

G. V. Orton,

Mortising Machine.

No 79,249.

Patented June 23, 1868.

Fig. 1.

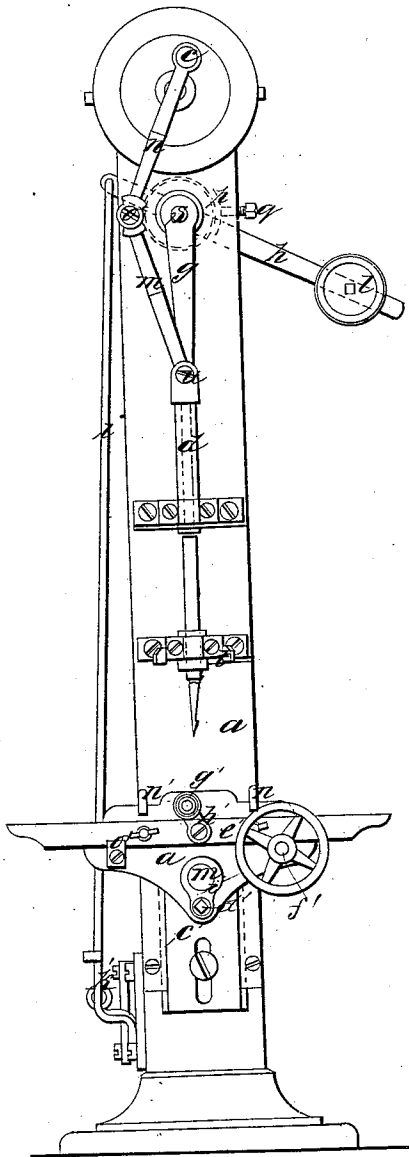
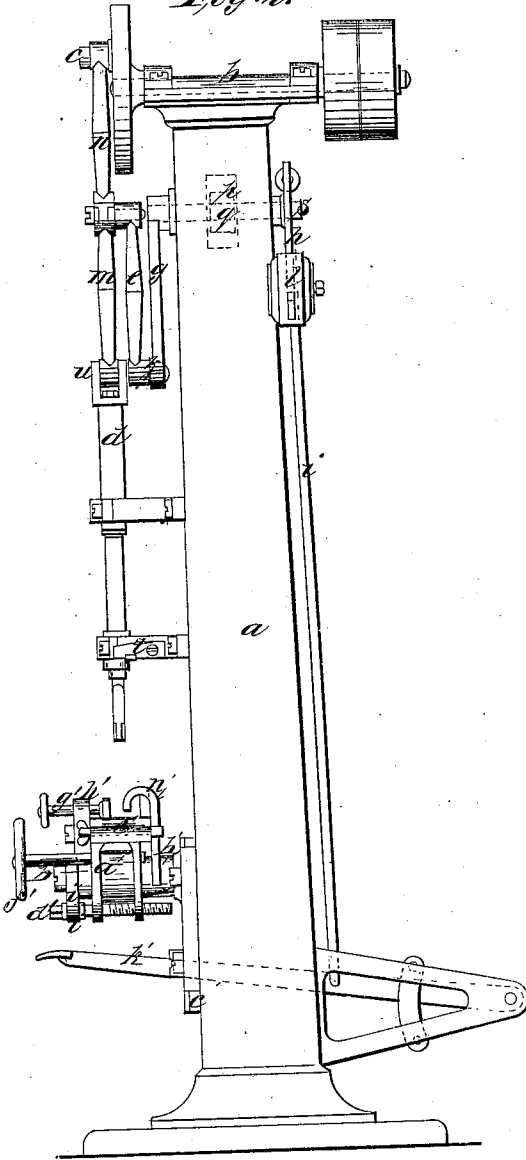


Fig. 2.



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GERRIT V. ORTON AND JOHN RICHARDS, OF CINCINNATI, OHIO.

Letters Patent No. 79,249, dated June 23, 1868.

IMPROVEMENT IN MORTISING-MACHINES.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that we, GERRIT V. ORTON and JOHN RICHARDS, of Cincinnati, in the county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Power Mortising-Machines; and we do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings forming a part of this specification, in which—

Figure 1 is a front, and

Figure 2 a side elevation of machine, constructed on our plan, and embodying our several improvements. Similar letters of reference on the different figures indicate corresponding parts.

Various devices have been used to produce what is known as a graduated stroke of the chisel and chisel-bar in power mortising-machines.

To meet the various conditions of wood-mortising it is required—

First, that the chisel have a variable movement, controlled by the operator, that is, the chisel has to work down into the mortise by degrees, increasing in depth at each stroke, until it reaches the bottom.

Second, this variable stroke of the chisel-bar has to commence from a still point, or a point where there is no movement, so as to admit of any necessary adjustment of the chisel, and to reverse the bar, and also to prevent unnecessary wear of the reciprocating parts when the chisel is not in action.

Third, it is required that the chisel-bar should have a fixed point (or its position when at rest) above the extreme upper stroke. This gives the machine the capacity of cutting a mortise as deep as the whole throw of the eccentric.

In devices for a graduated stroke of the chisel-bar by a variable eccentric, the chisel requires a stroke of at least twice the depth of the mortise, as its fixed position is in the centre of the stroke, and the movement is entirely different from that of our machine, as will hereafter be explained.

The nature of our invention consists in a novel means of producing a graduated stroke of the chisel, with a fixed point above the path of the stroke by means of connected and radial links, all having annular bearings, with compensating adjustment, and in the special devices for carrying this invention into effect, as hereinafter explained.

Also, in a frictional device to regulate and steady the motion of the parts, and to prevent vibration in the radial links, as will be specified.

Also, in a table for supporting the piece to be operated upon, having peculiar adjustments, and so compounded as to admit of what is known as "hand-feed" or "carriage-feed," at the will of the operator, as will be hereafter fully described.

To enable others skilled in the art to make and use our invention, we will proceed to describe the manner of constructing and operating the same, referring to the drawings accompanying this, as part of the specification.

a is the main column, cored out hollow in the usual manner of box-frames, with a broad flanged base, as shown.

On the top of this column is mounted the crank-shaft *b*, carrying driving-pulleys and crank-wheel, constructed in the usual manner.

The crank-pin *C* is connected to the chisel-bar *d* by a pivoted connection, consisting of the two links *m* and *n*. These links are connected by a through-pin, *o*, passing through the joint at their connection, and also through the upper end of the radial link *E*, fig. 2. This link *E* swings on a stud at *f*, inserted in the radial arm *g*, as shown. The arm *g* is keyed on a shaft, *S*, passing through the column *a*, supported by suitable bearings, and operated by the cross-lever *h*, rod *i*, and treadle *k'*. The lever *h* has a weight, *l*, attached to one end, to return the chisel-bar and links to the position shown, when the treadle *k'* is released from the foot of the operator, as will be understood. On this shaft, *S*, within the column, is a friction-pulley, shown by dotted lines in fig. 2. This pulley is keyed firmly to the shaft *S*, and has a segmental friction-plate or break, *p*, fig. 1, applied to one side, and pressed up against the pulley by means of the screw *q*, which regulates the degree of resistance offered to the rotation of shaft *S*.

The bearings of the chisel-bar are constructed in the usual manner, and a reversing-device, *t*, applied, to revolve the chisel-bar a half turn in either direction, as will be understood.

The table-support *a'* is mounted on a large stud, *b'*, cast upon the plate *C'*, and is arranged to move to and from the column *a* by means of the screw *d'*. The table *E'* slides upon the top of support *a'* by means of a hand-wheel, *f'*, and a rack and pinion, in the usual manner.

g' is a clamp-screw, passing through a radial swinging nut-piece, *h'*, and is adjustable, by moving the piece *h'*, so that it can be made to bear in the centre of large or small pieces, when placed upon the table *E'* to be mortised.

The piece *i'*, through which screw *d'* passes, is arranged to swing on the screw *m'*, carrying with it the table-support *a'* and table *E'*, by rotating on the stud *b'*, as will be understood.

The bent stops *n'* are used to keep the stuff down upon the table, and prevent it rising by the action of the chisel, and are retained in their position and adjusted by eye-bolts, passing through the table, as shown in dotted lines, fig. 2.

To operate the machine, the operator presses down the treadle *h'*, which moves the radial arm *g*, by means as before explained. This arm *g* carries the pivot *f* away from the centre *u*, and gradually brings the pivoted connection *m n* into line, giving a reciprocating motion to the chisel-bar *d*, equal to the throw of the crank-pin *C*. The link *E* being sustained nearly in a horizontal position, forms a guide for the joint *o*, the several parts being so constructed that the connection *m n* forms a straight line, when receiving the greatest force of the blow.

When the mortise is completed, the operator raises his foot from the treadle, and the weight *l* returns the radial arm *g* to its first position, and, as the two pivot-centres *u* and *f* coincide, no motion of the chisel-bar is produced, and the links *m* and *E* vibrate upon the fixed centres *u* and *f*, as before stated.

The frictional device upon the shaft *S*, by offering a steady resistance to its rotation in either direction, prevents any vibration in the joint *f* when the chisel-bar is operating, or being thrown into operation, but is not sufficient to prevent the action of the weight *l* or treadle *h'*.

In mortising with what is called a carriage-feed, the nut-piece *h* is adjusted to allow the screw *g* to bear in the centre of the piece, or in a point to correspond with its depth.

The stops *n'* are removed, and the stuff is firmly clamped by screw *g*, and fed along by the wheel *f'*, in the usual manner.

When the mortise is required to be diagonal with the face of the piece, the clamp-nut *i'* is loosed, and the table-support *a'* is set at the proper inclination, and fastened by screw *m'*, the carriage-movement not being interfered with.

For hand-feed, when light pieces are to be mortised, the piece *h'* and clamp-screw *g* are removed, and the table *E'* locked by means of the clamp-stop *o'*, fig. 1. The stops *n' n'* are inserted, and the whole becomes a hand-feed table, having all the advantages common to those constructed especially for that purpose.

Having thus described the nature and objects of our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The frictional device *p* and *q*, for controlling the action of the treadle and chisel-bar, substantially as herein described.
2. Adjusting the table-support *a'* laterally upon the stud *b'*, in the manner and for the purposes shown.
3. The bent stops *n' n'*, when arranged to swing and adjust to different points on the stuff, in the manner herein set forth and shown.
4. The adjustable nut-piece *h'*, arranged with a clamping-screw, to act on stuff of different thickness, in the manner and for the object as specified.
5. The rotating clamp-piece *i'*, for adjusting and holding the table-support *a* in different positions, as shown, and for the objects described.

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