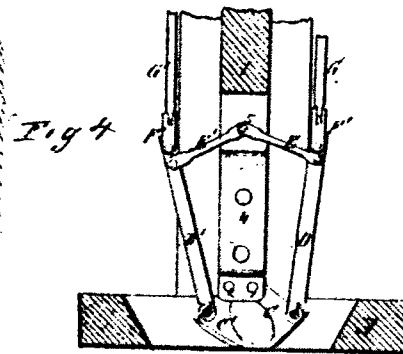
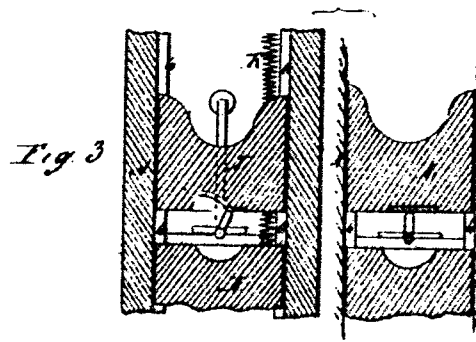
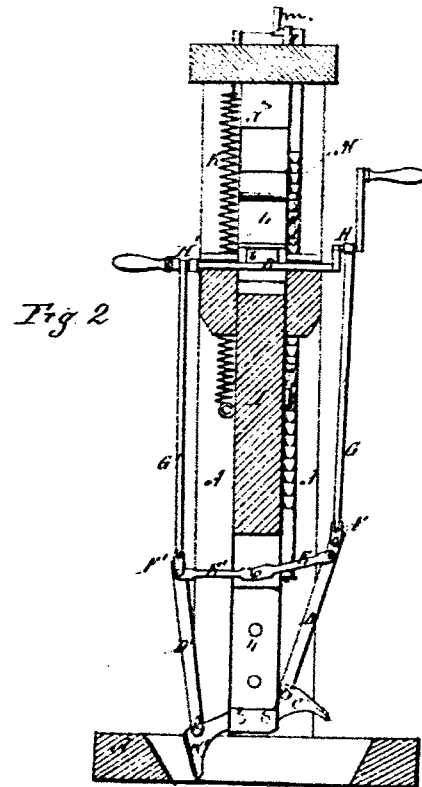
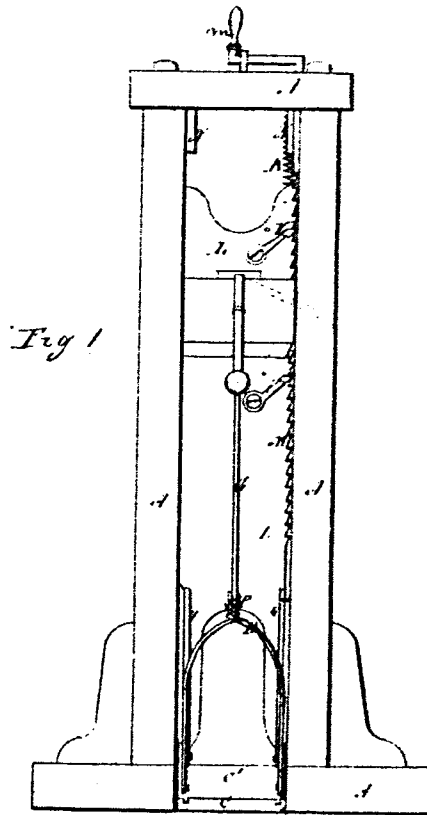


G. T. Savary,
Mortising Machine.
No. 106,511. Patented Aug. 16, 1870.



Witnesses
J. F. Baker.
John J. Hackett

Inventor
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United States Patent Office.

GEORGE THOMAS SAVARY, OF NEWBURYPORT, MASSACHUSETTS.

Letters Patent No. 106,511, dated August 16, 1870.

IMPROVEMENT IN MORTISING-MACHINE.

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, GEORGE THOMAS SAVARY, of Newburyport, in the county of Essex and State of Massachusetts, have invented certain Improvements in Mortising-Machines; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My improvements relate to that class of mortising-machines in which the cutters are so shaped as to cut an oblong or square opening into or through wood, and they consist in a novel mode of operation of a pair of cutters; in the mechanism which actuates them; in a novel means for feeding the cutter-carriage or frame; and in the devices for returning the carriage to place after the cutters have done their work.

Figure 1 is a representation of a machine embodying my invention, one of the cutters being at its lowest point of movement;

Figure 2 is a vertical section of the same, taken at right angles to fig. 1, and near the center, one of the cutters being nearly at highest point of movement;

Figure 3 is a fragment in vertical section, showing the cam or wiper on the driving-shaft, by which the cutter-carriage is moved downward step by step; and

Figure 4 is a fragment in vertical section, showing how each cutter, one after the other, descends to or beyond the same line or point, so that the two shall, jointly, make a continuous cut.

A is the frame-work or support for the machine.

B, the driving and crank-shaft.

C C', the two cutters or knives, each separately hung upon and free to swing on its own independent pivots or bearings, 1 1 or 2 2, neither cutter being directly connected to the other.

To each cutter or cutter-stock is connected, at 3 3, a yoke or forked piece, D or D', these forked pieces having each a pivoted connection, at their tops, to a link, E E', respectively, both links having at their inner ends a pivoted or swinging connection to the carriage I, as seen at 5.

Links, A F', respectively, connect the yokes D D' to the pitmen G G', the latter being separately connected to the cranks H H', respectively, on opposite sides of the machine.

The two cranks H H', as will be seen, are relatively so located upon the shaft B that, in their action upon their cutters, the latter shall not be forced downward to their lowest points at the same period of time, although the arcs of the circles they describe shall be of equal radii. The extreme downward movement of each, however, and, consequently, the extreme of the cut made by each in the wood, is such as to reach or to pass a little beyond the cut made by the other, in

order that the uncut part shall be left, and that the action of the two shall cut a continuous chip from the wood.

It is found best to set the cranks at about an angle of forty-five, or thereabouts, relatively one to the other. By this relative position, and the independent action of each cutter, there is avoided all possibility of bringing the two cutting-edges into damaging contact with each other; and there is also avoided any liability of not making a complete continuous cut, and much expenditure of power is also saved, as both cutters are not at the same time performing their severest duty in cutting across the grain of the wood or through a knot; and, further, the two cutters cannot jam the chips between, and so retard and clog their proper action.

The vertically-sliding carriage I is arranged to run in ways or guides, 6, in the frame, as shown, and the spring K exerts a constant tendency to draw it upward. The means by which it is, during the action of the machine, intermittently fed downward, are as follows:

L is a slide, also running in the same ways or guides 6, and free to drop by gravity, when not impeded by the sliding carriage I, located immediately beneath it. It is, however, when the machine is arranged for action, prevented from rising by the weighted or gravitating pawl I, which automatically engages with the teeth of the ratchet M.

Upon the carriage is a similar pawl, i, also engaging with the same ratchet, and upon the shaft B is a cam or wiper, b, which, at every revolution of the shaft, comes in contact with the bottom of the slide L, as seen in figs. 2 and 3, and, bearing upward against the same while locked by the pawl I, forces downward the carriage I far enough to permit its pawl i to descend against the force of the spring K, and engage with the next tooth of the rack. The continued revolution of the shaft and its cam or wiper b relieves the slide M, and permits it to drop, by its own weight, and again rest upon the top of slide I, its pawl engaging with the next lower tooth of the ratchet, so that it is now ready for a repetition of the above-described action, and another step of the feeding motion.

When the mortise has thus been cut deep enough, or completed, the carriage and the slide are raised to place by simply turning on its axis, by means of the handle m, the ratchet-bar, which, for this purpose, has teeth only upon one side, and is mounted at both ends in bearings in the frame.

Buffers, N N, are preferably applied at the top of the ways, to ease the rapid upward movement of the slide and carriage when the ratchet is turned away from the pawls.

The knives, instead of being made as shown, may

have removable cutting-blades applied to a cutter-stock otherwise constructed, as shown and described, to facilitate the sharpening of the cutting-edges or the substitution of others without taking the apparatus apart elsewhere.

The long or horizontal cutting-edge or blade may have between its ends one or more cutting-edges, which will sever the chip transversely; or, instead thereof, a dull projection or elevation, (or more than one,) a little in rear of the edge of the cutter, may be employed, to act as a lifter to lift the chip between its edges, thus bending it upward, and preventing its binding tightly at its edges. Either of these modes, in certain cases, will make easier cutting and less liability to clog.

Instead of swinging the links E E' from a pin or pins, 5, as shown, each link may be rigidly connected with its own rock-shaft, (one on each side of the carriage I,) such shaft being supported at each end in bearings affixed to the carriage. This, for certain kinds of work, would be found desirable to a more steady and positive action of the cutters, and prevent the liability of side motion or wobbling of the link and the cutter-stock, especially when the cutter should strike a knot at one corner of the mortise.

By the employment of two cranks, each having its independent pitman, I avoid throwing too much strain upon a single pitman and its connections, and afford opportunity, at the same time, for a wider separation of the links or yokes by which the pitmen are connected with the cutters, thus giving ample space for the chips to escape freely.

I am aware that two mortising-cutters have been

used, both of which were attached by links to the same sliding rod, and actuated by a single pitman from a single crank; and I am also aware that the vertically acting cutters have been employed in conjunction with two swinging cutters, all being required to cut a mortise. These I do not claim; but

I claim—

In a mortising-machine, the combination of two separate cutters, C C, two separate pitmen, (one for each cutter,) two separate links or yokes, D D', and two cranks for operating such pitmen, the cranks being upon a single shaft, substantially as shown and described.

Also, in such a combination of cutters, pitmen, and cranks, the arrangement of the cranks upon the shaft at an angle to each other, and operating to drive the cutters one after the other, in the manner shown and described.

Also, the combination of the cutters C and C', the crank-shaft B, pitmen G G', and links E E' F F', and yokes D D', substantially as and for the purpose set forth.

Also, the combination of the cam on the driving-shaft with the gravitating slide L and the cutter carriage I, substantially as shown and described.

Also, the combination, with the carriage and gravitating slide, of the ratchet-bar M, arranged to be turned to place its teeth into and out of connection with the pawls, substantially as shown and described.

GEO. T. SAVARY.

Witnesses:

JOHN J. HALSTED,

J. F. BEALE.