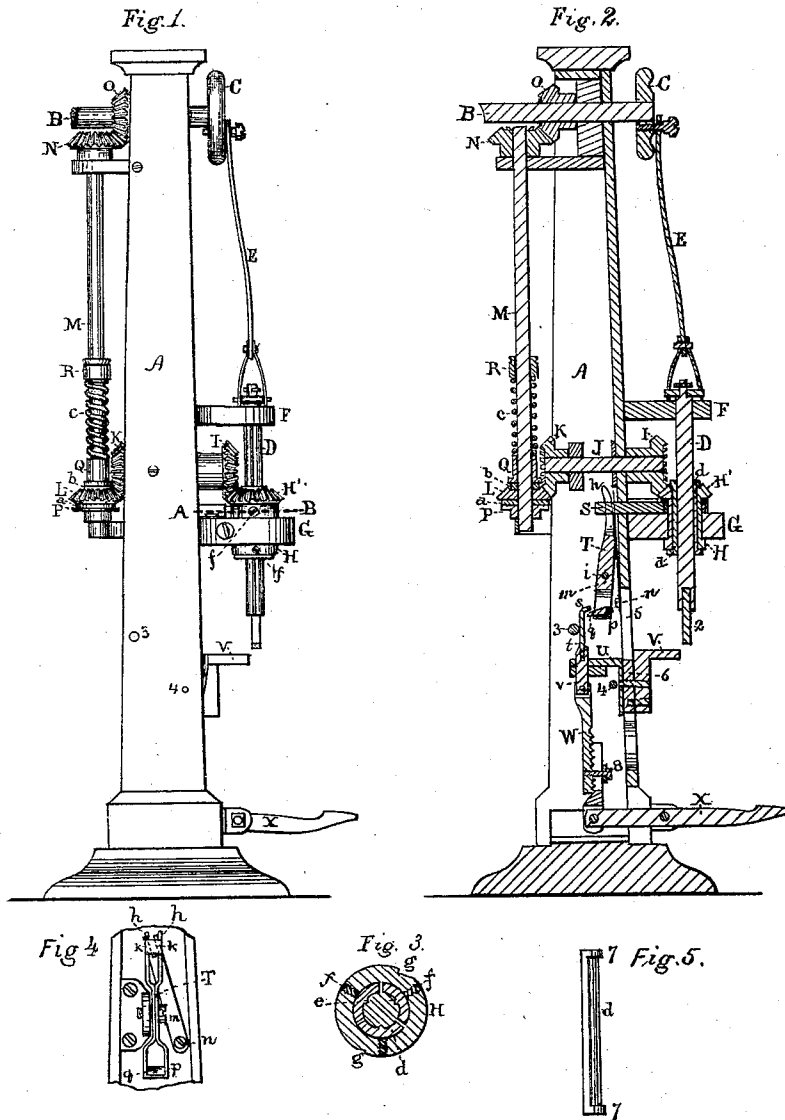


D. L. GIBBS.
Mortising-Machines.

No. 149,466.

Patented April 7, 1874.



Witnesses.
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IMPROVEMENT IN MORTISING-MACHINES.

Specification forming part of Letters Patent No. **149,466**, dated April 7, 1874; application filed March 4, 1874.

To all whom it may concern:

Be it known that I, DALPHON L. GIBBS, of the city and county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Mortising-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents so much of a mortising-machine as is necessary to illustrate my present improvements. Fig. 2 represents a vertical central section from front to rear. Fig. 3 represents, upon an enlarged scale, a section of a portion of the machine on line A B; Fig. 1. Fig. 4 represents a rear view of a part of the devices employed in holding the chisel-spindle and releasing it, as will be hereafter described. Fig. 5 represents one of the chisel-spindle guide-pieces detached upon an enlarged scale.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

The nature of my improvements consists, first, in the combination of certain devices for reversing the chisel automatically, as will be hereafter described; second, in the combination of certain devices for releasing, arresting, and holding the chisel-spindle in its proper position, as will be hereafter explained; third, in the combination, with the chisel-spindle and its rotating gear-reversing bearing, of independent guide-pieces, as will be hereafter explained.

In the drawings, the part marked A represents the main frame of the mortising-machine, in the top of which is supported, in proper bearings, the chisel-spindle-operating shaft B, having a balance-wheel, C, to which is connected the chisel-spindle D by means of the connecting-rod E, and all these parts may be made in the usual manner. The chisel-spindle D is supported by two bearing-pieces, F and G, secured to and projecting from the main frame A. Within the bearing-piece G is fitted to turn a tubular bearing-piece, H, having upon its upper end a bevel-gear, H', which meshes into the bevel-gear I upon the front

end of shaft J, while another bevel-gear, K, is fastened to its rear end, and meshes into a bevel-gear, L, loose on the lower end of shaft M, which has a bevel-gear, N, fastened to its upper end, to mesh with gear O fast on shaft B. A ring or plate piece, P, is fastened to the lower end of shaft M, and a leather or other suitable washer, *a*, is interposed between said plate and gear L, while a similar washer, *b*, is interposed between gear L and the lower end of a hub-piece, Q, which is fitted upon shaft M, so that it can slide up and down on said shaft freely. An adjustable stop-piece, R, is fastened to shaft M by a set-screw, and between said stop-piece R and hub-piece Q a spiral spring, *c*, is arranged upon the shaft M, as fully indicated in the drawings. Within the tubular bearing-piece H are three guide-pieces, *d*, having upon their inner surfaces longitudinal spurs or V-shaped ribs *e*, which enter corresponding grooves cut in the chisel-spindle D. Each of the metal packing-pieces *d* can be adjusted by two set-screws, *f f*, which pass through the tubular bearing-piece H. Two stop-notches, *g g*, are cut in the upper part of the tubular bearing-piece H, said notches being upon opposite sides of said bearing-piece H, and into these notches the front end of a slide-stop, S, is fitted to enter, while its rear end is notched to receive the forks *h* of lever T, which is pivoted at *i*, and also the forks *h* of spring *m*, the lower end of which is fastened to frame A at *n*. The lower end of lever T is made in the form of a stirrup, *p*, and in said stirrup is hinged a cam-piece, *q*, the outer or free end of which, when down, as shown in Fig. 3, projects far enough to be caught by the curved or bent end *s* of the arm *t*, which projects up from the angle-plate U, which, in turn, is fastened to and slides up and down with the table V. From the under side of plate U projects an arm, *v*, the lower end of which is hinged to the upper end of the adjustable treadle-piece W, while the lower end of said treadle-piece is hinged to the rear end of the treadle X. The action of spring *m* throws slide-stop piece S forward, while the action of lever T draws it back.

The operation of the machine is as follows: Shaft B, having a rotary motion communicated

to it in any suitable manner, communicates a reciprocating motion to chisel-spindle D, and also a rotary motion to the shaft M. The operator places the work to be mortised on table V, and then, by pressing his foot on the front end of treadle X, raises the table and work thereon up within reach of the chisel 2; and after he has cut the mortise in one direction, and desires to reverse the chisel to cut the mortise in an opposite direction, he removes his foot from the treadle, when the weight of the table and the work thereon descend by their gravity, carrying down the angle-plate U and arm *t*, thereby bringing the curved end *s* against the point or cam-piece *q* in its descent, thereby throwing forward the lower end of the lever T, which causes its forks *h* to withdraw slide-stop piece S, and allows the bearing-piece H to turn, in consequence of the friction between the gear L and the washers *a* and *b*, the front end of slide-piece S having been removed from one of the stop-notches *g*. As soon as the curved end *s* passes the end of cam-piece *q*, spring *m* acts upon slide-piece S, and, as soon as the chisel has turned half-way round, or into the proper reverse position, the point of slide-piece S is forced into the other stop-notch *g* in bearing-piece H. As the cam-piece *q* is hinged, when the operator places his foot on the treadle X, and raises up the table V and the work thereon, the end of cam-piece *q* rises, and allows the curved end *s* to pass, but falls, so as to be in position again to be acted upon, as described above, when the chisel is to be reversed.

It will be seen that, by adjusting stop-piece R up or down upon shaft M, a greater or less amount of friction is thrown upon gear L, whereby just the amount can be obtained for reversing the chisel when slide-piece S has been withdrawn from either of the stop-notches *g*. A guide-rod, 3, keeps arm *t* from springing back while acting upon the hinged cam-piece *q*, while a stop-rod, 4, arrests the downward motion of angle-piece U and table V.

It will be understood that a slot, 5, is cut in the front side of the frame A, in which is placed a block, 6, which is fastened between angle-piece U and table V, and moves with them when they are raised or lowered, the table working against one side of the frame, and the

angle-piece against the other side, as they are moved up and down. (See Fig. 2.)

As the chisel-spindle works quite rapidly, and as it is important to have it work true and uniformly at all times, the metal packing-pieces *d*, having flanges 7 on their ends, are fitted within their bearing-piece H, so as to encompass and hold the chisel-spindle, as indicated in the drawings.

Each packing-piece *d* has two adjusting-screws, *f* *f*, one near each end, whereby said packing-pieces can be adjusted to guide the chisel-spindle as may be desired, the flanges 7 preventing said pieces from moving longitudinally. Said packing-pieces may be made of babbitt or other soft metal suitable for the purpose.

The treadle-piece W is composed of two serrated pieces, held together by bolt 8, whereby the length of the piece can be adjusted as may be desired.

The hub-piece Q may be secured upon shaft M by means of a spline, if preferred, so that it will have a positive rotary motion with said shaft, while it can move up and down as it is acted upon by spring *c*.

Having described my improvements in mortising machines, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the chisel-spindle D and rotating shaft M, of tubular bearing-piece H, beveled gear H', I, K, and L, shaft J, adjustable stop-piece R, plate-piece P, hub-piece Q, spring *c*, and washers *a* and *b*, substantially as and for the purposes set forth.

2. The combination, with tubular bearing-piece H, provided with stop-notches *g* *g*, treadle X, treadle-piece W, and angle-piece U, of slide-stop piece S, lever T, spring *m*, hinged cam-piece *q*, and arms *t* and *v*, substantially as and for the purposes set forth.

3. The combination, with the tubular bearing-piece H and chisel-spindle D, of the spindle metal packing-pieces *d* *d*, provided with holding projections *e* and adjustable screws *f* *f*, substantially as and for the purposes set forth.

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