

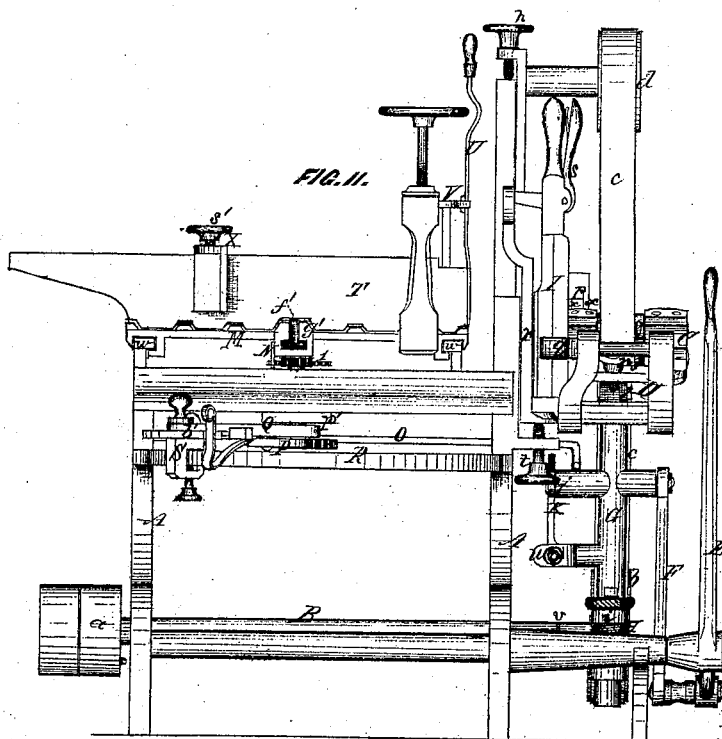
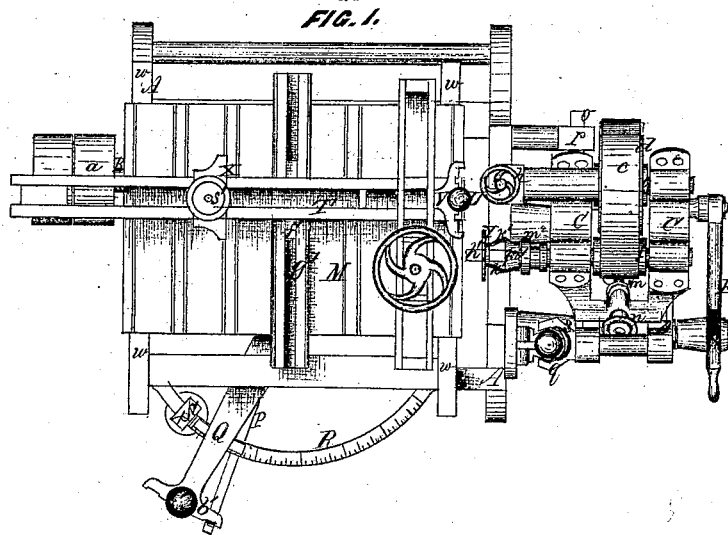
H. H. Everts,

2. Sheets. Sheet 1.

Dovetailing Mach.

No. 110,642.

Patented Jan. 3, 1871.



Witnesses

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2, Sheets, Sheet 2.

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FIG. III.

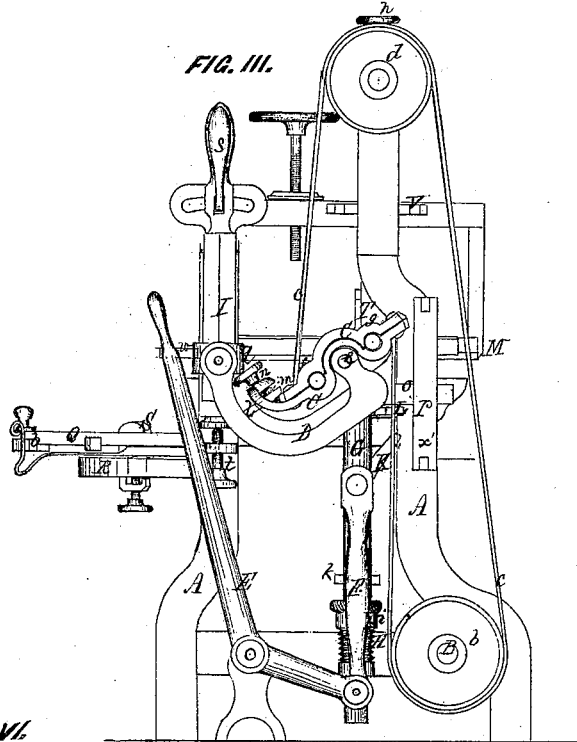


FIG. VII.

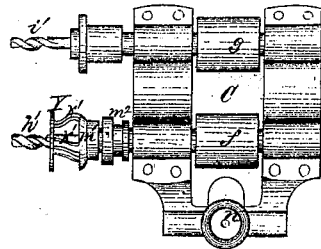


FIG. VI.

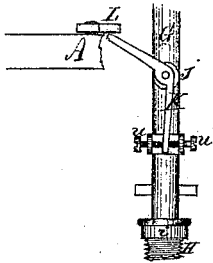


FIG. IV.

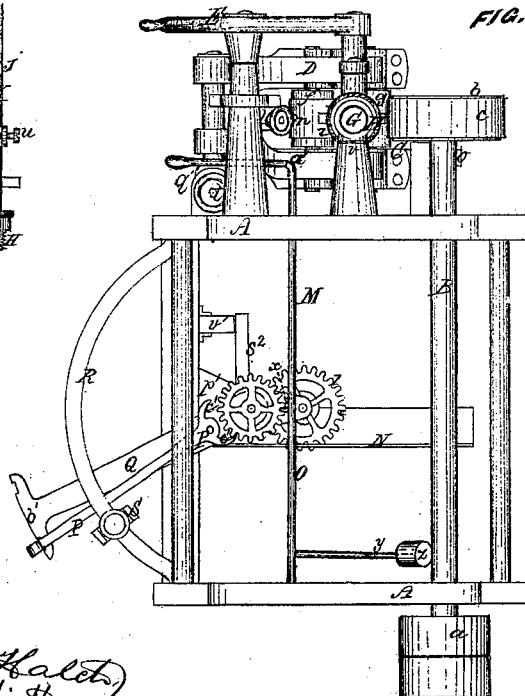
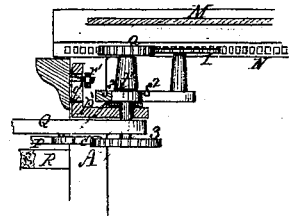


FIG. V.



Witnesses.

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# United States Patent Office.

HARRY H. EVARTS, OF CHICAGO, ILLINOIS.

Letters Patent No. 110,642, dated January 3, 1871.

## IMPROVEMENT IN DOVETAILING-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 I, HARRY H. EVARTS, of the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Dovetailing-Machines, of which the following is a specification.

### *Nature of the Invention.*

In general principle this invention is similar to that patented by me June 7, 1870. It consists in an improved construction and arrangement of the parts as hereinafter described.

### *General Description.*

In the drawing—

Figure 1 is a plan;

Figure 2, a side elevation;

Figure 3, an end elevation;

Figures 4, 5 and 6, 7 and 8, detail views.

A represents the frame, which may be of any convenient form to sustain the parts.

B is the driving-shaft, operated by pulley *a*.

At its opposite end is a pulley, *b*, having a band, *c*, which passes over pulley *d* at the top, thence down around and over the pulleys *f g*, which give motion to the tools.

Pulley *d* is adjusted higher or lower to tighten the band by means of a hand screw, *h*, and pulleys *f g* are mounted in a rocking mandrel-frame, *O*, turning on the axis *e*, fig. 3, by which means the band always keeps equal tension, whatever the position of the pulley may be.

The rocking mandrel-frame *O* rests in a carriage *D*, which is thrown up and down vertically by means of a lever, *E*, and pitman *F*.

The spindle *G* of this carriage rests in a pivoted box or bearing, *H*, at the bottom, which thus forms a guide.

On the top of this is cut a screw-thread, on which rests and adjusts a nut, *i*, that forms a stop to the fall of the spindle. The object of this is to adjust the spindle to the proper height to allow the tool to cut at the proper altitude in horizontal work. Instead of this arrangement the nut may screw upon the spindle itself, and the top of the box form the stop.

The carriage *D* has a stiff tongue or bar, *l*, fig. 3, projecting under the front end of the mandrel-frame *O*. A screw, *m*, passing through this tongue, and another, *n*, passing through the frame, enables the said frame to be adjusted higher or lower, to adjust the tools and retain them in a fixed position, as will presently be described.

The carriage has also an arm, *o*, on one side, which slides in a way, *p*, formed by two upright bars, *x x*, to keep it in place, and a gib-box, *q*, on the other end, which slides on lever *I*.

This lever is pivoted at *r*, so as to set to any desired angular position, and is retained by a sliding pawl and thumb-piece, *s*, at the top.

The lever is also movable up and down by means of a screw, *t*. When this lever is set vertically, the tool cuts the vertical sides of the dovetails, and when set angularly it cuts the angular sides of the pins.

An elbow, *K*, fig. 6, is pivoted at *j* on the inner side of the spindle. Its lower end rests between screws *u u*, by which means its upper end is adjusted higher or lower. This elbow acts in conjunction with a pivoted stop, *L*, on the frame above, to gauge the height to which the carriage rises.

This stop-arrangement is intended for use only in cutting those dovetails or pins that are not cut entirely through the lumber, better known as "blind dovetails." In through-work there is no gauge to the upward or downward cut.

To allow the angular action of the carriage the box *H* has a pivot-joint at *v*, which admits the proper rocking motion.

The table *M*, upon which the lumber rests moves transversely upon ways *w w*, fig. 1. It has upon its under side a rack, *N*, which receives motion through a train of gears, 1 2 3, as clearly shown in figs. 4 and 5.

These gears are mounted upon a bearing, *p*, extending horizontally from the frame, and made adjustable vertically by means of slots *q' q'* and screws *r' r'*, to keep the wheels in gear, and compensate for wear. For the same purpose the gear 1 is mounted upon one end of a bent lever *s*<sup>2</sup>, which turns upon the spindle *t* as a fulcrum, and has a rubber or equivalent spring, *v*, pressing against its opposite arm, thus insuring the connection between gear 1 and the rack *N*.

A shaft, *O*, extends across on one side of gear 3, having a detent, *x*, which strikes into the teeth and holds the gear stationary in any desired position.

An arm, *y*, of this shaft, with weight *z*, holds the detent in connection with the gear, except when it is thrown out by elbow *a'*, for the purpose of allowing the gears to act.

Gear 3 is operated by a double-acting pawl, *P*, pivoted to swinging lever *Q*, which has its bearing upon the axis of the gear.

The outer end of the pawl-shank is made changeable upon a gauge-head, *v'*, of the lever, so that, as it is changed from one position to the other, the pawl-points *c' c'* will be correspondingly changed or adjusted to engage with the teeth of the gear, and correspondingly move it backward or forward, consequently moving the table in the same manner. In this manner dovetails may be formed moving in either direction.

The lever *Q*, with pawl *P*, rests over a gauge-segment, *R*, having marked thereon a scale in inches and sub-divisions, and also an adjustable stop, *S*, by

which means the movement of the table may be adjusted exactly to the dovetail which is to be made.

As the lever and pawl swing from one side to the other, the dovetails will be formed at given distances apart, which distances will be increased or lessened according as the lever and pawl have a long or a short stroke, which is governed by the stop S. The motion of the lever, therefore, is simply to feed the material along.

Where the dovetail-pins are to be cut through several thicknesses of board at one operation, in order to preserve the same angle in each, I employ a gauge-block, T, on top the table, which is so jointed or connected therewith as to be capable of changing to any desired lateral angle. This is done by means of a lever, U, which rests in a guide-gauge, V, above.

The angle to which this block is set must correspond with that of the lever or way I, which governs the motion of the carriage, and the pieces will rest against the side of the same. In this manner the dovetail-pins may be formed in series in a perfect and rapid manner.

A movable stop, X, is connected with and slides on the gauge-block T, for gauging the length of the stuff. This stop is fastened to the gauge-block at any desired point by hand-screw s<sup>1</sup>.

This gauge-block T has a central bearing, f', which rests in a way, g', of the table, and, if desired, the ends may be arranged in the same manner, the object of which is to render the block adjustable laterally on the table.

The tools h' i' may be of any kind suitable to the work. The double tools represented are for the purpose of cutting the dovetail tenons, one cutting above and the other below, and the work moving horizontally. For this use the vertical adjustment of the mandrel-frame C, before described, is essential to bring the line of cut nearer together or farther apart, thereby producing the tenons of different sizes or thicknesses.

I combine with either or both tools a small circular saw or cutter, Y, which encircles the tool and cuts or trims the ends of the boards. It is connected by arms k' k' with a collar, m', which is in the form of a nut, and screws upon the shank or end of the tool-holder or mandrel. Its construction is such that it does not interfere with the action of the tool, and it is easily removed from place.

Back of this nut m', and on the shank or mandrel, I place a screw-collar, m<sup>2</sup>, which serves the purpose of a lock-nut to retain the saw Y fixedly in place in any desired position.

### Claims.

What I claim, and desire to secure by Letters Patent, is—

1. The lever slide I, with its pivoted gib-box g', the arm O with its guide-bars x' x', the spindle G with its pivoted guide-box H, combined with the carriage D and mandrel-frame C, for the purpose of governing the direction of the movements of said carriage D and mandrel-frame C, substantially as shown and described.

2. The pivoted box H and adjusting nut i, when combined with the spindle G, provided with pin k, arranged as described, and operating in the manner and for the purpose specified.

3. The combination, with the stop-arrangement H i k and spindle G, of the adjustable elbow K and stop L, arranged as described, and operating in the manner and for the purpose specified.

4. The combination, with the vertically-moving carriage D, of the rocking mandrel-frame C carrying the tools h' i, and made adjustable by means of screws m n, in the manner and for the purpose specified.

5. The lever Q, double-acting pawl P, gauge-segment R, stop S, rubber spring v' and bearing P' for insuring the connection of the gears and compensating for wear, when combined with the gears 1 2 3 and rack N, for giving motion to and adjusting the action of the table, substantially as described.

6. The weighted shaft O, with detent x, combined with the gear 3, and the lever and pawl Q P, as described.

7. The angularly-adjustable gauge-block T and stop X, in combination with the table M, in the manner and for the purpose specified.

In witness whereof I have hereunto set my hand this 20th day of September, 1870.

HARRY H. EVARTS.

Witnesses:

JOSHUA GASKILL,  
WASHINGTON H. RANSOM.