(No Model.) 2 Sheets—Sheet 1.

W. H. HALLADAY.

SAW SHARPENING MACHINE.

No. 381,775. Patented Apr. 24, 1888.

Fig. 2.

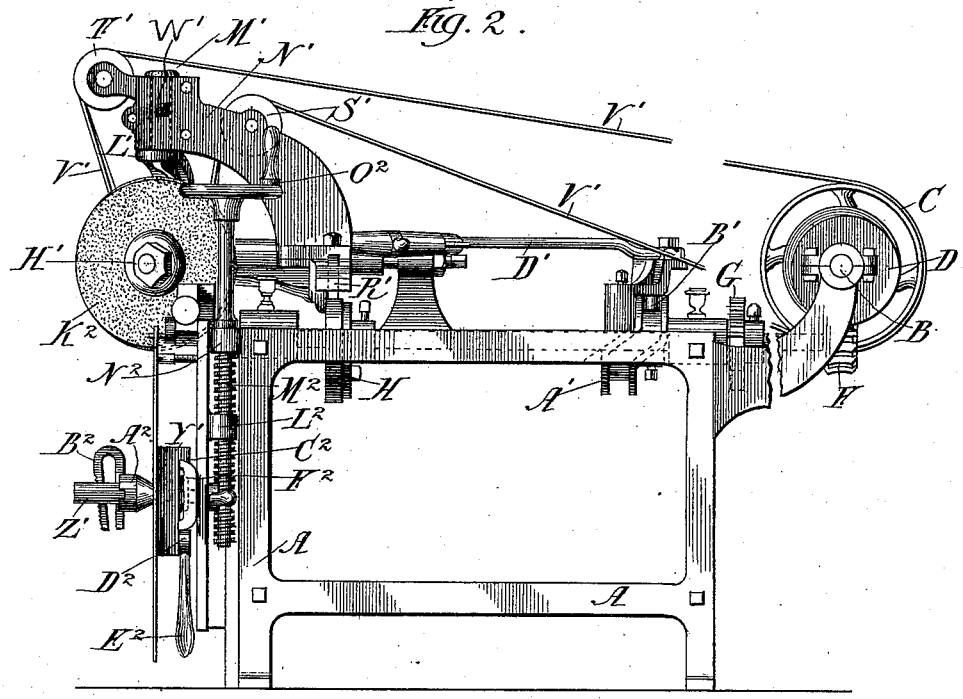
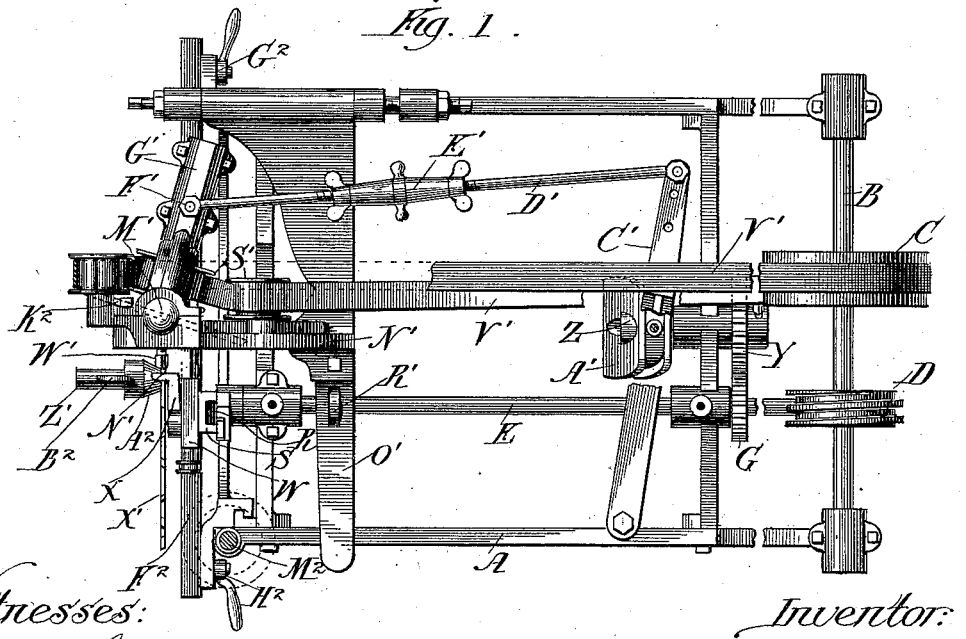


Fig. 1.



Witnesses:
Frank J. Blanchard.
Chas. D. Burton.

Inventor:
William H. Halladay.
By Lucius W. Parker.
Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

W. H. HALLADAY.

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Fig. 3.

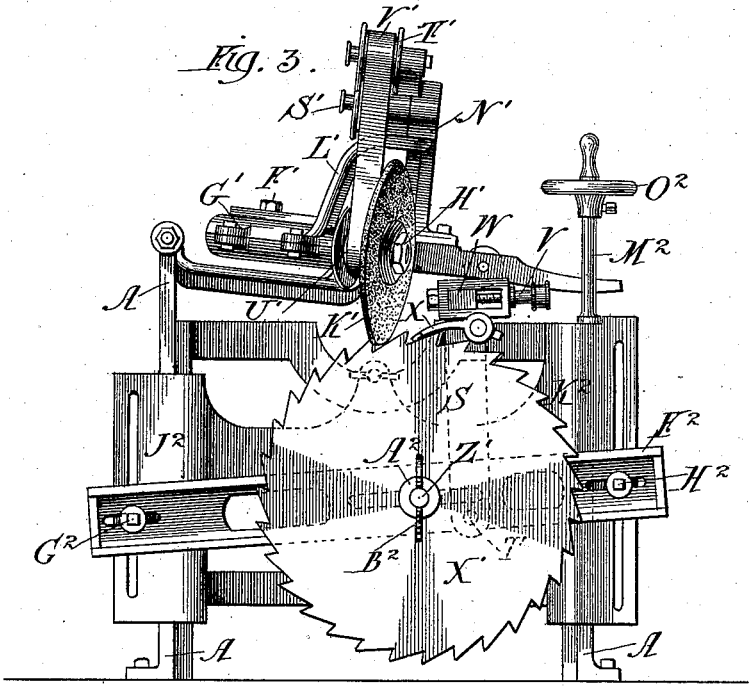


Fig. 4.

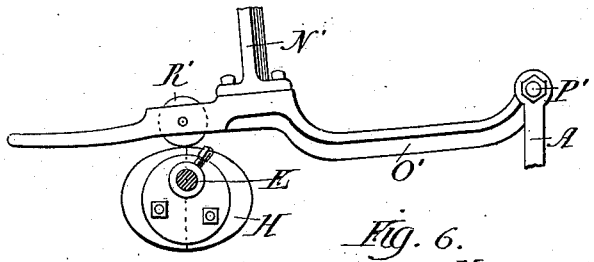


Fig. 5.

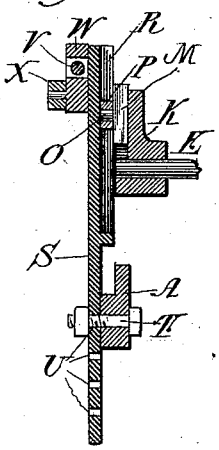
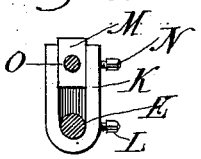


Fig. 6.



Witnesses:

Frank J. Blanchard

Chas. D. Burton.

Inventor:

William H. Halladay.

By Francis W. Parker.

Attorney.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM H. HALLADAY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WILLIAM H. HALLADAY MANUFACTURING COMPANY, OF SAME PLACE.

SAW-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 381,775, dated April 24, 1888.

Application filed February 7, 1887. Serial No. 226,760. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HALLADAY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Saw-Sharpening Machines, which are fully set forth in the following specification.

My invention relates to machines for sharpening either crosscut or rip saws automatically by means of grinding-wheels, and has for its objects, in general, to provide sundry adjustments and parts whereby the machine is made to operate more easily, and is less liable to get out of order than similar machines now in use. I attain these objects by the means illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view with parts broken away. Fig. 2 is a plan view. Fig. 3 is a front view. Fig. 4 is a detail of the grinding-wheel table and its tilting mechanism. Fig. 5 is a detail vertical section of the finger-rocking bar. Fig. 6 is a detail of the crank which operates the finger-rocking bar.

Like parts are indicated by the same letter in all the figures.

A is the frame; B, a shaft on the rear thereof, driven by any suitable power-supplying device, carrying the pulley C and the worm-wheel D.

E is a shaft journaled in the frame at right angles to the shaft B, and carrying at one end the gear F, which engages the worm-wheel, the pinion G, and also the cam H, and at the other end the crank K. The crank is secured to the shaft by a set-screw, L, and carries a block, M, adjustably secured to such crank with the screw N, and having the short shaft O, on which rotates the roller P. This latter slides in the cavity R on the finger-rocking bar S, which is pivoted to the frame A by the bolt T.

U are sundry apertures to receive the bolt T at varying heights. Secured to said rocking bar above by means of the screw-bolt V is the open box W. The screw-bolt is journaled in the ends of the box and passes through a screw-threaded hole in the end of the rocking bar S, so that by turning the bolt by the hand-wheel on the end thereof the position of the box on the rocking bar may be easily adjusted. Pivoted to the box is the finger X.

Y is a pinion which engages the pinion G, and is secured on and thus drives the short shaft Z, which is journaled on the frame.

A′ is a cam, shaped as shown, and having a groove around its periphery to receive the pendent lug B′ on the arm C′, which is pivoted at one end to the frame, and at the other end is provided with a series of apertures, whereby it may be pivoted to the rod D′. This rod is provided with the extension connecting device E′, and pivoted to the grinding-wheel arbor-frame G′ at F′. In this frame is journaled the grinding-wheel K′. The arbor-frame has an upward arm, L′, terminating in a short shaft, M′, which is vertically journaled in the arm N′. This latter arm rises from the table O′, which is hinged to the frame at P′, and provided with a roller, R′, which rides upon the cam H.

Journaled on the arm N′ are the pulleys S′ T′, and on the arbor back of the grinding-wheel is secured the pulley U′. Over these pulleys and the pulley C passes the belt V′, which drives the arbor. In the arm N′ there is a set-screw, W′, which can be driven in against the short shaft M′ to keep the same from rotating.

X′ is the saw secured to the block Y′ by means of the shaft Z′, cone A^2, and locking-key B^2. The block Y′ is provided with a shoulder, C^2, above and the cam D^2 below. To the cam D^2 is secured the hand-lever E^2, whereby the block is locked at any suitable position to the cross bar F^2. This bar is adjustably secured at G^2 and H^2 to the frame-pieces J^2 and K^2. The piece J^2 is secured to the frame A, and the piece K^2 is provided with the eye L^2, screw-threaded to receive the screw-bolt M^2, which passes through the screw-threaded eye N^2 on the frame, and is provided with the hand-wheel O^2 above.

The use and operation of my invention are as follows: As soon as the shaft B is set in motion by connecting it with the line-shaft or power-supplying device, the pulley C rotates and drives the belt V′. This operating upon the pulley U′ imparts a rapid rotation to the grinding-wheel K′. At the same time the

worm-wheel D, engaging the gear F, drives the shaft E, thus turning the crank K and carrying the roller O about in a circle. This roller O slides in a groove or aperture, R, and causes the bar S to rock on its pivot T. The loosely-pivoted finger thus plays along the edge of the saw in its forward motion, engages the tooth thereof, and rotates the saw. In its rearward motion it slides over the tooth. The throw of the finger may be adjusted by rotating the screw-bolt V. The pinion G, as the shaft E rotates, engages the pinion Y and rotates the shaft Z and grooved cam-wheel A′, thus rocking the arm C′ and reciprocating the rod D′. The length and character of this latter movement may be varied by adjusting the connection of the arm C′ and rod D′ and by altering the length of the extensible connection E′. The reciprocation of this bar rocks the arbor-frame in its supporting-pivot, and this alternately places the rotating grinding-wheel in the position, shown in Fig. 1 and the opposite position, whereby the wheel may be used to grind a crosscut-saw.

Should it be desired to use the wheel for grinding a rip-saw, the swinging arbor-frame is brought into proper position therefor, and is then locked by means of the set-screw W′. As the shaft E rotates, the cam H is carried about, thus alternately raising and lowering the table O′ and the arm N′, on which the arbor-frame is secured. Thus the grinding-wheel is alternately raised and lowered. The size of the various pulleys is such, and the sizes and shapes of the various cams are such, and the several parts are so adjusted, as that the finger first engages a tooth and pushes it forward until just beneath the grinding-wheel, and then returns to engage the next tooth. The grinding-wheel then descends, sharpening the short side of the tooth, and as the finger advances rides up the long side of the next tooth, sharpening the same, and then, if as shown in the figures, it is set to grind a crosscut-saw, it changes its angle and descends to sharpen the short side of the tooth.

The grinding-wheel is secured to its arbor at a point directly below the arbor-frame pivot. The table which supports the arbor and frame is hinged at one side and supported by the cam on the opposite side of the grinding-wheel. This arrangement I find to be very important in securing a steady and easy action of the grinding-wheel.

I claim—

1. In an automatic saw-sharpening machine, the combination of the main frame with a table hinged on one side of the frame and supported on a rotating cam on the opposite side and a grinding-wheel arbor supported about midway of the frame on the pivoted table.

2. In an automatic saw-sharpening machine, the combination of the main frame with a table hinged at one side to the frame and supported toward the other end on a rotating cam and a grinding-wheel arbor supported on such table between the cam and its pivot-point by means of a vertical bolt, so that the grinding-wheel arbor rises and falls with the table and may be turned about on its pivot.

3. In an automatic saw-sharpening machine, the combination of the main frame with a grinding-wheel arbor, a saw-support, and a vertical pivot from which the grinding-wheel arbor is suspended, the whole being arranged so that the vertical pivot is directly over the grinding-wheel and the saw when the latter is in position.

4. In an automatic saw-sharpening machine, the combination of the main frame with a table hinged at one side to such frame and supported at the other on a rotating cam-wheel, a grinding-wheel arbor supported, as shown, by a vertical pivot on the pivoted table, a rod secured to one end of the arbor and attached to a rock-shaft, and a cam-wheel which rocks said rock-shaft, the whole combined so that the grinding-wheel is alternately raised and lowered by the motion of the table and is turned about its vertical pivot by the motion of the rod and rock-shaft.

5. In an automatic saw-sharpening machine, the combination of a pivoted rocking bar, a feed-finger pivoted to such bar, a rotating shaft provided with a crank, a groove in the back of said rock-shaft to receive the crank, and a suitable main frame on which the parts are mounted, so that by the rotating of the rod the shaft is rocked back and forth on its pivot.

6. In an automatic saw-sharpening machine, the combination of the main frame, a rocking bar pivoted thereon, a box secured to the upper end of said bar, a feed-finger pivoted to such box, and a screw-bolt which passes through said box on the upper end of the bar, by turning which the position of the finger on the rock-shaft may be changed to vary its throw.

7. In an automatic saw-sharpening machine, the combination of the main frame, a rock-bar provided with a series of holes, whereby it may be adjustably pivoted on the frame, and a finger adjustably secured to the upper end of said rocking bar.

8. In an automatic saw-sharpening machine, the combination of the main frame, a saw-supporting piece thereon, and a block to which the saw is secured, said block provided above with a groove and below with a cam-lever, whereby said block, together with the saw, may be secured at any desired position on the saw supporting bar.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 4th day of February, A. D. 1886.

WILLIAM H. HALLADAY.

Witnesses:

FRANCIS W. PARKER,

CHAS. S. BURTON.