D. L. Gibbs

Mortising Machine.

No. 77,877. Patented May 12, 1868.

Fig: 3.

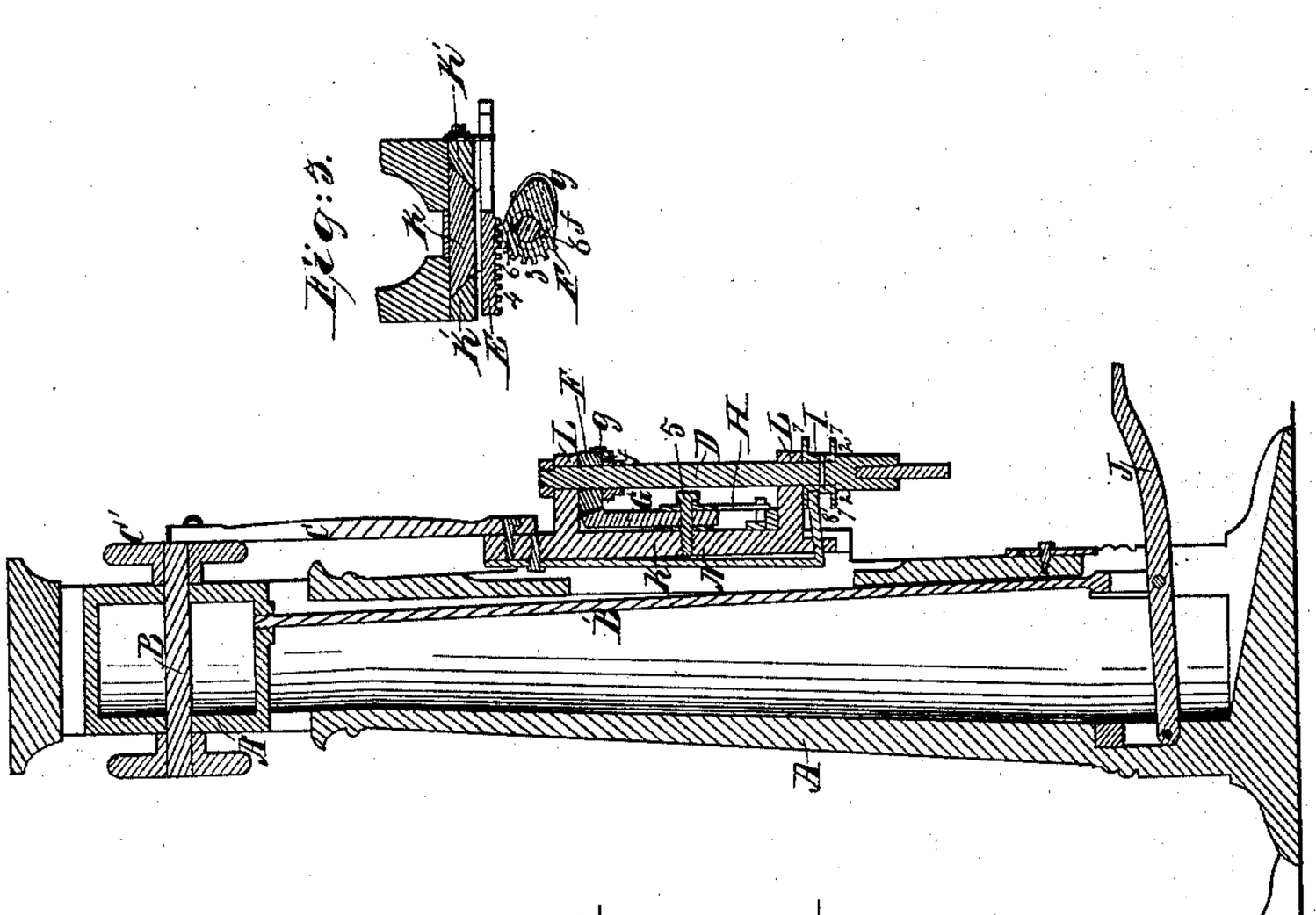


Fig: 4.

Fig: 1.

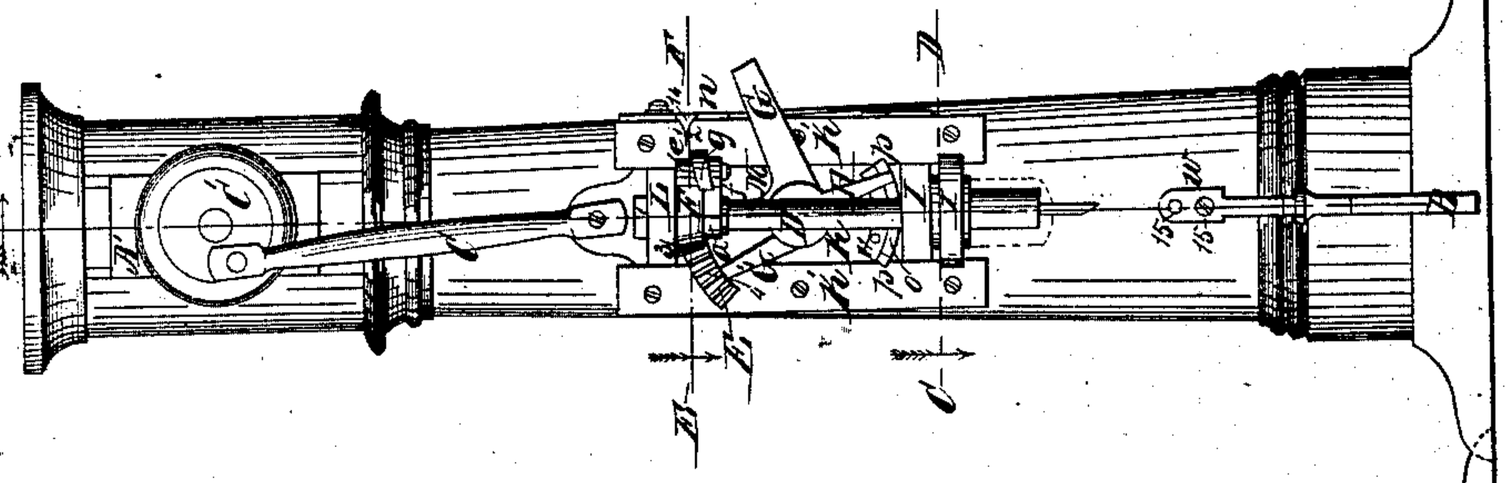


Fig: 2.

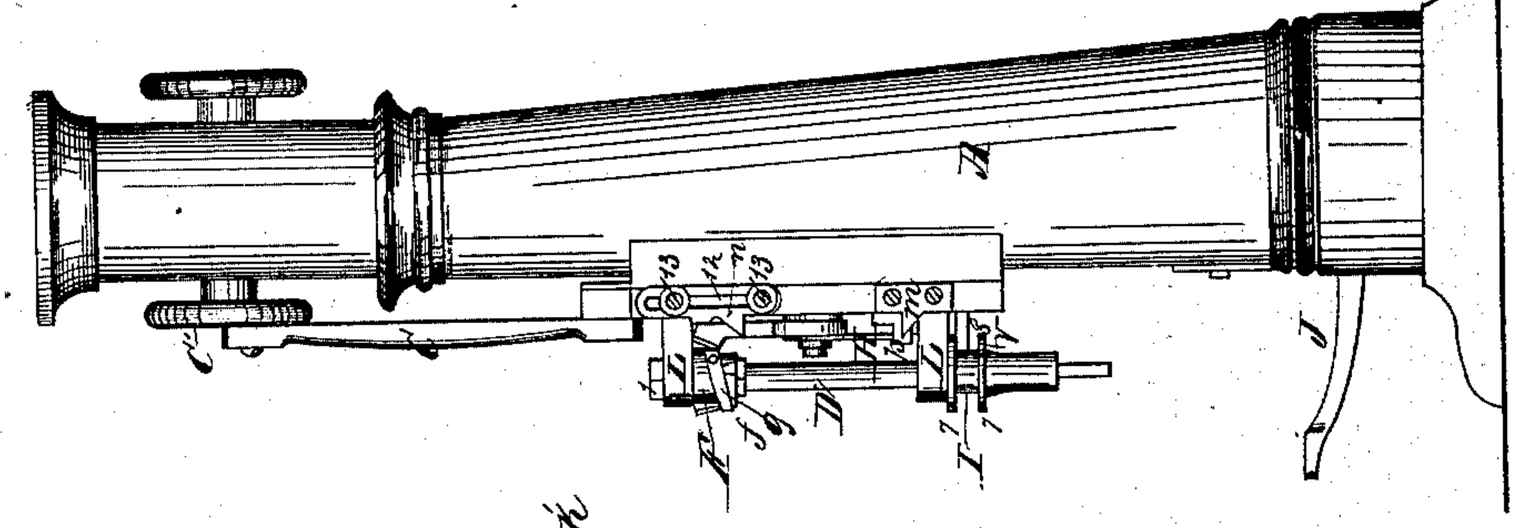
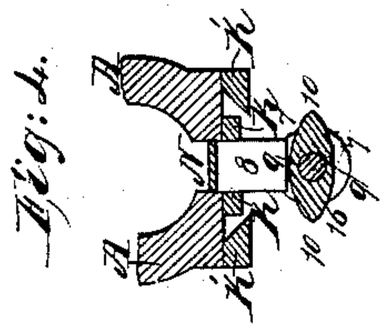


Fig: 5.



Witnesses:
Thos H. Dodge
Geo H. Miller

Inventor:
D. L. Gibbs

United States Patent Office.

D. L. GIBBS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO R. BALL & CO., OF SAME PLACE.

Letters Patent No. 77,877, *dated May* 12, 1868.

IMPROVEMENT IN MORTISING-MACHINES.

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

KNOW ALL MEN BY THESE PRESENTS:

That I, D. L. GIBBS, of the city and county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Devices for Reversing the Chisel in Mortising-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a front view of so much of a mortising-machine as is necessary to illustrate my improvements.

Figure 2 represents a side view of the parts shown in fig. 1.

Figure 3 represents a longitudinal central section on line A B, fig. 1.

Figure 4 represents a cross-section on line C D, fig. 1; and

Figure 5 represents a cross-section on line E F, fig. 1.

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.

In the drawings, A is the post or main frame, in the top of which the slide-bearing, A′, works, and in which slide-bearing the crank-driving shaft, B, is supported and turns.

Rod B′ connects slide-bearing A′ with the hinged foot-lever J, as fully indicated in fig. 3.

Pitman C connects the balance and crank-wheel C′ with the slide-piece K, which is fitted to work up and down between the guide-pieces K′ K′, fastened to the post or frame A.

The chisel-arbor or spindle, D, is fitted to turn in the projecting arms L L. In this instance it is passed up through holes in said arms, and secured therein by a nut, 1, on its upper end.

A shoulder, 2, bears against the lower side of the stop-cam, I, which is pinned to said arbor or spindle, the upper side of the cam I being drawn close up against the under side of the lower arm L, to prevent backlash, all as fully shown in the drawings.

Just under the upper arm L is fitted loosely, to the spindle or arbor D, a segment-gear, F, the cogs or teeth, 3, of which fit the cogs or teeth, 4, on the segment E, on the arm G′ of the bell-crank lever, M, which turns upon journal 5 fastened to the slide-piece K. The other arm G of lever M projects out laterally, as shown in fig. 1, for a purpose hereafter to be explained.

Below the segment-gear F is fastened, upon the chisel-spindle D, a ratchet-wheel, *a*, having two teeth or ratchets, 6 6, one on each side of the wheels, as fully shown in red lines, fig. 5.

A pawl, *f*, is hinged to the rear part, *e*, of the segment-gear F, to fit the ratchet teeth 6 6, and is held in position by the spring *g*, which is fastened to the rear part *e* of the gear F.

The stop-cam I is fastened to the lower end of the chisel-spindle or arbor.

Cam I has two lips, 7 7, between which the bent end, 8, of the spring N works.

Cam I has two flattened sides, 9 9, and two pointed ends, 10 10.

Upon the front of the bell-crank lever M is fastened a friction-spring, H, the point of which works on the ledge *o* of the piece 11, fastened to slide-piece K.

A projection, *p*, on each end of ledge *o*, limits the extent of the motion of the point of spring H.

Upon one edge of one of the guide-pieces K′ are fastened two stops, *m* and *n*, the latter being made with a slat, 12, so that it can be adjusted up or down, by means of the screws 13 13, (see fig. 2.)

Combined with the stop *n* is a pointer, 14, and the face of the guide-piece K′ on that side is marked or gauged off, as shown in fig. 1, to correspond, in distance, with the holes 15 in the stop-piece *w* fastened to the bottom of the post A.

It will be understood that the slide-bearing piece A′ is held or drawn up by a weighted lever, as shown in a previous patent granted to me.

The operation is as follows:

The parts being in the position shown in fig. 1, if the lever J is allowed to rise up, until it strikes against the stop *w*, the arm G will be forced down, by coming in contact with the stop *n*, thereby giving motion to the segment-gears E and F, which turns the ratchet-wheel *a* and spindle D a little more than a quarter way around, or until one of the points 10 passes the centre line of the bent end 8, when the action of spring N, acting upon the part 16 of cam I, completes the half revolution of the spindle or arbor D, and reverses the chisel.

The pressure of spring N against the flattened side 9 retains the arbor and chisel in the proper positions until it is desired to reverse the chisel again.

As the slide-bearing A′ is drawn down by the treadle or foot-lever J, to depress the chisel and cut the mortise, the lower edge of arm G comes in contact with the stop *m*, and the gears E F are turned back sufficiently to allow the pawl *f* to catch into the other ratchet-tooth 6 in the ratchet-wheel *a*.

It will thus be seen that the chisel is reversed by moving the chisel-arbor half way around at each time the chisel is reversed, the arbor having an intermittent rotary motion imparted to it in the manner above described.

The chisel is reversed by allowing it to rise up, as before explained, while the parts lettered M, G G′, E F, and *f*, are returned to the proper position to renew the reversing operation, by depressing it to its lowest limit of motion.

For the purpose of obviating the necessity of a great range of motion to lever J, when mortises are being cut in thin sticks or pieces, stops *n* and *w* may be set down so as to cause the reversing-mechanism to act sooner. In ordinary cases, two changes will be sufficient, one for cutting shallow and one for cutting deep mortises.

The object of having the friction-spring H is to prevent the bell-crank lever M and the gears E and F from rattling or moving unnecessarily when the machine is in operation.

The stops *p p* prevent the parts from working too far in either direction, and thus become deranged or detached, so as to interfere with the proper action of the machine.

When the stop-cam I becomes badly worn, it can be easily removed, and a new one applied.

It will be understood that my invention can be applied to mortising-machines in which the chisel-stand does not rise and fall, the depth of the mortises being regulated or varied by elevating or depressing the table, by simply combining the stops *m n* with some part of the moving table, so that they will act upon the arm G to give it the desired motions at the proper times.

In this last-named arrangement the chisel-arbor should be fitted to work up and down, independent of gear F and collar *a*, and the latter should have a spline to fit a groove in the chisel-arbor, so that, when revolved, it would turn the arbor to reverse the chisel.

Having described my improved device for reversing the chisel 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, the pinion or segment-gear thereon, and the pawl *a* and ratchet *f*, of the bell-crank lever and its toothed segment, actuated by stops *m n*, in the manner described, and the cam I and spring N, for completing the movement of the spindle, substantially as and for the purposes shown and described.

2. The combination, with the bell-crank lever and its toothed segment, arranged to operate the chisel-spindle, as specified, of the friction-spring H, ledge *o*, and stops *p p*, substantially in the manner and for the purposes shown and described.

D. L. GIBBS.

Witnesses:

THOS. H. DODGE,

GEO. H. MILLER.