B. H. Otis,

Mortising Machine.

No. 4,387. Patented Feb. 20, 1846.

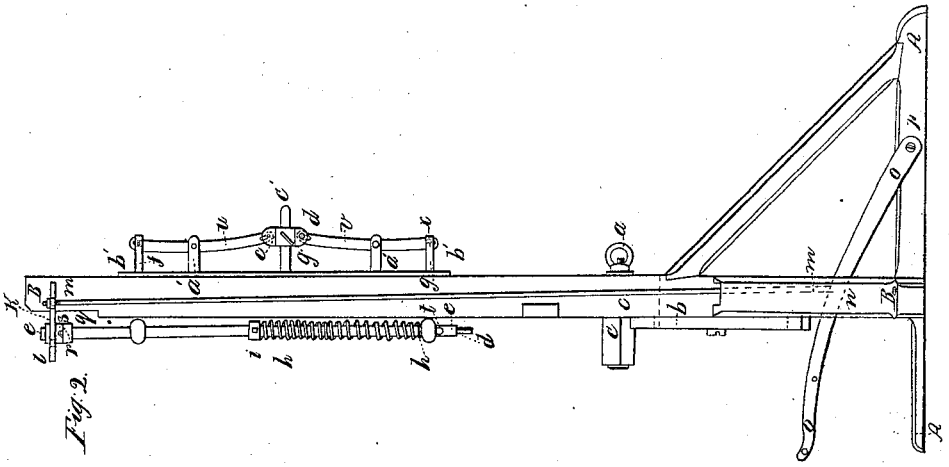

Fig. 2.

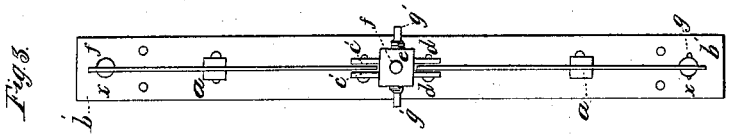

Fig. 3.

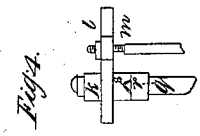

Fig. 4.

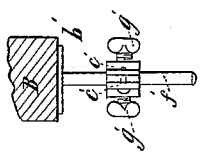

Fig. 6.

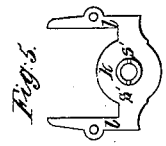

Fig. 5.

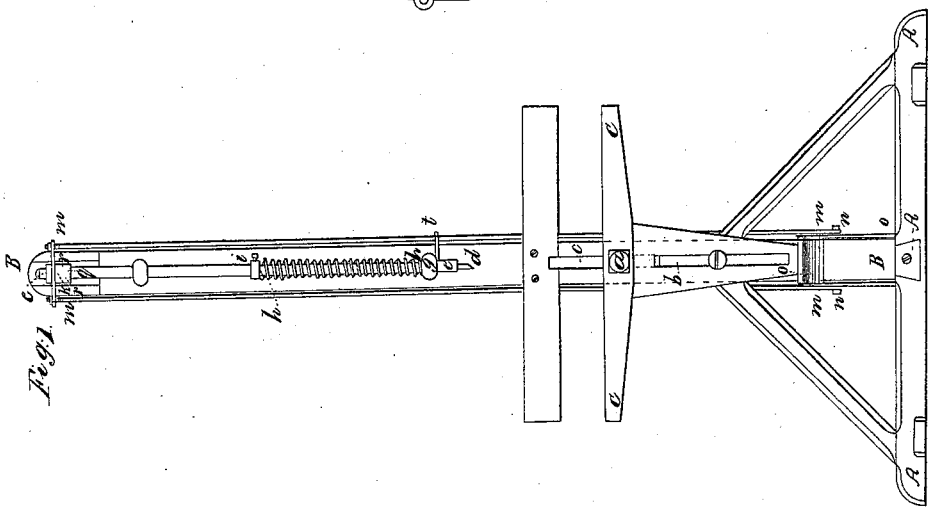

Fig. 1.

UNITED STATES PATENT OFFICE.

BENJ. H. OTIS, OF DEDHAM, MASSACHUSETTS.

MORTISING-MACHINE.

Specification of Letters Patent No. 4,387, dated February 20, 1846.

To all whom it may concern:

Be it known that I, BENJAMIN H. OTIS, of Dedham, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Mortising-Machines, and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements by which my invention may be distinguished from others of a similar class, together with such parts or combinations as I claim and desire to have secured to me by Letters Patent.

My improvements consist first in a novel combination of mechanical means for effecting an easy, accurate and speedy lateral adjustment of the mortising chisel and its supporter, so that two parallel mortises may be cut in the same plank; and also in a novel mechanical arrangement or provision for turning said chisel and supporter around ninety degrees, so that after one head of a mortise is formed perpendicular to the face of a plank, or parallel to the back of the chisel, the opposite head of the mortise, (when it is approached by sliding the plank along on the shelf of the machine), may be parallel to the head first formed, and like it parallel to the vertical back side of the chisel.

The figures of the accompanying plate of drawings represent my improved mortising machine.

Figure 1, is a front view of the same. Fig. 2 is a side view, Figs. 3, 4, 5 and 6 being detail views of some important parts and which will be referred to in the sequel.

A A A in the several drawings is the framework of the machine, consisting of horizontal joists, properly framed together and a vertical standard B B, strongly braced with diagonal braces, as shown in the drawings or in any other suitable manner.

C C is the horizontal supporting shelf for the stuff to be mortised, said shelf being arranged in the usual way, so as to be capable of sliding vertically and of being adjusted for different thicknesses of stuff, the nut and screw at *a* and slots at *b* and *c*, providing for such adjustment, as will be seen by inspection of Figs. 1, and 2. The chisel *d* Figs. 1, and 2 is supported and confined in any proper manner in the vertical sliding bar or rod *e e*, which bar moves up and down in suitable holes in the front ends of the horizontal guiding rods *f*, *g*, said guiding rods resting in suitable eyes formed or inserted through the vertical standard post B B, where the rods *f*, *g*, in Figs. 1, 2 and 3, are seen to be situated. The last named figure (3) is a detail elevation of the back plate *b' b'* and parts connected to the same as hereinafter specified. The sliding rod or bar *e e* is hung or suspended on the top of the spiral or helical spring *h h*, by means of the adjustable cylindrical collar, *i*, on said rod and which rests on the top of said spring, while the bottom of the spring rests on the inner end of the guiding rod *g* as shown in Figs. 1, and 2. The elastic power of said spring, it will be seen may be diminished or increased by sliding the collar *i* up or down on the rod *e e*. The office of said spring *h h*, is to retract the chisel *d* and rod *e e* after each depression of the same, which retracting in the machines is effected, by a horizontal spring attached to the top of the chisel rod *e e* in a manner well known.

The rod *e e* with its chisel *d* is depressed in the following manner, and through the medium of the following described mechanism. A cylindrical collar *k* Figs. 1, and 2, encircles loosely the top of the rod *e e* and around, and to this collar a forked plate *l l* is securely fastened (see Figs. 4 and 5, which are detail views of said collar *k* and plate *l l*). The arms of said plate *l l* clasp, straddle, or fit and slide against the sides of the post B B, which post thereby serves as a guide to any movements of the said plate. The collar *k* rests on the top of another similar collar *q* which is firmly attached to the chisel rod *e e*. The tops of the connecting rods *m m*, *m m*, pass up through holes in the arms of the plate *l l*, and have nuts screwed to them as shown in Figs. 1 and 2, which nuts rest on the top faces of said arms. The lower ends of these connecting rods *m m*, *m m* are arranged so as to play on the screws or pins at *n*, *n* Figs. 1 and 2, which pins are fastened to the sides of the treadle lever *o o*, as shown in the figures. The treadle lever *o o* has a fulcrum at *p* Fig. 2, and is made curved as shown in said figure, in lieu of straight, so that when the foot is applied to the front end of the same for the purpose of de-

pressing the chisel bar, the pressure will be the more direct, the nearer said front end is depressed to the level of the fulcrum of the treadle.

The collar *q*, above mentioned as firmly attached to the chisel rod *e e*, has on its upper side two angular shaped studs or teeth *r*, *r* directly opposite each other in a line at right angles to the back of the chisel. These studs fit into corresponding grooves or notches *s*, *s*, on the underside of the collar *k*, in which the chisel bar *e e* plays; said notches *s*, *s*, being shown in Fig. 5, which is a view of the lower side of the plate *l*, *l* and collar *k*. Such an arrangement of the two collars *k*, *q*, at the top of the chisel rod in conjunction with the suspension or supporting of said rod on a spiral spring as described, provides, as will readily be perceived, for turning the chisel rod (with the chisel), around ninety degrees by the handle *t*, for the object herein above specified of making the two heads of a mortise parallel and vertical. The reason for this is that the spring *h h* will yield sufficiently, when it is requisite, to allow the studs *r*, *r*, to disengage from the notches *s*, *s*, and permit the turning as specified, while when the said studs and notches of the collars *k* and *q* are in connection, the chisel is held as firmly almost as it would be if it were not susceptible of the change described.

The arrangement for the lateral adjustment of the chisel rod &c. consists of the following combination of mechanical parts. The two horizontal guiding rods *f*, *g*, slide forward and back in the eyes formed for them in the post B B, as above suggested, and at the rear end of each of these rods, the slotted end (shown by dotted lines in Fig. 2) of a curved lever *u*, *v* is connected by means of pins *x*, *x*, which pass through the slots of the levers *u*, *v* and the ends of said rods *f*, *g*; said ends being forked for the insertion of the slotted lever ends (see Figs. 2 and 3). The levers *u*, *v* have fulcra in the horizontal pins, *a'*, *a'*, which project from, and are secured to the back plate *b' b'*. The other ends of the levers *u v* are also slotted, like those before named (and as shown by dotted lines in Fig. 2) and are fastened by pins, between the ears *c' c'* and *d' d'* on the upper and under side respectively of the guiding nut *e'* which nut slides on the horizontal rod *f'* attached to the back plate *b' b'* midway between the fulcrum pins *a' a'*. The sliding nut *e'* may be secured in any position on the rod *f'* by the confining screw *g'*, *g'* working in each side of said nut as shown in Figs. 3, and 6.

From the above it will be seen, that by unloosening the screws *g'*, *g'*, at any time, the nut *e'* may be made to slide forward or back on the rod *f'*, and that such sliding will through the medium of the levers *u*, *v*, force the arms *f*, and *g*, (with the chisel rod held in the same), forward and back, in an easy, quick, and accurate manner.

Having thus described my improved mortising machine I shall state my claim as follows:

What I claim as my invention and desire to have secured to me by Letters Patent is—

The combination of the loose collar *k* and and fast collar *q*, arranged at the top of the chisel rod, and having notches *s*, *s*, and studs or teeth *r*, *r*, respectively as above described, with the spiral spring on which the said chisel rod is supported, so that the same spiral spring that retracts the chisel, (by the combination above stated), allows, or provides for the turning around of the chisel ninety degrees, for the purpose and in the manner hereinbefore set forth.

In testimony that the foregoing is a true description of my said invention and improvements I have hereto set my signature this fifteenth day of September in the year 1845.

BENJAMIN H. OTIS.

Witnesses:

EZRA LINCOLN, Jr.

H. LINCOLN.