

W. Perrin,
Doreailing Machine,
N^o 2,014, Patented Mar. 24, 1841.

Fig: 1.

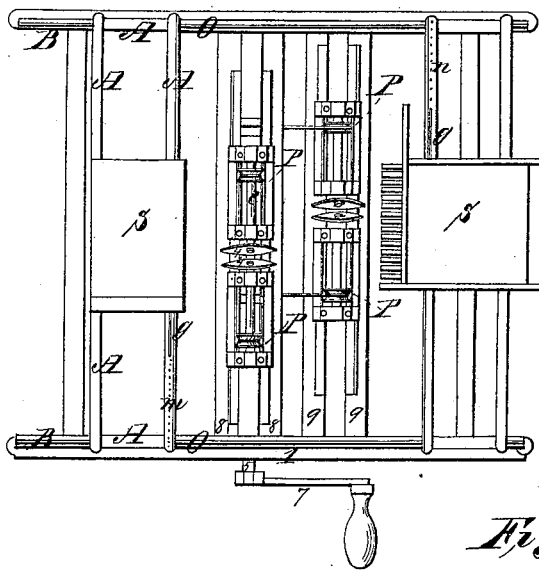


Fig: 2.

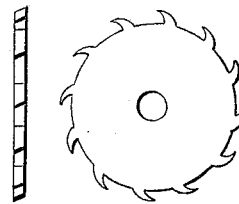
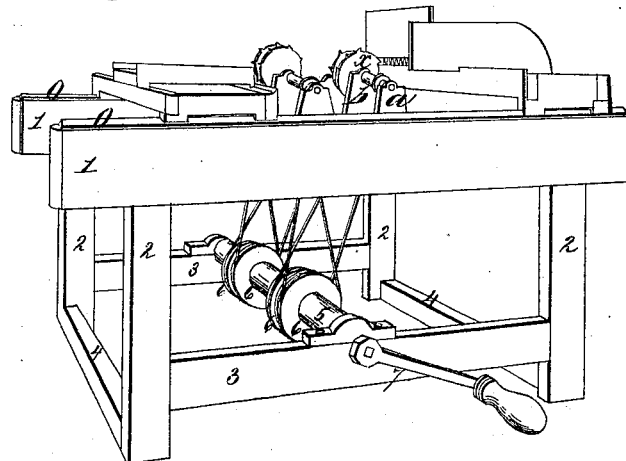


Fig: 3.



Witnesses:

Charles Fuller
J. S. Morse

Inventor:

William Perrin

UNITED STATES PATENT OFFICE.

WILLIAM PERRIN, OF LOWELL, MASSACHUSETTS.

MACHINE FOR CUTTING SQUARE-JOINT DOVETAILS.

Specification of Letters Patent No. 2,014, dated March 26, 1841.

To all whom it may concern:

Be it known that I, WILLIAM PERRIN, of Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a Square-Joint-Dovetailing Machine; and I do hereby declare that the following is a full and exact description.

The nature of my invention consists in arranging two circular cutters in such manner that they will cut the dovetails, and two other circular cutters to the pins to match or fit into the dovetails, and providing a carriage, with a slide and gage to carry the boards to each pair of cutters. The boards are placed in a vertical position on the slide and moved up to one pair of cutters, which cut the dovetails; while the boards lie horizontally on the other slide and in that position moved up to the other pair of cutters, which the pins exactly match, or fit into the dovetails.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation. I make a frame of any convenient shape and dimensions supported by legs, and make it sufficiently strong to sustain the axes of the cutters and the carriages with firmness.

In Figure 3, the sides of the frame are marked, 1, 1; the legs 2, 2, 2, 2; the side cross bars marked 3, 3; and the end or lower cross bars marked, 4, 4. I construct a shaft, (5, on Fig. 1st) the ends of which rest on the side cross bars, 3, 3, which carries four drums, (see Fig. 3, drums marked 6, 6, 6, 6,) or one long drum around which pass four belts which also pass over the pulleys, P see Fig. 1, and give motion to the four cutters. The sides of the frame, 1, 1, in Fig. 1 and Fig. 3, are connected by four substantial parallel timbers, marked 8, 8, 9, 9, in Fig. 1. These timbers are designed to support the headstocks of the cutters. On the timbers 9, 9, Fig. 1 I fix the headstocks, marked *a*, and *b*, in Fig. 3, on which headstocks rest the ends of the axis of the circular dovetail cutter, *x*. The headstock, *b*, in Fig. 3, which supports the end of the axis next to the cutter, is higher or longer than the headstock, *a*, which supports the remoter end of the same axis. Thus the axis does not lie horizontally, but makes an angle with the horizon, and so also the circular dovetail cutter, which is fixed at the end of this axis and revolves on this axis, does not stand perpendicular to the horizon but makes as great

an angle with a perpendicular as the axis makes with the horizon. The other, or corresponding dovetail cutter has the headstocks of its axis resting on the same timbers 9, 9, in Fig. 1, and its axis makes the same angle with the horizon, as the axis of the former dovetail cutter makes, and so also the dovetail cutter makes the same angle with a perpendicular or vertical line. The result is that the dovetail cutters make with each other an angle equal to double the angle, which the axis of each makes with the horizon.

The pin-cutters are attached to axes, whose headstocks rest on the timbers, 8, 8, in Fig. 1st. The pin-cutters are arranged in all respects like the dovetail cutters; their axes have the same inclination to the horizon, and the pin-cutters themselves making the same angle with each other which the dovetail cutters make with each other. On the shaft or axis of each of the four cutters is a pulley *p* in Fig. 1 to receive a belt from the drum. The drum or drums, over which the belts pass to the pulleys to move the cutters, may be turned by hand with a crank, as shown in Figs. 1 and 3, where the crank is marked 7, but it is intended to be turned by steam or water power.

The cutters which I use to cut dovetails are circular steel plates, three-eighths of an inch thick; their teeth occupy one third part of the circumference, the space between two teeth being just twice as wide as the tooth, as seen in Fig. 2; and the teeth of the dovetail cutters are made beveling in order to cut the bottom of the dovetails square; the circular plates of the pin-cutters are five-eighths of an inch thick, and the teeth are not made beveling; in other respects the dovetail cutters and pin-cutters are precisely alike.

To aid the operator, I construct an apparatus, which, if not essential, is very necessary to the ready use of my machine. This apparatus I place above the frame. It consists of a carriage marked, A, in Fig. 1 which moves easily on top of the sides of the frame to and from the cutters. This carriage is kept in place by the guides *o*, *o*, in Figs. 1 and 3, on top of the frame. On this carriage I place a slide, marked S, in Fig. 1; the design of this slide is to support the boards while they are moved to and from the cutters, and while the cutters are doing their office. The slide for the dovetail cutters consists of one board lying horizontally

across which another board standing vertically is placed, by the side of which cross board, the board to be dovetailed stands also in a vertical position while the slide is moved up to the cutters, and the machine cuts the dovetails. But the slide on the carriage for the pin-cutters is a simple board in a horizontal position, whereon the board lies horizontally while the pins are cut by the machine. Each slide moves readily back and forward from right to left, and from left to right, on the sides of the carriage. To govern these lateral movements of the slides, I attach to each slide a rectangular elastic gage, marked *g*, on Fig. 1; one end of the gage is fixed into the slide and the other end rests on the side of the carriage.

The side of the carriage, where the gage moves is perforated with equidistant holes, of a size to admit the end of the gage. When a board is put on the slide, the end of the gage is put into one of these holes. The operator then moves the carriage, with the slide carrying the board upon it, to the cutters which perform their duty; he then brings back the carriage with the slide and board thereon, lifts the gage from the hole with one hand while he moves the slide, with the other hand, further to the right on the carriage or further to the left, as the case requires, until the gage by its own elasticity drops into the next hole in the side of the carriage; the operator then moves the carriage again to the cutters, and, when the cutting is done, brings back the carriage, and again moves the slide and gage laterally till the gage finds another hole; this process is repeated until all the dovetails or all the

pins have been cut in the board. The dovetails are cut by the upper part of the beveled cutters while the board is held in a vertical position. The dovetail cutters in operation stand $2\frac{1}{2}$ inches apart; so that the right hand cutter cuts the right hand half of one dovetail while the left hand cutter at the same time cuts the left hand half of another dovetail which is the next but one to the left of the former. So that although the two cut two halves of a dovetail at once; it is not the two halves of the same dovetail, but a half of two alternate dovetails. Something like this takes place in cutting the pins; the space between the pins is larger than the dovetails; and this space is not cut out by one operation. But the pin-cutters will cut out two of these spaces, at three operations, there being three times the space cut by a single cutter between each two pins. It should be noticed in connection with this operation of the cutters, that the perforations, in the side of the carriage for the gage for the slide for the pin-cutters, are only one half as far apart as the perforations for that of the dovetail cutters, as will be seen in Fig. 1 *m, n*.

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

The arrangement of the carriages one moving at right angles to the motion of the other, in combination with cutters arranged with their axles inclined, as herein described.

WILLIAM PERRIN.

Witnesses:

I. P. MORSE,
ELISHA FULLER.