C. J. HARDEE.

Lock Mortising-Machine.

No. 164,295. Patented June 8, 1875.

Fig. 1.

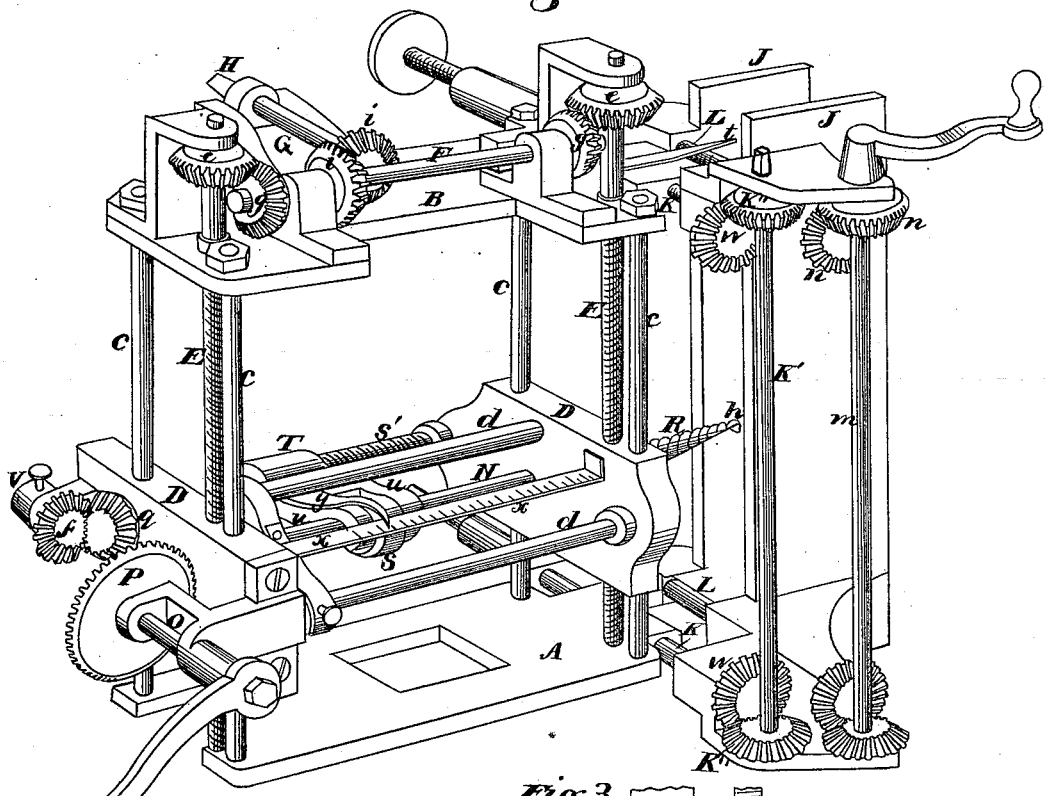


Fig. 2.

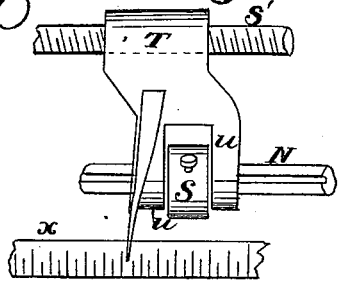


Fig. 3.

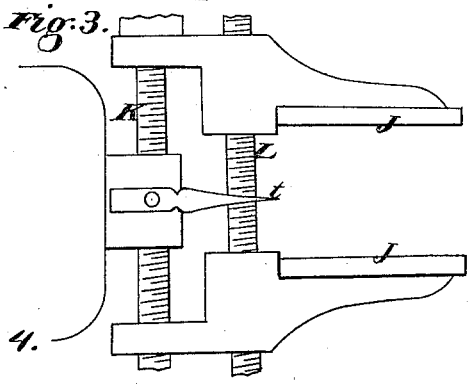
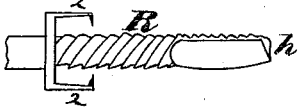


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES J. HARDEE, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN LOCK-MORTISING MACHINES.

Specification forming part of Letters Patent No. **164,295**, dated June 8, 1875; application filed April 10, 1875.

To all whom it may concern:

Be it known that I, CHARLES J. HARDEE, of San Francisco city and county, State of California, have invented an Improvement in Lock-Mortising Machine; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

My invention relates to a portable machine which is intended for making mortises for the reception of mortise-locks in the edges of doors, but which can also be used for making mortises in any piece of timber.

My machine is provided with two clamping-jaws, by means of which it can be clamped to the door or other piece of wood to be mortised, so as to fix the machine in position to make the mortise.

My machine is represented in the accompanying drawing, in which—

Figure 1 is a perspective view of my machine. Figs. 2 and 3 are sectional views of part of my machine. Fig. 4 is a separate view of the cutting-bit.

The frame of my machine consists of the bottom plate A and top plate B, which are connected together at their four corners by the rods *c c c c*. These rods also serve as guides, and for the two heads D D, which support the boring and mortising tool. One sliding head, D, is placed across the front of the machine, and the other across the rear end, parallel with it, and the vertical connecting-rods *c c* pass through them near each end, so that they can move up and down along the rods. These heads are rigidly connected together by means of horizontal bolts or rods *d d*, so that they will move together as in one piece. A vertical screw, E, passes down through the top plate B and head D at each end of the machine, while its lower end steps in the bottom plate A. On the upper end of each screw is a bevel-gear wheel, *e*. A horizontal shaft, F, extends from the upper end of one screw to the upper end of the other, being supported in boxes on the top plate B, and to each end of this shaft is secured a bevel-wheel, *g*. These wheels engage with the bevel-wheels *e* on the upper ends of the screws E, so that when the shaft F is rotated the screws E will also be rotated simultaneously, and the heads C moved up or down, according to the direction in which the shaft is rotated. For rotating the shaft F I employ a shaft, G, which can be turned by a crank at H, and which transmits its motion through bevel-gears *i i* to the shaft F. In front of the machine I mount two movable jaws, J J, by means of screw K, one of which passes through the upper portion of the jaws and forward end of the top plate B, while the other passes through the lower portion of the jaws and forward end of the bottom plate A. These screws are rotated simultaneously by a vertical rod, K′, and bevel-wheels K″ K″ at each end, which engage with the bevel-wheels W W on the end of the screw-rod, so that the two jaws can be moved together in the same direction, in order to set the machine with reference to the edge to be mortised. A screw, L, passes through the jaws J J, and these screws are arranged to be rotated by a shaft, *m*, and bevel-wheels *n*, in the same manner that the screws K are rotated, and these screws L serve to close the jaws together upon opposite sides of the door, in order to fix the machine in position to make the mortise. The spindle N, which carries the boring and mortising tool, passes through both heads D D, and is rotated by a shaft, *o*, and bevel-gears *p q* behind the rear head D. The spindle N passes through the forward head D, and has the boring and mortising tool R secured to its forward end, just in rear of the clamping-jaws J J. This tool consists of a cancavo-convex bit, one edge of which is beveled and sharpened, as shown. The point *h* of the bit is sharpened on the cutting-side, and bent at right angles to the bit, so as to stand across its end.

The back of the tool is provided with spiral grooves, and the spindle may also have the spiral groove continued along a portion of its length, so that it will clear itself of the cuttings or borings of the tool. This tool will not only bore a hole similar to an auger-hole, but after the hole is bored it can be lengthened by moving the tool up and down slowly, so as to cause it to cut a groove or mortise equal in width and depth to the width and depth of the original boring or auger hole. In order

to feed the spindle forward I secure a collar, S, upon it between the two heads D, by means of a feather, so that it can rotate with the spindle and move upon the feather at the same time. Between one end of the heads D D I secure a screw, S′, upon which is a nut, T. This nut has two arms, *u u*, through the ends of which the spindle passes, one upon each side of the collar S. The screw S′ is turned by a crank-shaft, V, and bevel-wheels *f*, so that the nut can be fed back or forth, as desired. A graduated scale, X, is secured between the two heads D D on the side of the spindle N opposite the screw, and a finger or index, *y*, is secured to one of the arms, *u*, of the nut, so that it will indicate the depth to which the auger or tool is to bore.

Two cranks will serve to operate the entire machine, and one of these should be made to fit the end of all the adjusting-shafts on the right-hand side of the machine, and the other on the left-hand side.

To make a mortise in the edge of a door for the reception of a mortise-lock, the door need not be taken from its hinges, but the machine can be placed against its edge, so that the clamps will come on opposite sides of the door at the point where the mortise is to be made. The crank is then applied to the upper end of the vertical shaft *m*, and the shaft turned so as to cause the screws L to draw the jaws J J toward each other, and thus clamp the machine to the door. The machine can then be shifted to either side in order to bring the point of the tool R opposite the middle of the edge of the door by shifting the crank to the upper end of the vertical shaft K′, so as to move the machine to either side, as desired, without disturbing the gripe of the jaws. A pointer or index, *t*, which is secured to the forward end of the top plate B directly above the tool, serves to indicate the center of the mortise in setting the machine. The crank is then changed to the shaft O, which drives the spindle and tool, and at the same time the crank which operates the screw S is turned by the left hand of the operator, so as to feed the tool forward, and cause it to bore a hole similar to an auger-hole. After the hole has been bored to the desired depth, which is indicated by the index, the left-hand crank is shifted to the shaft F, so that the sliding frame, which carries the auger, can be moved up or down, as desired, to lengthen the bore and make the mortise.

A treadle can be applied for driving the boring and mortising tool, and thus leave both hands of the operator free to manage the balance of the operation.

The tool R, owing to its peculiar construction, will readily lengthen the bore, which it first makes without withdrawing it until the mortise is finished.

When a deep mortise is to be made the operation may be repeated two or three times in order to sink it deeper than a single bore would make.

When it is desired to sink a rim or flange around the mortise, I secure one or more short cutting-bits, 2, to the outer face of the head D at the base of the cutting-tool, so that it will countersink the edge of the mortise at the same time that the mortise is made.

I thus provide a complete portable machine for making mortises, which will be especially useful for mortising in the edges of doors.

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

1. The frame, consisting of the sliding heads D D and bolt or rods *d d* arranged to be moved up or down along the guiding-rods *c c* by means of the screws E, bevel-wheels *e g*, and shaft F, and carrying the spindle N, with its boring and lateral-cutting bit R operated by the shaft O and bevel-wheels P *q*, in combination with screw S, with its nut T having the arms *u u* and sliding collar S, all combined and arranged to operate substantially as and for the purpose above described.

2. A boring or mortising auger N R, in combination with a laterally-adjustable frame, D, and clamping-jaws J J, when constructed to operate substantially as and for the purpose set forth.

3. In combination with a boring and mortising tool, having the feed-screw S′, nut T, with its arms *u u*, and sliding collar S, the graduated scale X, and index-finger *y*, substantially as and for the purpose described.

4. In combination with a mortising-bit, R, the short bit 2, for countersinking the edge of the mortise, substantially as specified.

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Witnesses:
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