R. HOWLAND.

SAW-SHARPENERS.

No. 183,931. Patented Oct. 31, 1876.

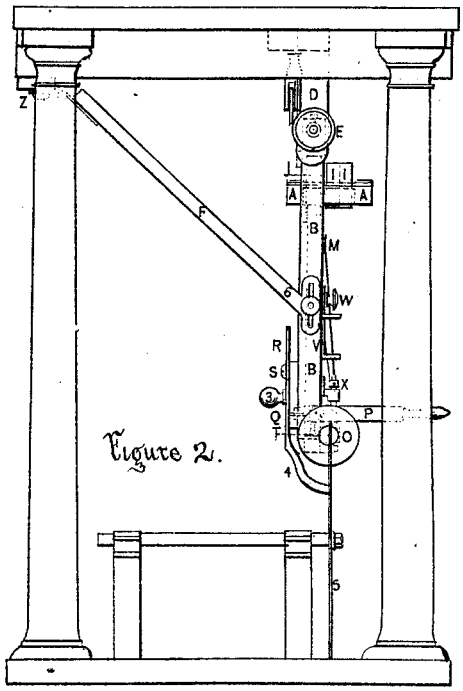

Figure 2.

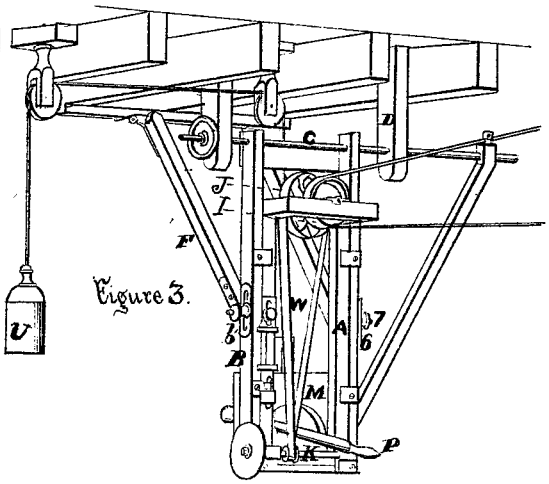

Figure 3.

Figure 4.

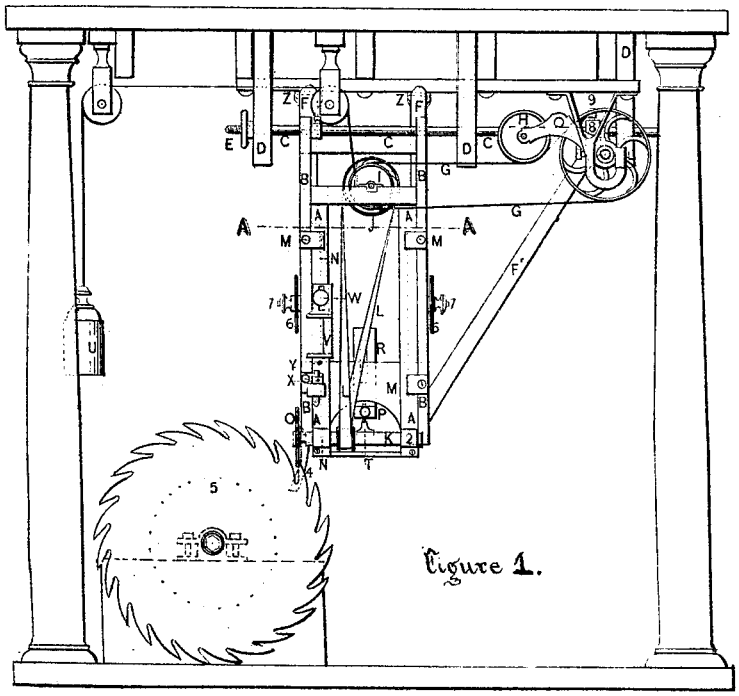

Figure 1.

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ROBERT HOWLAND, OF BRIDGEWATER, MASSACHUSETTS.

IMPROVEMENT IN SAW-SHARPENERS.

Specification forming part of Letters Patent No. **183,931**, dated October 31, 1876; application filed June 22, 1874.

To all whom it may concern:

Be it known that I, ROBERT HOWLAND, of the town of Bridgewater, county of Plymouth and State of Massachusetts, have invented a new and useful Improvement in Machinery for Sharpening and Gumming the Teeth of Circular Saws, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of the specification.

Figure 1 represents a front elevation of this machine; also the same view of the saw to be operated upon. This figure also gives the same view of an arrangement for application of power. Fig. 2 is a side elevation of the same, the counter-shaft, its hangers, and also the weight being omitted. Fig. 3 is a perspective view without the saw, the counter-shaft, and its hangers. Fig. 4 is a horizontal section through the line A A, Fig. 1.

Similar letters indicate like parts in the different figures.

My invention will be first fully described, and subsequently pointed out in the claims.

Referring to the drawing, A A A A, Fig. 1, represent the inner or sliding frame. B B B B, Fig. 1, represent the outer frame, suspended from the rod C C C, which is held in its position by passing through holes in the pieces D D D, allowing the rod C to revolve, and also to move laterally, carrying with it the combined frames A A A A and B B B B. This lateral movement is produced in one direction by the wheel E, which is threaded upon the end of the bar C, while the belt G G tends to pull the frame in the opposite direction. A constant tension of the belt G is secured by the use of the idler H, which, while the belt slackens, as the frame is moved to the right, descends by its own weight, and as the rod and frame are moved to the left by the wheel E it ascends, thus producing the effect of shortening and lengthening the belt.

Referring to Fig. 2, it will be seen that the inner frame or slide A A is constructed with horizontal transverse framing in the form of a square, projecting somewhat more on the front of the frame B B than on the back of the same. This is in order to support the shaft and pulleys I I and J. Power is taken from any convenient pulley, and received by the pulley I. The pulley J, being on the same shaft, receives and transmits it to the shaft K, Fig. 1, and emery-wheel O, by means of the belt L L, which, for this purpose, makes a quarter turn to the left.

Referring to Fig. 4, (sectional view,) it will be seen that the inner frame or slide A A is held in its position in the outer frame B B by the pieces M M, which are screwed upon the outer frame. The inner slide moves on metallic Vs N, Figs. 1 and 4, so that while it can easily be moved, there is no side motion or play to render the action of the emery-wheel O evasive. The lever P, Fig. 2, has its fulcrum at Q, Fig. 2, which point is adjustable by means of the slide R and screw S, Fig. 2, and is attached to the inner frame or slide by means of the stud T, Figs. 1 and 2, enabling the operator to move the frame A A vertically within the outer frame B B, while the weight of the inner frame is supported by the counter-balance U, Fig. 1. The gage or stop V, Figs. 1 and 2, is held in any desired position by means of the screw W, Fig. 2, which allows the inner frame to descend until the stop strikes the screw X, Figs. 1 and 2.

Sometimes it is found necessary to confine the inner frame to one rigid position, as, for instance, in "truing up" a saw. In order to do this, the gage is taken off and placed so that the screw X will come between the lugs of the gage V, which is held in this position by the screw W, being now turned into the hole Y, Fig. 1. By means of this arrangement the emery-wheel can be accurately adjusted.

In order to hold the machine very rigidly while it is in use, and while at the same time it must be so constructed as to secure a lateral movement, and to be easily swung up to the flooring above, out of the way of the sawyer, when it is not in use, a peculiar arrangement of braces is required. The upper extremities of the braces F F, Figs. 1 and 2, are hung at Z, Fig. 2, by means of a strap-hinge, one part or leaf of which is securely fastened to the brace F, the other leaf being fastened to the flooring with a single strong screw or bolt, so that if the lower extremity of the brace F, Fig. 2, is raised up until horizontal, the end 6, Fig. 2, could be moved in the arc of a circle, the radius of which would be equal to the length

of the brace F. The lower ends of the braces are fitted with metallic plates 6 6 6, Figs. 1 and 2, in which are cut slots to allow the studs 7 7, Fig. 1, to pass through. These studs are fastened in the outer frame B B, and are fitted with thumb-nuts 7 7, Fig. 1, which securely confine the plates, holding the machine in the desired position. The brace F′, Fig. 1, is securely fastened to the lower part of the frame B B, and is fitted at its upper end with a head, 8, Fig. 1, through which the bar C passes, and on which the head 8, Fig. 1, is securely confined by the screw 9, Fig. 1. The arm 4, Figs. 1 and 2, is attached to the back part of the outer frame B B by the screw 3, Fig. 2, which bears against the saw 5, Fig. 2, insuring a correct position of the emery-wheel, the axis of which should lie in the plane of the radius of the saw-plate. This arm also prevents any undue jar or chattering of the saw-plate while being ground.

Having thus described the construction of my improved saw-gummer, its operation is described as follows: Power being applied to the emery-wheel, the operator, with the left hand, grasps the saw, and brings the front of the tooth up to the right-hand side of the wheel, which has been lowered into the space between the teeth by the use of the lever and right hand. Should a very straight tooth be required, or one in which the front of the tooth nearly coincides with a radius drawn from its point, the machine must be moved to the left by means of the adjusting-wheel E. If a hooking-tooth is preferred, the machine must be moved to the right, using the same means. The gumming and sharpening are done at the same time, as the back of the tooth requires no grinding unless the saw is "out of true." When this is the case, the gage or stop is moved to its lower position, the screw X being contained within its lugs. This screw is then turned slowly down until all the teeth are touched by the emery-wheel, the saw being meanwhile turned by hand. The back of the tooth may afterward be shaped by moving the saw and lever at the same time.

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

1. The swinging frame B B, having a lateral adjustment on the rod C C, in combination with the sliding frame A, carrying the emery-wheel O, substantially as described.

2. The hinged and adjustable braces F F, having the slotted ends 6 6, and set-screws, in combination with the swinging frame B B, for the purpose specified.

3. The combination of the frame B B, rod C C, and adjusting-screw E, for the purpose specified.

4. The combination of the sliding gage V, adjusting-screw X, and clamp-screw W, constructed and arranged as shown and described, and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT HOWLAND.

Witnesses:
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EDWIN H. KEITH.