(No Model.) 2 Sheets—Sheet 1.

S. C. ROGERS.

SAW SHARPENING MACHINE.

No. 564,394. Patented July 21, 1896.

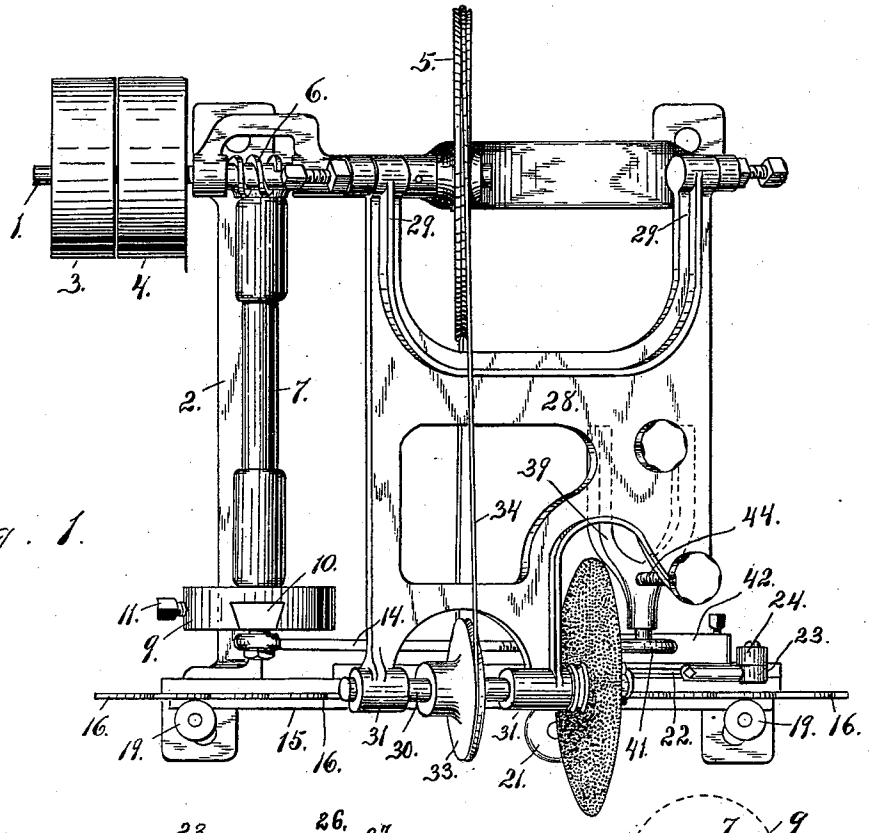

Fig. 1.

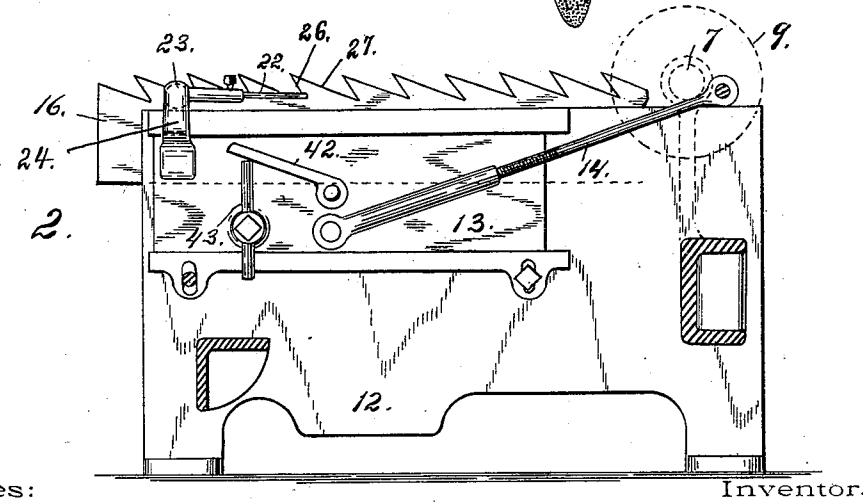

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

S. C. ROGERS.

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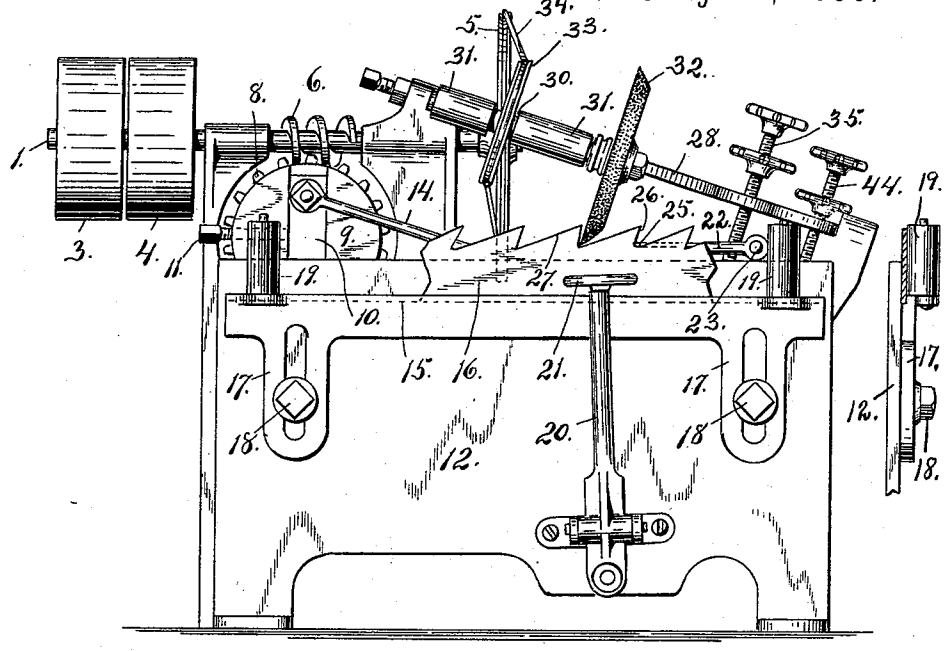

Fig. 3.

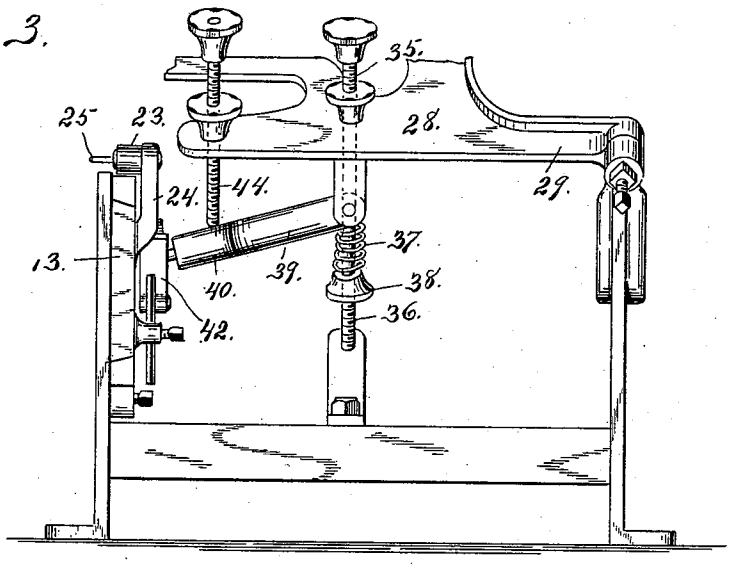

Fig. 4.

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UNITED STATES PATENT OFFICE.

SAMUEL C. ROGERS, OF BUFFALO, NEW YORK.

SAW-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 564,394, dated July 21, 1896.

Application filed September 18, 1894. Serial No. 523,397. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL C. ROGERS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Saw-Sharpening Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of saw-sharpening machines which are adapted for operation upon the teeth of band-saws, its object being to so construct and combine the operative parts of the machine as to adapt it for continuous and automatic sharpening action upon the teeth of the band-saw for any depth of throat and for any shape of tooth.

To this end my invention consists, first, in improved means for holding the band-saw while being fed and sharpened and for drawing it down to place; and, second, in an improved form of pivoted frame for carrying the revolving emery-wheel, provided with means for adjusting the position of the emery-wheel with relation to the depth of throat and the shape of the front and back edges of the teeth.

In the drawings, Figure 1 is a top plan view of my improved sharpener. Fig. 2 is an inner face view of the front wall of the main frame. Fig. 3 is a front elevation of the sharpener, and Fig. 4 is a partial end elevation showing adjustment of pivoted frame carrying revolving emery-wheel.

Referring to the drawings, 1 is a horizontal shaft journaled in the upper part of the framework 2. Upon the outer end of this shaft are mounted the fast and loose pulleys 3 and 4 for the reception of the power-belt. (Not shown). At the inner end of this shaft is rigidly secured the grooved pulley 5, and 6 is a worm or screw integral with the shaft upon its central portion.

Below the shaft 1 and journaled in the framework, at right angles to such shaft, is the shaft 7. A worm-wheel 8 is mounted upon the shaft 7 just under and in engagement with the worm 6 upon the shaft 1, and upon the opposite or front end of the shaft 7 is mounted the disk 9. Dovetailed in the front face of this disk is the block 10, which is diametrically adjustable in such disk and secured in any position desired by the set-screw 11. On the inner side of the front wall 12 of the frame 2 is loosely dovetailed a plate 13.

An adjustable connecting-rod 14 is pivoted at one end to the disk 9 and at the other end is centrally pivoted at the lower edge of the plate 13, and by this connecting-rod 14 the plate 13 is horizontally reciprocated in its bearing in the front wall. On the outer face of the front wall 12 is arranged the horizontal ledge 15, (see Fig. 3,) upon which the band-saw 16 to be sharpened rests. This ledge 15 has the downwardly-projecting slotted extensions 17 by means of which in connection with the bolts 18 the ledge 15 is vertically adjustable. At either end of this adjustable ledge is secured the vertical rollers 19 19, which serve to hold the saw 16 upon the ledge.

20 is an adjustable arm pivoted near its lower end to the front wall and carrying at its upper end the wheel 21, which bears against the saw 16 at a point near which it is being sharpened for the purpose of steadying the saw at that point.

It will be noticed that the rod 20 is inclined slightly to the left or in the direction in which the saw is being fed. This, as the saw-blade moves, causes a slight bearing-down contact of the wheel 20 with the saw, which tends to assist in holding it down while being sharpened.

The saw is intermittently fed forward to the left by means of the feed-finger 22, pivoted at 23 to a projection 24 upon the reciprocating plate 13. The outer end of this feed-finger 22 is bent inwardly, as at 25, to engage with the front edges 26 of the teeth of the saw to feed it forward, which is accomplished as follows: Rotary motion being imparted to the shaft 1, its worm 6 revolves the worm-wheel 8, which causes its shaft 7 to turn and with it the disk 9 at its other end. The connecting-rod 14, adjustably pivoted to this disk and to the plate 13, causes said plate to reciprocate in its bearing in the front wall 12. As this plate is moved to the left the bend 25 at the outer end of the feed-finger 22, pivoted to the plate 13, engages with the front face 26

of a tooth in the band-saw and pushes it forward a distance equal to the throw of the plate 13, and as the plate travels back the bend 25 of the feed-finger 22 rides up the back face 27 of the next tooth and drops over in engagement with the front face of this tooth to again feed the saw forward, as before. In this manner the saw is intermittently fed forward as desired to have its teeth sharpened. By shifting the position of the diametric arm 10 in the disk 9 and adjusting the length of the connecting-arm 14 the intermittent feed of the saw can be varied as desired to adapt it for different sizes of teeth to be sharpened.

The sharpening apparatus employed in connection with the feeding device just described is arranged as follows: 28 is a flat frame provided at its rear end with the two extensions 29 29, which are pivoted to the main frame so as to give to the frame 28 an inclination, as clearly shown in Fig. 3.

30 is a short shaft pivoted in the bearings 31 31 in the front of the frame 28. Upon the outer end of this shaft 30 is mounted the emery-wheel 32 and between the bearings 31 31 is mounted the grooved pulley 33. A cord or belt 34 passes over this pulley 33 and the pulley 5 upon the shaft 1, and thus the revolution of the shaft 1 causes the shaft 30, carrying the pulley 33 and emery-wheel 32, to revolve simultaneously with the feeding operation before described to effect the automatic sharpening of the teeth.

The movement of the pivoted frame 28, carrying the emery-wheel 32 during its grinding contact with the faces of the teeth, is controlled as follows: The depth of the cutting action of the revolving emery-wheel, which is limited by the throat of the saw being sharpened, is regulated by the screw-threaded rod 35 adjustable in the frame 28 and a similar rod 36 secured to the main frame and against which the rod 35 impinges as it descends, thus limiting its downward movement, and 37 is a spiral spring interposed between the thumb-nut 38 upon the rod 36 and the frame 28 to act as a cushion and prevent the rods 35 and 36 from coming together with sufficient force to mar their meeting ends.

39 is a yoke pivoted to the under side of the frame 28 and carrying upon its outer end 40 the roller 41. This roller is adapted for engagement with a pivoted incline 42 secured to the reciprocating-plate 13. Its inclination is regulated by the adjustable pin 43. An adjusting-screw 44, passing down through the pivoted-frame 28, is adapted for contact with the yoke 39 to permit the adjustment of this yoke and its roller 41 and provide additional means for regulating the distance which the frame shall rise when the roller travels up the incline. When the incline 42 moves forward against the roller 41, it gradually raises the emery-wheel in the frame 28, causing it to grind off the back edge 27 of the tooth, the inclination of the cut being regulated by adjusting the angle of the incline 42.

The upper bearing-surface of the incline 42 is straight, as shown, to grind teeth with straight backs, but it is apparent that by changing the bearing-surface of the incline to a concave, convex, or other configuration a similar edge will be cut on the back of the tooth.

I claim—

1. In a saw-sharpening machine, the combination with means for grinding the saw-teeth; of the saw-blade-holding devices consisting of a vertically-adjusted ledge on the front wall of the frame, rollers thereon between which and the frame the blade is held, an upright arm pivoted at its lower end to the frame and inclining slightly toward that end thereof toward which the blade moves, and a wheel journaled on the upper end of said arm and bearing against the outer face of the blade, said wheel standing in a plane at a slight angle to the horizontal, as and for the purpose set forth.

2. In a saw-sharpening machine the combination with the main frame and driving-shaft, the saw-feeding devices connected with said shaft and the saw-holding devices; of the tilting frame pivoted to the main frame, the grinding devices carried thereby and connected with said driving-shaft, a threaded rod adjustable through said tilting frame, a coiled cushioning-spring thereon, a second threaded rod on the main frame against which the first rod impinges, and a thumb-nut on this rod at the end of said spring; and means substantially as described for causing the rise and fall of the pivoted frame, as and for the purpose set forth.

3. In a saw-sharpening machine the combination with the main frame and driving-shaft, the saw-feeding devices connected with said shaft and the saw-holding devices; of the tilting frame pivoted to the main frame, the grinding devices carried thereby and connected with said driving-shaft, a threaded rod adjustable through said tilting frame, a coiled cushioning-spring thereon, a second threaded rod on the main frame against which the first rod impinges, and a thumb-nut on this rod at the end of said spring; a yoke pivoted to the tilting frame and carrying a roller at its outer end, a set-screw through the frame onto the yoke, and an adjustable incline carried by said saw-feeding devices and adapted to make contact with said roller, as and for the purpose set forth.

4. In a saw-sharpening machine, the combination with the main frame and driving-shaft, the saw-feeding devices connected with said shaft, and the saw-holding devices; of the tilting frame pivoted to the main frame, the grinding devices carried thereby and connected with said driving-shaft, a threaded rod adjustable through said tilting frame, and a second threaded rod on the main frame

against which the first rod impinges; a yoke pivoted to the tilting frame and carrying a roller at its outer end, a set-screw through the frame onto the yoke, and an adjustable incline carried by said saw-feeding devices and adapted to make contact with said roller, as and for the purpose set forth.

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

SAMUEL C. ROGERS.

Witnesses:
W. T. MILLER,
S. J. HARRIS.