V. P. WILLCOX & O. RANNEY.

Brush-Wood Boring-Machine.

No. 219,550. **Patented Sept. 9, 1879.**

Fig. 1

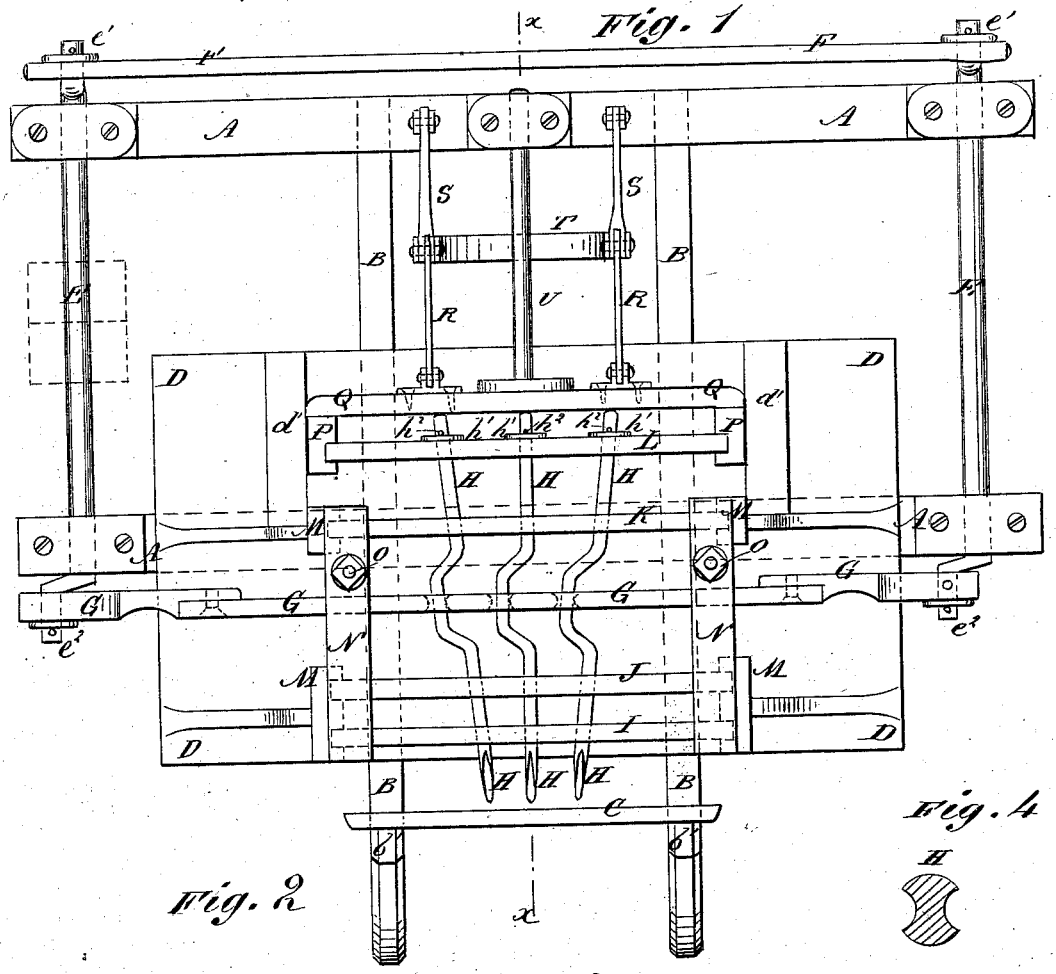

Fig. 2

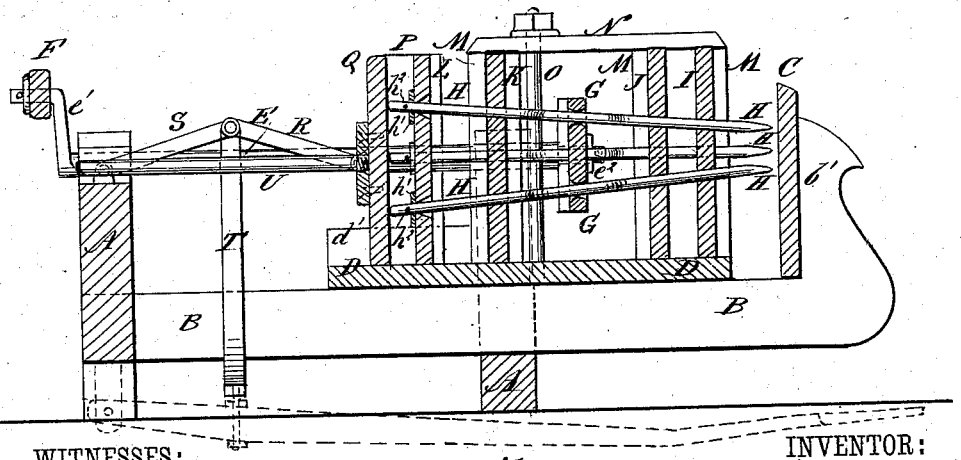

Fig. 4

Fig. 3

WITNESSES:

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UNITED STATES PATENT OFFICE.

VESTUS P. WILLCOX AND ORRIN RANNEY, OF CORRY, PENNSYLVANIA.

IMPROVEMENT IN BRUSH-WOOD-BORING MACHINES.

Specification forming part of Letters Patent No. **219,550**, dated September 9, 1879; application filed July 9, 1879.

To all whom it may concern:

Be it known that we, VESTUS P. WILLCOX and ORRIN RANNEY, of Corry, in the county of Erie and State of Pennsylvania, have invented a new and useful Improvement in Brush-Wood-Boring Machines, of which the following is a specification.

Figure 1 is a top view of our improved machine. Fig. 2 is a vertical section of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a detail view of one of the bits. Fig. 4 is a cross-section of the same, taken through the line *y y*, Fig. 3.

The object of this invention is to furnish an improved machine for boring brush-blocks and other work in wood or metal requiring straight and inclined holes to be bored close together or in groups, which shall be simple in construction, convenient in use, and effective in operation, boring round holes in line with the axis of the bits, and at any desired angle.

The invention consists in the bits, each made in one piece, with a crank in its middle part, and provided at its rear end with a washer and a pin, in combination with the guide-plates, the bar operated by the cranks of the two shafts, and the feed-plate operated by the toggle-bars, as hereinafter fully described.

Similar letters of reference indicate corresponding parts.

A represents two frames or plates, to the lower parts of which are attached two parallel bars, B. To the upper sides of the forward ends of the bars B are attached, or upon them are formed, knees or brackets b', to which is attached the gage or rest C, against which the work is held while being bored. The middle upper part of the forward plate or frame A is cut away, and to the said plate or frame A and to the bars B is attached the bed-plate D of the machine. To the upper corners of the plates or frames A are attached bearings, in which revolve two shafts, E. To one or both the shafts E power may be applied by pulleys and belts or other suitable means. To the rear ends of the shafts E are attached, or upon them are formed, cranks e^1, which are connected by a connecting-bar, F, pivoted to them, so that they and the shafts E may always move together and at the same velocity. To the inner ends of the shafts E are attached, or upon them are formed, cranks e^2, which project at a different angle from the cranks e^1, so that there may be no dead-points. To the cranks e^2 are pivoted the ends of the bar G, through the middle part of which are formed holes, in the same relative position as the holes required to be bored, which holes are designed to receive the cranks of the bits H. Each bit H is made in one piece, and has a crank formed in its middle parts, which cranks pass through the holes in the bar G, so that the said bits may be rotated by the movements of the said bar G. The forward parts of the bits H pass through holes in the guide-plates I J, and their rear parts pass through holes in the guide-plates K L. The holes in the guide-plates I J K L are so formed as to give the desired direction to the bits H. The ends of the guide-plates I J K are placed in grooves in the inner sides of the standards M, the lower ends of which are rigidly attached to or formed upon the bed-plate D.

The guide-plates I J K are secured in place by bars N, placed upon their upper corners, and held down by bolts O, passed up through the bed-plate D, so that by removing the nuts of the said bolts O the guide-plates may be removed and replaced by another set, as the work to be done may require. The ends of the guide-plate L are placed in grooves in the inner sides of flanges or uprights P, formed upon or attached to the sides of the ends of a plate, Q, which slides in ways d', attached to the bed-plate D. The rear ends of the bits H rest against the forward side of the plate Q, so that they may be fed forward by the forward movement of the said plate Q. The rear ends of the bits H have washers h^1 placed upon them at the rear side of the rear guide-plate L, and pins h^2 pass through them at the rear side of the said washers h^1, so that the said bits H may be drawn back by the rearward movement of the plates L Q. To the rear side of the feed-plate Q are hinged the forward ends of one or more bars, R, the rear ends of which are hinged or jointed to the forward ends of the bar or bars S. The rear ends of the bar or bars S are hinged to the upper part of the rear plate or frame A. The bars R S thus form elbow or toggle joints, and to

them, at their joints, are hinged the upper end or ends of the bar T.

When only one elbow-joint is used, the bar T may be made straight, and when two elbow-joints are used it should be made in U form.

I prefer to use two elbow-joints, R S, as moving the plates L Q forward and back squarely and preventing all tendency to bind.

The lower part of the bar T is designed to be pivoted to a lever pivoted at its rear end to the frame A, or to some other suitable support, and the forward end of which projects at the forward side of the machine, so that it may be operated by the workman with his foot to feed the bits H forward to their work. The foot-lever should be provided with a balance-weight, to draw back the bits H when the said lever is released from the foot of the workman.

To the rear side of the middle part of the feed-plate Q is rigidly attached the forward end of the rod U, which passes through and slides in a bearing attached to the rear plate or frame A, to cause the plates L Q to move forward and back squarely.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

The bits H, each made in one piece, with a crank in its middle part, and provided at its rear end with a washer, h^1, and a pin, h^2, in combination with the guide-plates I J K L, the bar G, operated by the cranks e^2 of the shafts E, and the feed-plate Q, operated by the toggle-bars R S, substantially as herein shown and described.

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Witnesses:
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