T. D. White,

Dovetailing Machine.

No. 77,148. Patented Apr. 21. 1868.

Fig. 1.

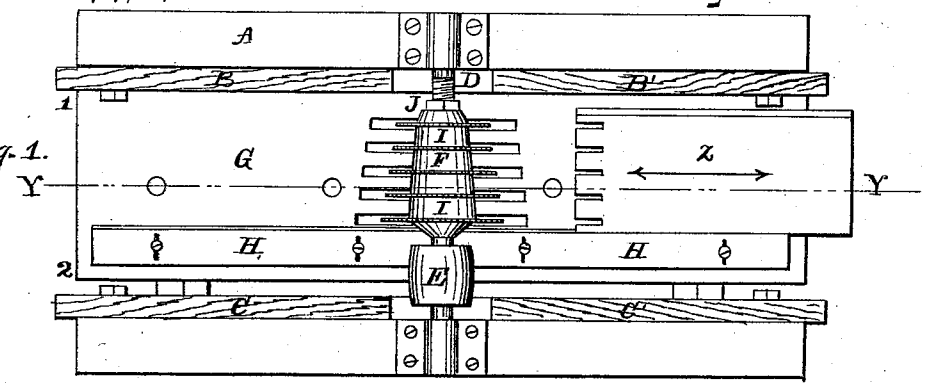


Fig. 2.

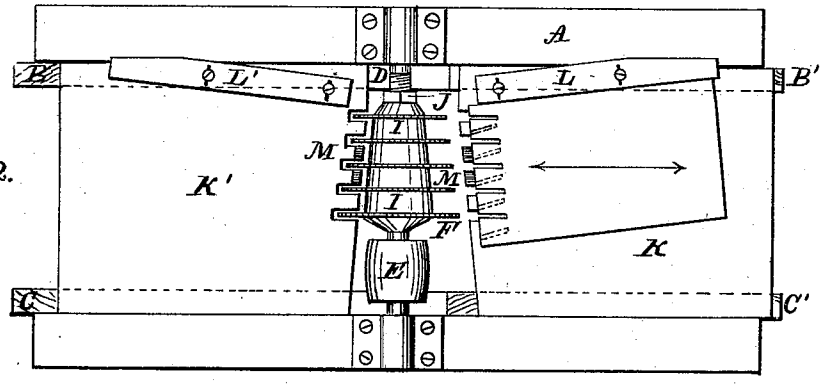


Fig. 3.

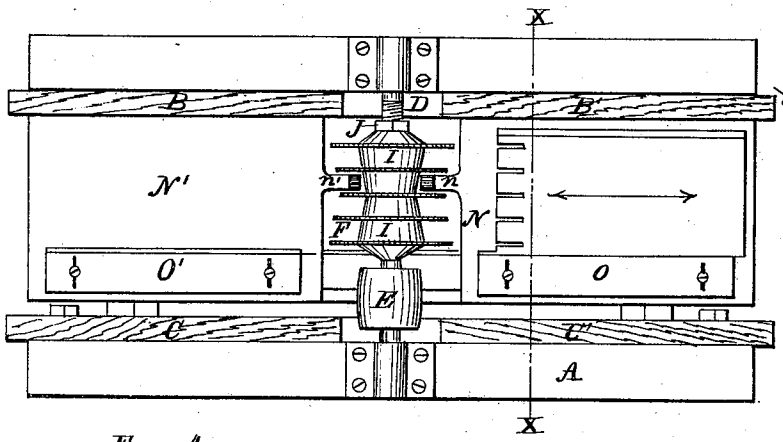


Fig. 6.

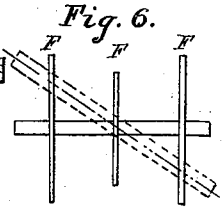


Fig. 7.

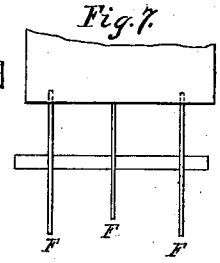


Fig. 4.

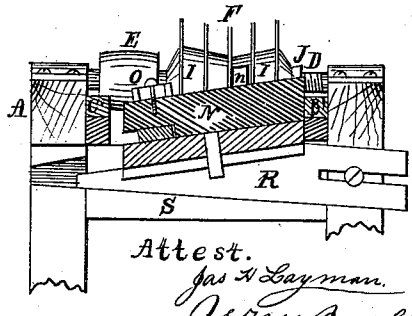
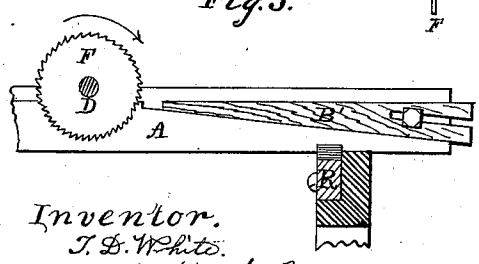


Fig. 5.



Attest.

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Jerm Bowen

Inventor.

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THAYER D. WHITE, OF CINCINNATI, OHIO.

Letters Patent No. 77,148, *dated April* 21, 1868.

IMPROVEMENT IN DOVE-TAIL MACHINES.

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

TO WHOM IT MAY CONCERN:

Be it known that I, THAYER D. WHITE, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Machine for Sawing Dove-Tails; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My invention relates to a machine for simultaneous sawing of the kerfs of an entire series of dove-tails, without the necessity of laying out the work.

Figures 1, 2, and 3 are top views of my machine, as adapted, respectively, for "heading"-pins for mortises, and for "open" pins.

Figure 4 is a transverse section, taken at the line *x x*, fig. 3.

Figure 5 is a longitudinal section, taken at the line *y y*, fig. 1.

A is a frame, provided with ledges B B′ C C′, made adjustable in height by reason of their oblique lower edges resting upon correspondingly oblique supports in the frame. These ledges serve to support at any desired height and angle the various beds on which the stuff is supported, and along which it is advanced to its work.

Journalled transversely athwart the frame is a shaft, D, having a driving-pulley, E, and a gang of circular saws, F, whose number corresponds to that of the desired dove-tails, and of such decreasing diameters, from one end to the other of the series, as that a line joining the lowest portions of their peripheries shall be parallel to a stationary bed or bench, G, which declines from point 1 to point 2, at an angle with the planes of the saws precisely corresponding to the flare of the desired dove-tails. The saws are held properly apart by means of washers, I, and are held fast by means of a nut, J, tapped upon the shafts.

The stuff Z being placed with one edge in contact with the gauge H, is pushed under the gang of saws a sufficient distance to cut the right or left side, as the case may be, of a series of heading-pins for secret dove-tails, a suitable stop underneath the saws determining the advance of the stuff.

One set of kerfs, corresponding, we will say, to the left sides of the pins, having been sawn, the corresponding set for the right sides, (see dotted lines,) are sawn by advancing the stuff from the other end of the bed.

Where it is desired that the kerfs shall not be carried further back than the bases of the pins, the sloping bed is elevated bodily somewhat higher, and a gang of saws is employed which diminish less rapidly in diameter. The stops also are so arranged as to arrest the stuff at an earlier portion of the stroke.

For sawing the mortises, the stuff is placed upon a horizontal travelling-bed or rest, K or K′, which rest is restricted to a rectilinear path parallel to and half the thickness of the stuff below the saw's axis.

The bed K or K′ has a side gauge, L, of corresponding obliquity to the flare of the mortises, and a stop, M. One set of sides having been cut as in fig. 2, a precisely similar operation on the corresponding bed K′, cuts the remaining sides, (see dotted lines.)

For sawing pins clear through, the arrangement shown in figs. 3 and 4 is employed, and in which the sloping bench has an additional slab, N, whose surface is, at its mid-with, half the thickness of the stuff below the plane of the saw-shaft.

The other end of the machine has a similar slab, N′, and these slabs are provided with stops, *n n′*, and adjustable gauges, O O′. In this arrangement the saws, instead of converging towards one end, are of very slightly-increasing diameters from the middle to the outside blades, so as to secure the represented equal penetration. In the drawing this disparity of diameters is exaggerated, for greater clearness of representation.

The above-described inequality of diameters is necessary, because one edge of the board has to be as much below the centre as its opposite edge is above it.

R and S are wedges at the ends of the machine, and they are employed in connection with the ledges B B′, C C′, for bringing the table G to a proper elevation.

Mortise and heading-pins can be sawed, without any change of saws, by depressing the lower rest as much below the periphery of the saws as you want to appear in front of the pins.

To saw heading-pins on an angle of forty-five degrees, or near that, the saws are all removed except the

two largest, and in their place I substitute three others, the smallest of which is one-twelfth larger than the smallest which has been removed, or near that size, the other three being of a size to bring their peripheries on a line with the two outside saws; they will then make a more obtuse angle than those you took off, which is necessary in order that the saws may all cut the same depth.

To saw pins clear through, take off all but the large saw, and put on four others, the largest of which is the same size as the one left on, and has to go on last. The next two being of equal size, go next to each outside saw, and the smallest in the centre, so that a line drawn along their peripheries will be slightly concave, as shown in fig. 3. This is necessary, as one edge of the board has to be as much below the centre as its opposite edge is above it; the centre saw would cut beyond a line the outside ones would cut to if they were all of a size. The unequal diameters of the saws enables them to cut tenons of equal length, because, by reason of the vertical obliquity of the bed, the middle saw only can work with that part of its edge which is at the greatest horizontal distance from the shaft. It is only the centre of the width of the plank that is fed radially toward the arbor, and hence if the saws were of equal diameter, the centre one would begin to cut first, and would cut to a greater depth than the others.

Figures 6 and 7 are diagrams illustrating this operation, the former being an elevation, and the latter a plan. The red lines indicate the position of the plank, but its obliquity is exaggerated, in order to make the effect more clear.

If the boards to be dove-tailed have parallel edges, and of equal width, there is but one slide and guide necessary in sawing mortises, as you turn the piece over and finish. In sawing pins, if the pieces are of the same width, a guide on one side is sufficient, but it is necessary to saw from both sides of the machine.

The spaces between the saws must all be the same. In order to dove-tail wider pieces than this machine represents, a greater number of saws can be employed.

Five different widths may be dove-tailed by using one less saw for each width, which would give the several widths six, five, four, three, and two pins, or the saws may be placed near together by providing a set of thinner blocks between them, and thus accommodate them to any desired width, but in so doing you make a more acute angle, and will have to accommodate the rests to it.

If the saws are placed farther apart, the angle is more obtuse, and the rests will have to be altered so as to agree with it.

It will be seen that both the mortises and the corresponding heading-pins may be sawn without change of saws, providing there is no objection to having the kerfs of the pins extend somewhat beyond their bases; but where this is objectionable, a change of saws, as above explained, will be required.

The same saws may be employed for hidden pins and mortises, by the use of larger washers, but in that case the obliquity of the beds and gauges must be correspondingly lessened.

I have described the apparatus as applied where the series of dove-tails is equally distant from both edges of the stuff, but where this is not the case, the work must be gauged from one edge only, and for this purpose I work from a gauge on the right instead of the left, or *vice versa*, for the second cutting, to complete the pins or mortises, as the case may be.

I claim herein as new, and of my invention—

The combined arrangement of a series of saws of unequal diameters, and an oblique table for feeding planks thereto, as and for the purposes herein specified.

In testimony of which invention, I hereunto set my hand.

THAYER D. WHITE.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.