(No Model.) 4 Sheets—Sheet 1.

E. MOSSBERG.

SAW SHARPENING MACHINE.

No. 329,936. Patented Nov. 10, 1885.

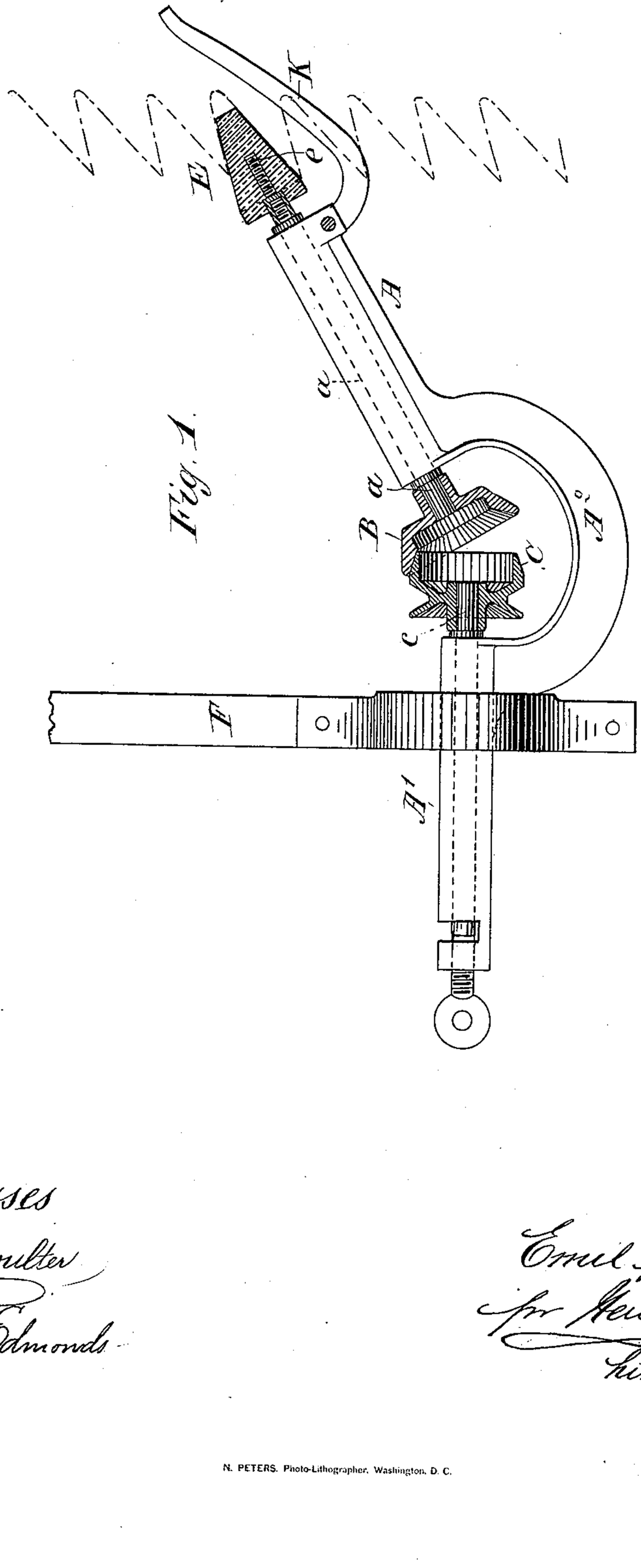

Fig. 1.

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Emil Mossberg
per Henry Orth
Pisatt & C.

(No Model.) 4 Sheets—Sheet 2.

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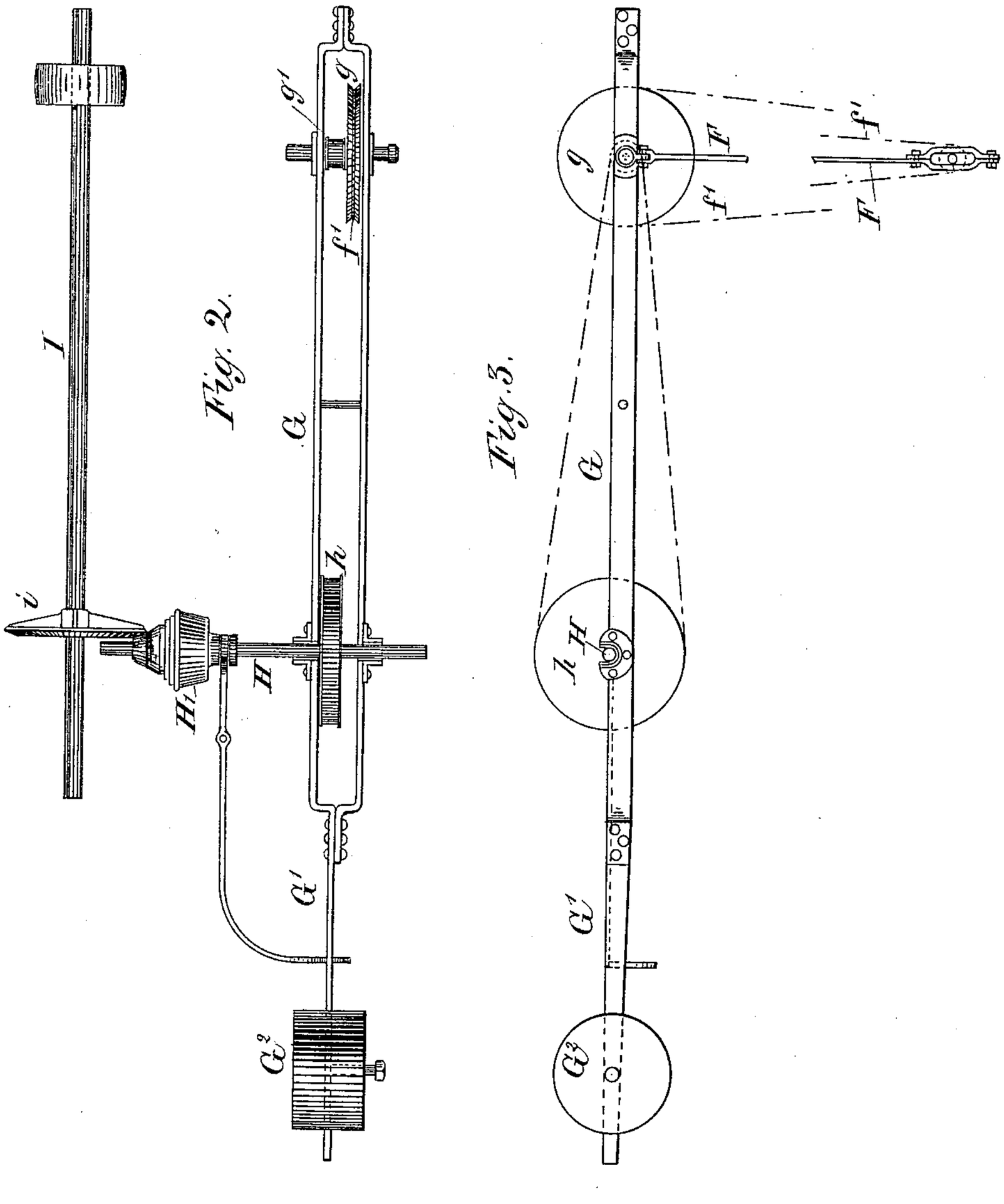

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(No Model.)

4 Sheets—Sheet 3.

E. MOSSBERG.

SAW SHARPENING MACHINE.

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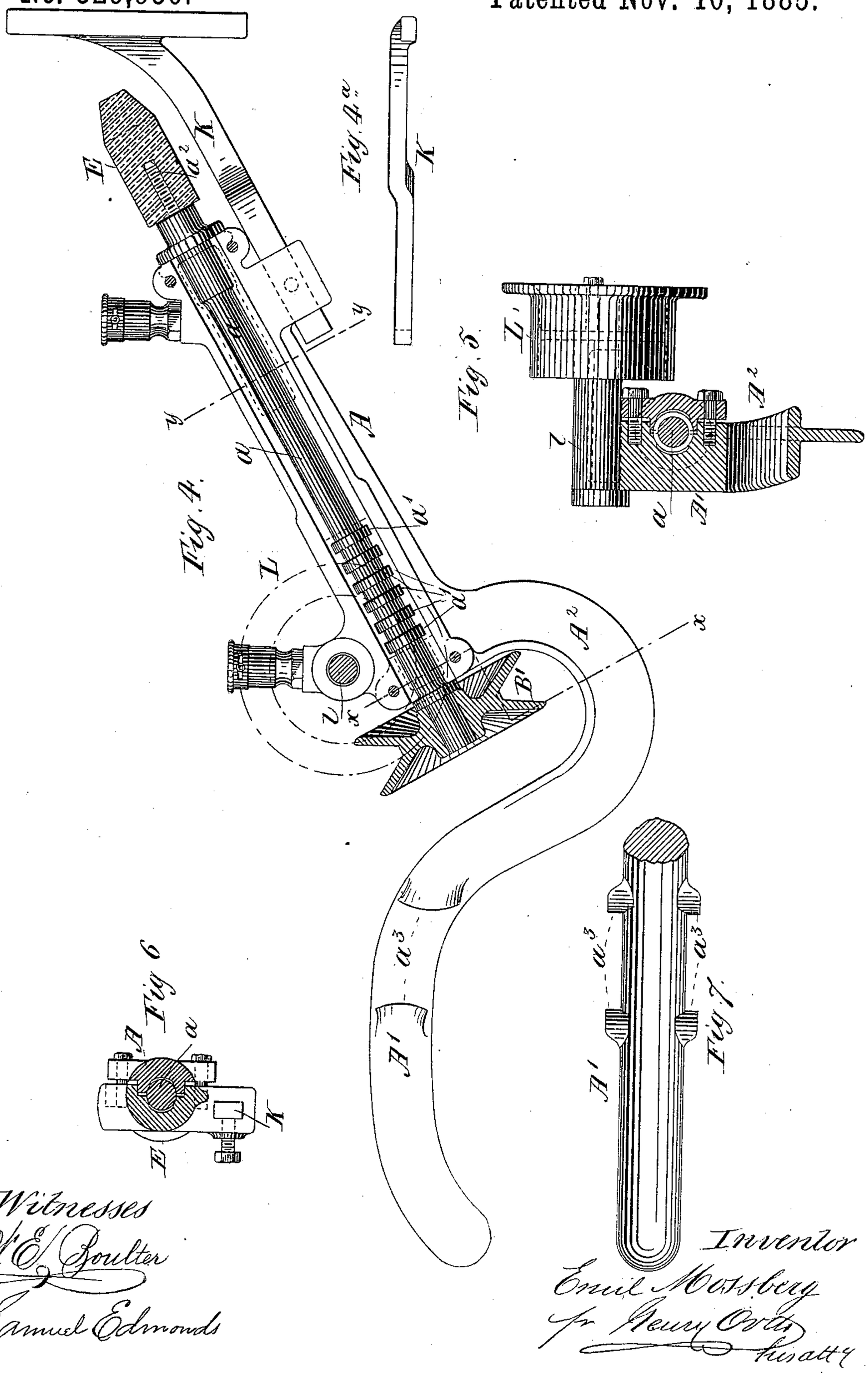

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(No Model.)

4 Sheets—Sheet 4.

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SAW SHARPENING MACHINE.

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Fig. 8.

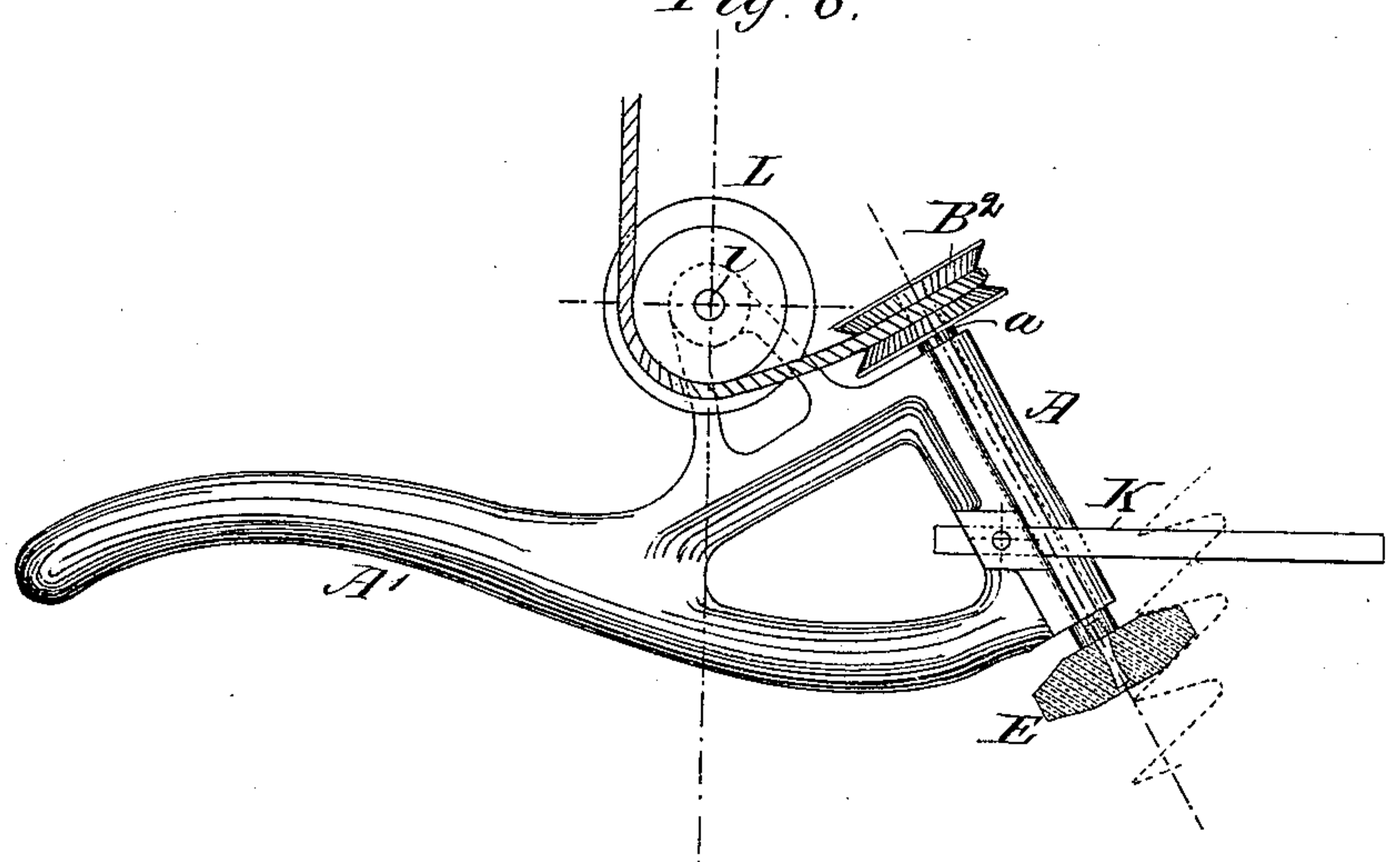
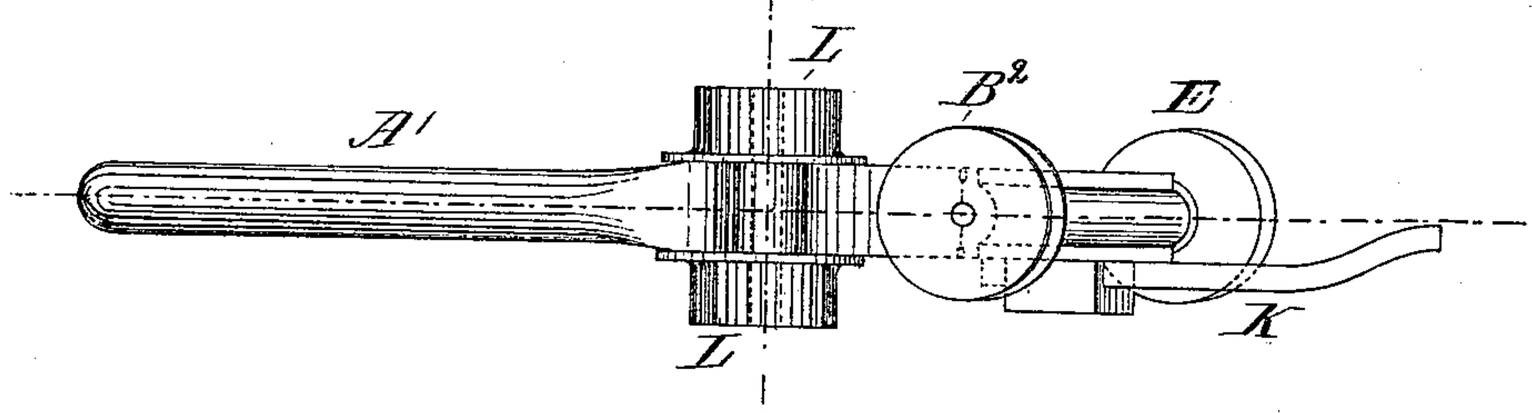


Fig. 9.



Witnesses
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UNITED STATES PATENT OFFICE.

EMIL MOSSBERG, OF ELFKARLEÖ, SWEDEN.

SAW-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 329,936, dated November 10, 1885.

Application filed May 12, 1884. Serial No. 131,221. (No model.) Patented in Sweden April 6, 1883, No. 129; in Germany May 6, 1883, No. 24,670; in Finland September 13, 1883, and in Norway December 21, 1883.

To all whom it may concern:

Be it known that I, EMIL MOSSBERG, of Elfkarleö, Sweden, have invented a new and useful Improvement in Machines for Sharpening Saw-Blades, of which the following is a full, clear, and exact description.

My invention relates to improvements in grinding-tools and in mechanism for operating the same, designed for use in the sharpening of circular or other saws, and for other grinding, polishing, or abrading purposes.

The invention has for its object to facilitate the operation of grinding or abrading; to simplify the construction of the grinding mechanism; to dispense with the use of the file in sharpening saws, and perform the operation of sharpening more rapidly and more economically.

In the accompanying drawings, Figure 1 is a sectional elevation of the grinding, abrading, or polishing machine. Fig. 2 is a top plan view of the power-transmitting mechanism from which the grinding, abrading, or polishing machine is driven, and from which the machine is suspended. Fig. 3 is a side view thereof. Fig. 4 is a sectional view of a modified form of the machine. Fig. 4^a is a top plan view of the guide K shown in Fig. 4. Figs. 5 and 6 are sections on lines *x x* and *y y* of Fig. 4, respectively. Fig. 7 is a detail view of the handle part of the machine shown in Fig. 4. Figs. 8 and 9 are side and plan views of another modified arrangement of the machine.

Like letters represent like parts in above figures of drawings.

In my improved appliances for grinding, abrading, or polishing I employ, instead of a file, an ordinary cone wheel or disk, which I prepare as follows: I take about three parts of finely-pulverized emery, and for some purposes, instead of emery, fine sharp sand may be used, and with either of them I mix one part of finely-pulverized gum-lac, resin, or other suitable binding material capable of being melted by the application of heat. When thoroughly incorporated, these ingredients are reduced to a plastic mass and filled into a heated mold of the desired form, in the center of which is arranged a core whereby an axial opening is formed in the cone or disk for the reception of the arbor on which they are to be mounted.

In Fig. 4 I have shown an abrading-cone, E, formed on an arbor, *a*, the attenuated end a^2 of which is screw-threaded, or otherwise roughened or corrugated, to afford a better hold for the abrading compound; and in Fig. 1 I have shown a like cone formed on a socketed spindle, *e*. It is obvious that the spindle *e* may be used over and over again when the abrading-body is worn.

After molding, the cones or disks are subjected to great pressure and allowed to cool, when they will be ready for use. The thoroughly-mixed pulverized material may also be introduced into the heated mold, and therein reduced to plasticity and subjected to pressure, as described.

My machine consists, essentially, of the described abrading-body, which by suitable mechanism is made to rotate in the same or nearly the same plane as the saw-blade which is to be sharpened. This abrading-body, with its rotating mechanism, is suspended from a counterbalanced frame, so as to be heightened or lowered within reasonable limits at will, without any interruption in the rotation of the abrading body or tool.

For the purpose of adapting the abrading-tool of my machine to the sharpening of saw-blades the teeth of which may have more or less inclination, I make that part of the machine which carries the abrading-tool somewhat inclined, as shown in Figs. 1 and 4; but for the sake of convenience in working the machine I prefer to maintain the handle of the tool in a practically horizontal position.

Fig. 1 shows a form of the lower part of my machine, in which the rotation is imparted to the abrading-body by means of a friction-gear. A is a bearing, in which is mounted the arbor *a*, that supports the abrading-body E at one end. The bearing A is by the arch-brace A^2 connected with the handle A′. The other end of the arbor *a* is provided with a friction-disk, B, which receives its motion from the driven pulley C, said pulley being mounted on an arbor, *c*, in the handle A′, and rotated by means of belting from the driving

mechanism in the upper part of the machine, hereinafter described. The frictional contact of the disk B and pulley C may be regulated by any suitable means.

The mechanism above described is suspended from the upper part of the machine by means of the hanger F. K is a guide, which may be forked or not, for steadying the machine during its operation, said guide bearing upon the side of the saw-blade operated upon.

Figs. 4, 4ª, 5, 6, and 7 show another form of the lower part of my machine, in which the rotation is imparted to the abrading-body directly. A is a bearing, in which is mounted the arbor *a*, that supports the abrading-body E at one end, and which carries at its other end the driven pulley B′. The bearing A is by the arch-brace A^2 connected with the handle A′. As the arbor *a* has an inclined position, and the pulley B′, fixed thereon, has to receive its motion from a vertical belting, I employ a guide-drum, L, mounted on a short shaft, *l*, mounted on the bearing A for guiding the belt in and out of the pulley B′. *a′ a′* are shoulders on arbor *a*, which engage with grooves in the bearing, and thus prevent end motion of arbor *a*.

The mechanism above described is suspended from the upper part of the machine by means of a hanger which fits in between the lugs a^3, formed on each side of the handle A′. K is a guide, which may be forked or not, for steadying the machine during its operation.

Figs. 8 and 9 show another form of the lower part of my machine, in which a disk or wheel, E, instead of a cone, is employed. A is the bearing, in which is mounted the arbor *a*, which carries at one end the abrading-disk E and at the other end the driven pulley B^2. A′ is the handle. L is a guide-pulley for the belting from the upper part of the machine, which pulley is mounted on a shaft, *l*, mounted on a projection of the bearing A. K is a guide, which may be forked or not, for steadying the machine during its operation.

Figs. 2 and 3 show the upper part of the machine. G is a counterbalanced frame which has its bearing and adapted to swing on a shaft, H, mounted in stationary bearings. (Not shown in the drawings.) This rotating shaft H carries the driving-pulley *h* and the clutch H′, the latter being adapted to rotate with and be moved longitudinally on the shaft H by means of a feather and groove. When the clutch H′ is brought in contact with the conical wheel *i* on the driving-shaft I, the shaft H is brought into rotation.

The frame G carries on its projection G′, at one end, the counter-balance G^2. At the other end the frame carries on a short shaft a pulley, *g′*, receiving its motion by means of a belting from the pulley *h*. At the side of the pulley *g′* on the shaft is fixed another pulley, *g*, from which, by means of a belt, *f′*, motion is transmitted to the lower part of the machine, hereinbefore described. F is the hanger supporting the lower part of the machine.

I will now point out the great advantages attained by the use of my machine over others of this class, namely: By maintaining the axis of the abrading-body and its arbor in the same or nearly the same plane as the saw-blade being sharpened I am enabled to sharpen such saw-blades without removing the same from their frames, which has heretofore been necessary, owing to the fact that the axis of the abrading-body was in a plane at or nearly at right angles to the plane of the saw-blade; also, that by suspending the abrading-tool and its supporting and driving mechanism from a counterbalanced frame I am enabled to heighten or lower the abrading-body during its rotation without any interruption thereto, and thus a saw-blade may be sharpened from its highest to its lowest tooth without moving it from its position, and by the possibility of effecting side motion of the lower part of the machine with the greatest freedom I am able to sharpen whole sets of saw-blades, if placed not too far apart, without changing the position of the upper part of the machine.

Having now described my invention, what I claim is—

1. In a machine for sharpening saws, the driving mechanism consisting of a shaft, H, carrying a driven pinion, and a pulley, *h*, a counterbalanced frame fulcrumed on said shaft and carrying an adjustable counter-weight at one end and a belt-pulley, *g*, at the opposite end, and a hanger fulcrumed on the shaft of said pulley, in combination with a stock or handle connected with said hanger, an abrading-body, and driving-gear supported from said stock and connected with and driven from the belt-pulley *g*, to rotate the abrading-body, substantially as and for the purpose specified.

2. In a machine for sharpening saws, the combination, with the counterbalanced frame carrying the driving mechanism, of the stock, spindle, or arbor *a*, having at one end a grinding-body and at the other end a friction-disk, the arbor *c*, carrying the pulley C, and the hanger, all substantially as shown and described.

The foregoing specification of my improvement in machines for sharpening saw-blades signed by me this 27th day of March, 1884.

EMIL MOSSBERG.

Witnesses:

AUG. LARSSON,

JOH. BENGTSSON.