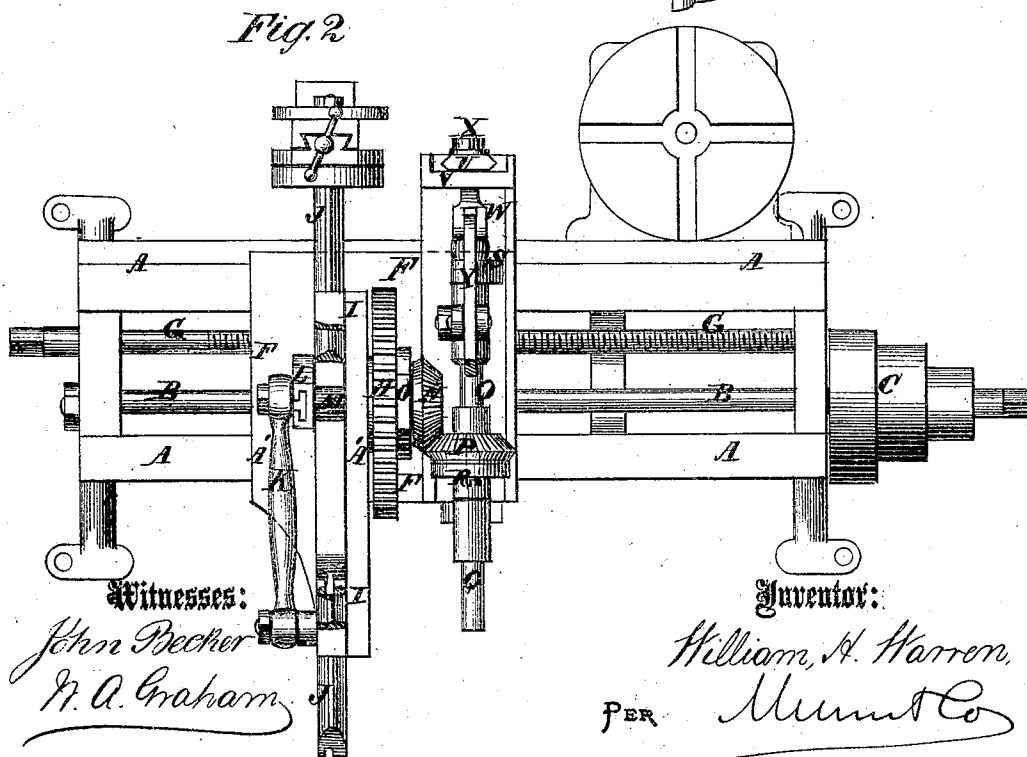
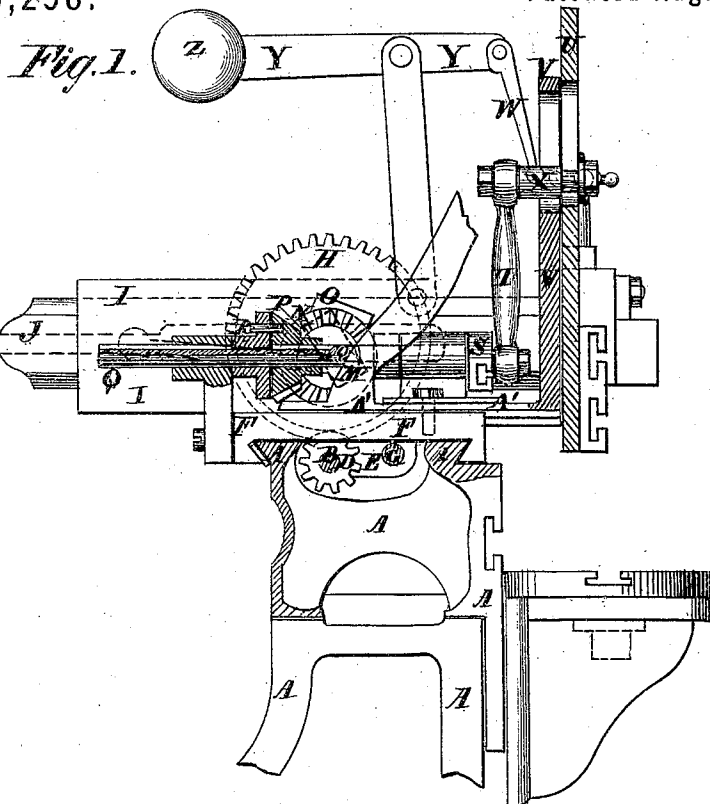


W. H. WARREN.

Improvement in Slotting and Shaping Machines.

No. 130,258.

Patented Aug. 6, 1872.



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UNITED STATES PATENT OFFICE.

WILLIAM H. WARREN, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN SLOTTING AND SHAPING MACHINES.

Specification forming part of Letters Patent No. 130,258, dated August 6, 1872.

Specification describing a new and useful Improvement in Combined Shaping and Slotting Machine, invented by WILLIAM H. WARREN, of Worcester, in the county of Worcester and State of Massachusetts.

Figure 1 is an end view of my improved machine, partly in section to show the construction. Fig. 2 is a top view of the same, parts being broken away to show the construction.

Similar letters of reference indicate corresponding parts.

My invention has for its object to combine a shaper and a slotter in a single machine, mounted upon one frame, and driven by the same driving device, in such a way that they may both work at the same time, or either separately, as desired; and it consists in the two rams, one moving vertically and the other horizontally, and both mounted upon the same traverse-shoe and driven by the same driving device, as hereinafter more fully described.

A represents the frame of the machine, which is constructed in the ordinary manner. B is the driving-shaft, to one end of which is attached a cone-pulley, C, to receive the driving-belt. The shaft B revolves in bearings in the ends of the frame A. D is a small gear-wheel, placed upon the shaft B and connected with it by a feather and groove, so that the shaft B may always carry the gear-wheel D with it in its revolutions, while allowing the said gear-wheel to slide longitudinally. The gear-wheel D is made with a long hub, upon which is placed a sleeve, E, which is secured to the traverse-shoe F, and has a screw-hole formed in it to receive the long screw G, which is swiveled to the ends of the frame A, and is turned by a crank or hand wheel attached to one of its ends, so that by turning the said screw G in one or the other direction the traverse-shoe F may be moved in one or the other direction. The shoe F works in ways upon the top of the frame A. The teeth of the gear-wheel D mesh into the teeth of the large gear-wheel H, which revolves upon a hollow stud attached to the guide-frame I, in which the slotting-ram J works, and which is attached to the traverse-shoe F. K is the connecting-rod by which the ram J is driven, one end of which is pivoted by a T-bolt in a T-slot formed in the said ram J. The other

end of the connecting-rod K is pivoted by a T-bolt in a T-slot formed in the crank-arm L, so that the said connecting-rod K may be conveniently adjusted to give a longer or a shorter throw to the ram J, as may be required. The crank L is attached to the end of the short shaft M, which passes through the eccentric perforation of the hollow stud, upon which the gear-wheel H revolves, and to the other end of which is attached a bevel-gear wheel, N. To the gear-wheel N, or to the shaft M, at the inner side of said gear-wheel N, is attached a plate or arm, O, in which is formed a radial slot to receive a pin, attached to the side of the large gear-wheel H, so that the shaft M and its attachments may receive a varying movement from the wheel H, revolving with a uniform movement. The teeth of the bevel-gear wheel N mesh into the teeth of the bevel-gear wheel P, placed upon the shaft Q, which revolves in bearings attached to the traverse-shoe F. The bevel-gear wheel P is secured by a screw to the flange of the flanged hub R placed upon the shaft Q, and connected with it by a tongue and groove, so that the gear-wheel P and flanged hub may carry the shaft Q with them in their revolutions, while allowing the said shaft Q to slide longitudinally through the said wheel and hub. To the forward end of the shaft Q is attached a crank-arm, S, in which is formed a T-slot to receive the T-screw, by which the lower end of the connecting-rod T is pivoted to said crank. The upper end of the connecting-rod T is pivoted to the vertical ram U by a bolt, X, which passes through a slot in the guide-frame or way V, in which the ram U works, and through a slot in the said ram U, where it is adjustably secured in place. To the bolt X is pivoted the lower end of the connecting-rod W, the upper end of which is pivoted to the end of the lever Y, which is pivoted to some suitable support, and the other end of which is provided with a weight, Z, to balance the ram U and cause it to move downward with a positive movement. The lower end of the guide frame or way V is attached to the base frame A', which rests upon the traverse-shoe F, and is slotted to receive the bolts by which it is secured to said shoe. The rams J and U are provided with adjustable tool-holders in the ordinary manner.

By this construction, when the slotter is not required for use the pivoting-screw of the connecting-rod K may be moved opposite the axis of the crank L, which will allow the ram J to stand still. In the same way the ram U may be made to stand still by adjusting the lower end of the connecting-rod T at the axis of the crank S. When the slotter is not required for use the bolts that secure the frame A' to the shoe F may be loosened, and the frame A' and all its attachments slide back out of the way; then, by removing the screw that secures the

bevel-gear wheel P to the flanged hub R, the gear-wheel P may be allowed to run loose.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The horizontal and vertical shaping-rams J U, combined with the same traverse-shoe, feed-screw, and lath-shear, as and for the purpose described.

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