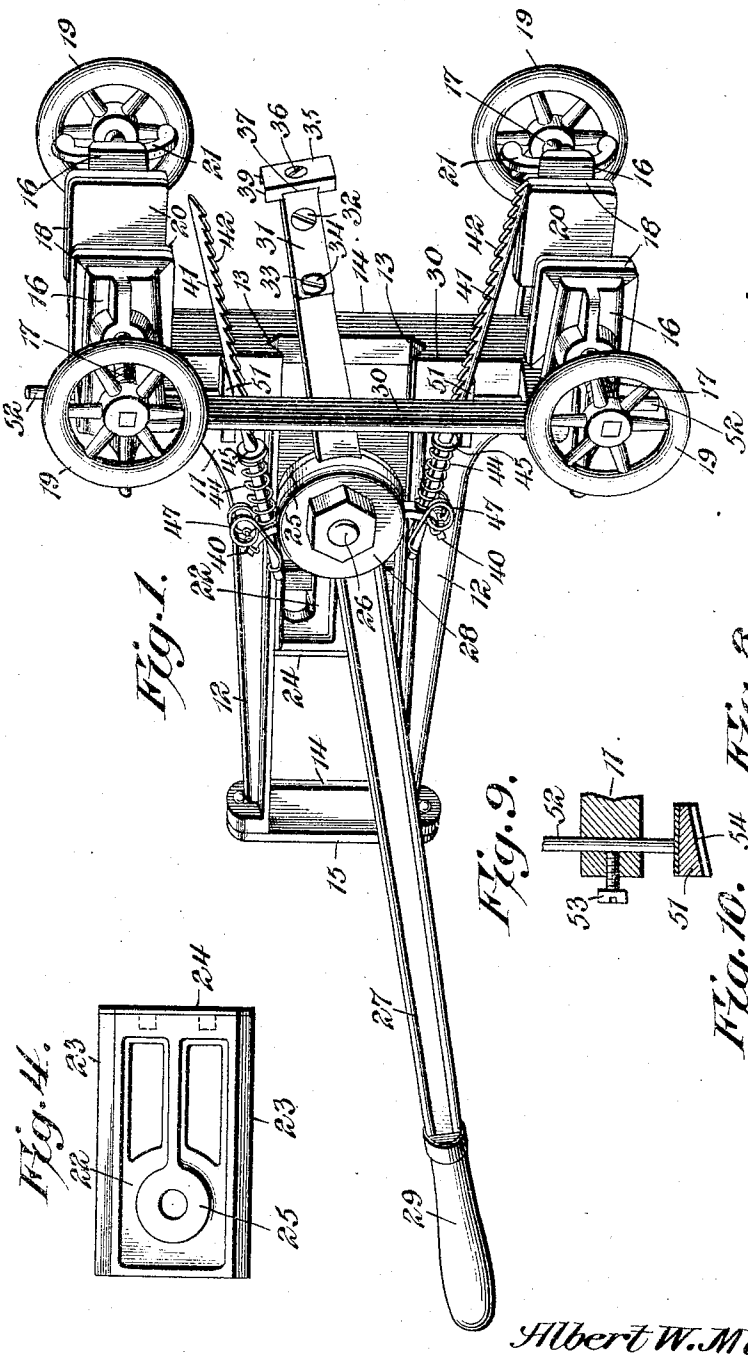


Fig. 1.

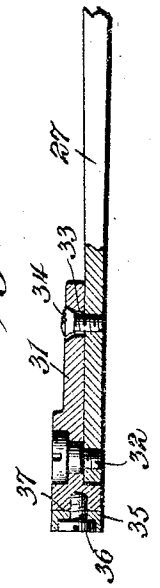


Fig. 7.

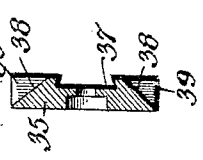


Fig. 6.

Fig. 9.

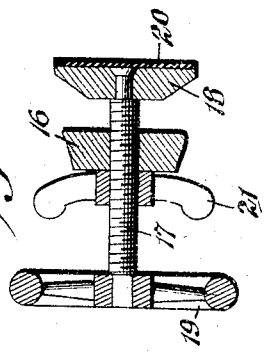


Fig. 10.

Fig. 4.

Witnesses
Howard D. Orr.
B. G. Lester.

Albert W. Miller, Inventor,
By E. G. Siggers.
Attorney

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2 SHEETS—SHEET 2.

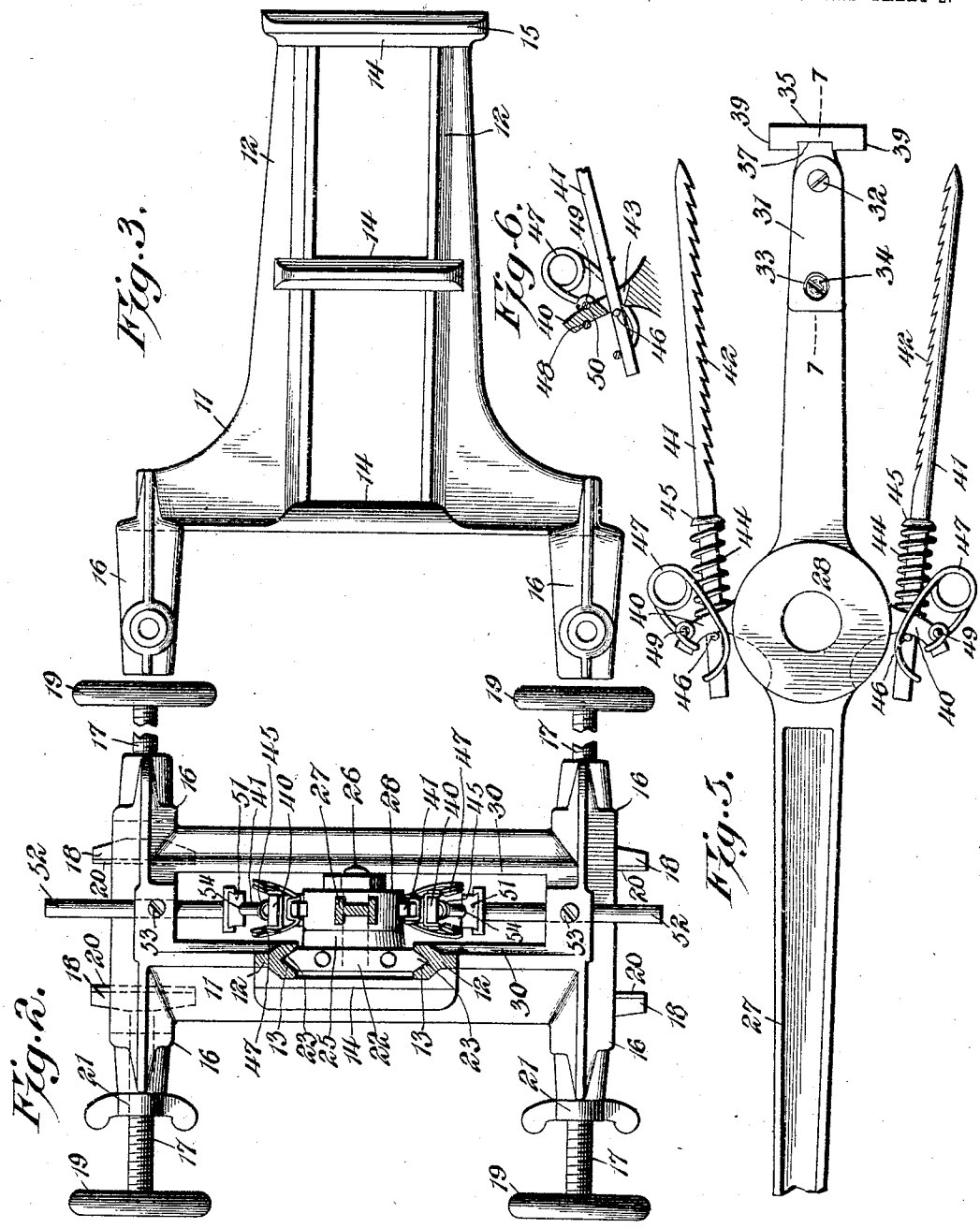


Fig. 3.

Fig. 6.

Fig. 5.

Fig. 2.

Witnesses
Howard D. Orr.
B. G. Foster

Albert W. Miller, Inventor,
By E. G. Siggers
Attorney

PHOTO-LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 779,955. Patented January 10, 1905.

UNITED STATES PATENT OFFICE.

ALBERT W. MILLER, OF RIVERSIDE, CALIFORNIA.

MORTISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 779,955, dated January 10, 1905.

Application filed December 12, 1903. Serial No. 184,930.

To all whom it may concern:

Be it known that I, ALBERT W. MILLER, a citizen of the United States, residing at Riverside, in the county of Riverside and State of California, have invented a new and useful Mortising-Machine, of which the following is a specification.

This invention relates to that class of machines employed in cutting mortises, and the prime object is to provide an instrument of this character which is simple in construction and at the same time efficient in operation.

More particularly, one of the features of the invention resides in means which can be attached directly to the article to be operated upon and may be arranged to cut mortises of different depths, lengths, and widths. Furthermore, when the proper adjustment upon the article has been obtained the instrument may be quickly and rapidly applied in succession to cut mortises of a similar nature.

Another feature relates to cutting and cleaning mechanism which is very simple and will operate to cut a mortise, at the same time removing therefrom the waste, thereby avoiding the choking and interference of the cutting device.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view of the improved machine. Fig. 2 is a rear elevation of the same, the actuating-lever being illustrated in section. Fig. 3 is a side elevation of the supporting-frame. Fig. 4 is a similar view of the carrier-block. Fig. 5 is a side elevation of a portion of the lever and the cleaning mechanism carried thereby. Fig. 6 is a detail sectional view through one of the fingers of the lever. Fig. 7 is a sectional view on the line 7 7 of Fig. 5. Fig. 8 is a detail sectional view through the cutter. Fig. 9 is a sectional view through a portion of the supporting-frame, showing the manner of mounting one of the stops for the cleaning devices. Fig. 10 is also a detail sectional view through a portion of the frame and showing one of the clamps.

Similar reference-numerals indicate corresponding parts in all the figures of the drawings.

In the embodiment illustrated a supporting-frame 11 is provided, and comprises spaced tracks or guides 12, provided with longitudinal grooves 13 in their opposing inner faces. These tracks or guides are connected by transverse webs 14, and the rear ends of the grooves are closed by a cap-plate 15, also connecting the tracks and detachably secured thereto. The opposite end of the frame is enlarged and carries at its upper and lower portions outstanding spaced ears 16. Through these ears are threaded upper and lower sets of shanks 17, carrying at their inner ends clamp-heads 18 and having suitable hand-wheels 19 attached to their outer ends. The opposing inner faces of the heads are preferably provided with cushioned surfaces 20, which may be of rubber or other suitable material. The shanks upon one side of the frame carry jam-nuts 21, which coact with the ears to lock the clamping members against movement for the reasons hereinafter described.

Slidably mounted on the tracks and bridging the space between them is a carrier-block 22, the opposite edges 23 of which are V-shaped and engage in the correspondingly-formed grooves 13 of said tracks. The block has its rear end cushioned, as shown at 24, which end is adapted to abut against the cap-plate 15 when the carrier is moved to its rearmost position. Said carrier also has a boss 25, and to this boss is pivoted, by means of a bolt 26, a lever 27, having an intermediate enlarged trunnion, through which the bolt 26 passes. One end of the lever extends beyond the rear end of the carrier-block and beyond the rear end of the supporting-frame, said end of the lever being formed into a suitable handle 29. The other end of the lever projects beyond the forward end of the carrier-bar and between guides 30, formed by the front end of the frame. This latter end of the lever carries a cutter-head 31, pivoted between its ends, by means of a screw 32, to the end of the lever and projecting beyond the same. The rear end of the head has an opening 33 therethrough, the outer portion of

which is beveled, as illustrated particularly in Fig. 7, and through said opening is passed a stop-screw 34, that is threaded into the lever and has a beveled head located in the beveled portion of the opening. The opening 33 is of greater diameter than the screw 34, as shown in Figs. 5 and 7, to permit the movement of the head upon the pivot 32. The free end of the cutter-head projecting beyond the end of the lever constitutes a support for a detachable cutter 35, fastened thereto by means of a screw 36 and engaging in a seat 37, formed in the rear wall of the cutter. The ends of the cutter are beveled, as shown at 38, and said ends are provided with side walls 39, that are preferably sharpened.

In connection with the cutting means there are employed cleaning devices which are attached to outstanding rearwardly-curved fingers 40, projecting from the lever 27 on opposite sides of its pivot. These cleaning devices comprise shanks or stems 41, having rearwardly-projecting teeth 42 on their sides that are adjacent to the lever. The shanks are arranged on opposite sides of the arm of said lever carrying the cutter. Their rear ends pass through openings 43, formed in the fingers 40, and coiled springs 44, surrounding the same, bear at their rear ends against the fingers and at their front ends against collars 45, formed upon the shanks. These springs urge the shanks forwardly, the movement, however, being limited by stop-pins 46, extending through the rear ends of the shank and normally bearing against the rear sides of the fingers. They are also urged outwardly or away from the lever by means of looped and doubled springs 47, the said springs bearing against the rear ends of the shanks and being attached to the free ends of the fingers 40 by engagement in notches 48 of said fingers and by means of pins 49, that pass through coils in the springs and are seated in other notches 50, formed in the fingers. The outward movements of the cleaning devices are limited by stop-blocks 51, carried by stems 52, that are slidably mounted in the frame and are normally held against movement by set-screws 53. The stop-blocks are preferably formed of wood and are detachably secured to the stems. They have inclined inner faces provided with grooves 54 to receive the shanks and permit the sliding movement thereof.

Assuming that a mortise to receive a lock is to be cut in a door, said door is first hung in the usual manner. Two holes are then bored in the edge of the door in the space in which the mortise is to be formed and at a distance apart equal to the length of said mortise. The machine is then attached to the door by means of the clamps, and the stops or guides 51 of the cleaning devices are adjusted so that the ends of said cleaning devices will enter the holes bored. By suitably operating the clamping members the machine can be shifted laterally of the door, so that it will be in proper position to cut the mortise. After this lateral adjustment has been obtained the jam-nuts 21 are screwed down, thereby locking the clamping members on one side of the machine, which consequently act as guides, so that when it is desired to place the machine upon other doors it is only necessary to loosen the unlocked members and reclamp them upon said other doors. In this way the machine will always assume the same lateral relation. It will of course be understood that the cushioned clamping-heads prevent the surface of the article being operated upon being marred or injured. Having obtained the desired position, the handled end of the lever is grasped by the operator and the entire mechism moved forward until the cutter engages between the bored holes. Said lever is thereupon oscillated, and as the cutter-head 31 has an independent pivotal movement said head acts as a self-feeder. In other words, the opposite edges of the cutter will alternately swing forward as they are opposed to the wood and each time will cut deeper. The amount of this movement can be varied as desired by screwing the stop 34 into or out of the lever, thereby carrying the beveled head into or out of closer coaction with the beveled walls of the opening through which said stop passes. It will also be noted that the oscillation of the lever will cause the cleaning devices to operate in and out of the openings, and thereby carry the chips and shavings from the same. In case any bunches of this refuse stick from one cause or another the lever can be brought down against either one of the cleaners, and such bunch can be ejected by an outward pull upon the lever. To prevent the cutters being thrown entirely out of the supporting-frame, the cap-plate is employed, and as the cushions are placed in the end of the slide the sudden jar caused by such rearward movement is taken up thereby. As the mortise nears completion it may happen that the ends of the cleaning devices will strike the inner ends of the openings, and as there is a yielding sliding connection between said devices and the fingers no damage will be occasioned thereby, and the full stroke of the lever can still be obtained. By urging the devices outwardly they will always follow the extreme outer walls of the bored holes, and this prevents shavings getting behind them and interfering with the work.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction

may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a mortising-machine, the combination with a supporting-frame including spaced tracks or guides, of clamping devices located at one end of the frame and operating transversely to the tracks or guides, a carrier-block slidably fitted between the tracks or guides, and freely movable in opposite directions, an operating device pivoted between its ends upon the carrier and projecting beyond the opposite ends thereof and beyond the rear end of the supporting-frame, and a cutter carried by the front end of the operating device, said operating device constituting the means for sliding the carrier-block to feed the cutter to its work.

2. In a mortising-machine, the combination with supporting means, of clamping devices located at one end of the supporting means for attaching the same to the work, a lever pivoted between its ends to the supporting means, one end of the lever projecting beyond the end of the supporting means having the clamps, and the other end extending beyond the opposite end of said supporting means and constituting an operating-handle, and a cutter pivoted upon the end of the lever that is located at the end of the supporting means having the clamps.

3. In a mortising-machine, the combination with a supporting-frame, of a carrier freely slidable thereon in opposite directions, a lever pivoted between its ends to the carrier and projecting beyond the same at one end, a cutter carried by said projecting end, the opposite end of the lever constituting a handle and being of sufficient length to extend beyond the rear end of the supporting-frame when the carrier has reached its limit of movement at the opposite end thereof, said lever also constituting the means for effecting the sliding movement of the carrier.

4. In a mortising-machine, the combination with a supporting-frame, of a carrier slidably mounted on the supporting-frame, a straight continuous lever pivoted between its ends upon the carrier and having its ends projecting beyond the carrier and the supporting-frame, a cutter mounted on one end of the lever, and a handle formed upon the opposite end.

5. In a mortising-machine, the combination with a supporting-frame including spaced tracks or guides, of clamps carried by one end of the frame for securing the same upon the work, a carrier-block slidably mounted between the tracks or guides, a straight single-piece lever having a pivotal connection between its ends upon the carrier and movable therewith, one end of said lever projecting between the clamps, and a cutter pivotally mounted upon said end of the lever, the other end of the lever projecting beyond the rear portion of the frame and forming an operating-handle for effecting the movement of the cutter and the movement of the carrier.

6. In a mortising-machine, the combination with a supporting-frame having spaced tracks or guides, of a carrier slidably fitted between the tracks or guides, and freely movable in both directions, means for attaching the supporting-frame to the article operated upon, and a lever pivoted between its ends upon the carrier and movable therewith toward and from the attaching means, said lever having a handle at one end and a cutter at the other, and furthermore, constituting the direct means for sliding the carrier and thereby feeding the cutter to its work.

7. In a mortising-machine, the combination with a supporting-frame including spaced tracks or guides, of spaced upper and lower sets of clamping devices adjustably mounted on the frame, a carrier-block slidably mounted between the tracks or guides and freely movable in opposite directions in a plane between the clamps, and a lever pivoted between its ends to the carrier-block, one end of said lever projecting between the clamps and having a cutter operating therebetween, the other end being provided with a handle portion, said lever also constituting means by which the carrier-block is moved.

8. In a mortising-machine, the combination with a swinging lever, of a cutter-head pivoted upon the lever and having a cutter at one end, said head also having a beveled opening therethrough at one side of the pivot, and a stop-screw passing through the beveled opening of the head and threaded into the lever, said screw being of less diameter than the opening to permit a limited play of the head upon its pivot.

9. In a mortising-machine, the combination with an oscillatory actuating device, of a cutter-head movably mounted on the device, and a cutter detachably mounted on the head and having faces provided with convergently-disposed portions terminating at their convergent ends in a cutting edge, said faces being entirely unobstructed when the cutter is detached to permit the sharpening of the edge.

10. In a mortising-machine, the combination with a swinging lever, of a cutter-head pivoted upon the lever, and a cutter detachably secured to the end of the cutter-head and being located at one end of the lever, said cutter having convergently-disposed faces terminating at their ends in cutting edges, and said faces being entirely unobstructed when the cutter is detached to permit the sharpening of the edges.

11. In a mortising-machine, the combination with a swinging lever, of a cutter-head pivoted upon the lever and projecting beyond the end thereof, a cutter located upon said

end and having a seat that receives the same, said cutter having convergent front and rear faces forming a cutting edge and a fastening device passing through the cutter and engaging the end of said head.

12. In a mortising-machine, the combination with longitudinally-movable and oscillatory cutting mechanism, of a longitudinally-movable cleaning device coacting therewith, said cutting mechanism and cleaning device being capable of independent movement in a longitudinal direction, and means for operating the cutting mechanism, said means having a yielding connection with the cleaning device.

13. In a mortising-machine, the combination with a swinging actuating device, of a cutter carried thereby, and a cleaner yieldingly supported on said actuating device.

14. In a mortising-machine, the combination with a swinging actuating device, of a cutter carried thereby, and a cleaner coacting with the cutter, said cutter being actuated by and having a yielding connection with the actuating device.

15. In a mortising-machine, the combination with a swinging actuating device, of a cutter carried thereby, and cleaners located on opposite sides of and having yielding connections with the actuating device.

16. In a mortising-machine, the combination with a swinging lever, of a cutter mounted thereon, and cleaners carried by the lever on opposite sides of its pivot and actuated thereby.

17. In a mortising-machine, the combination with a swinging actuating-lever pivoted between its ends, of a cutter mounted on one end of the lever, and cleaning devices yieldingly supported on the lever on opposite sides of its pivot, said cleaning devices coacting with the cutter.

18. In a mortising-machine, the combination with cutting mechanism including a swinging lever having an outstanding finger, of a cleaning device connected with the finger, and a spring bearing against the finger and cleaning device.

19. In a mortising-machine, the combination with cutting mechanism including a swinging lever having an outstanding finger, of a cleaning device including a shank slidably passed through the finger, and a spring coiled upon the shank and bearing against the same and against the finger.

20. In a mortising-machine, the combination with a supporting-frame, of a carrier slidably mounted on the frame, a lever pivoted between its ends upon the carrier and having outstanding fingers located on opposite sides of the pivot, a cutter carried by one end of the lever, a handle mounted upon the other end, cleaning devices including toothed shanks located on opposite sides of the cutter and slidably engaging the fingers, coiled springs located on the shanks and bearing against the same and the fingers, and other springs attached to the fingers and bearing against the shanks to urge the same outwardly.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ALBERT W. MILLER.

Witnesses:
WM. P. BRETT,
ROY E. CARTWRIGHT.