

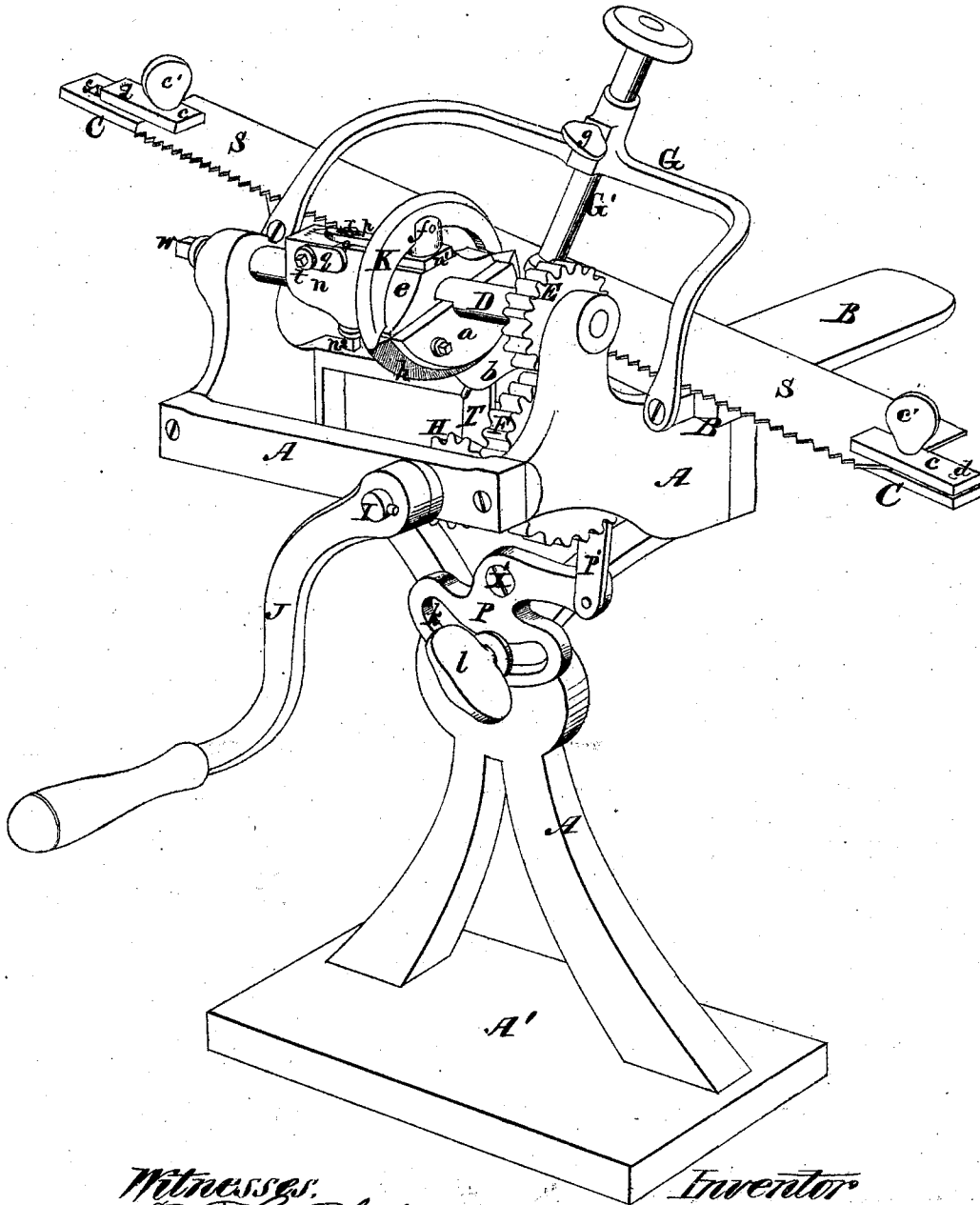
R. HINES & L. BEYER.

Improvement in Machines for Sharpening Saws.

No. 116,189.

Patented June 20, 1871.

Fig. 1



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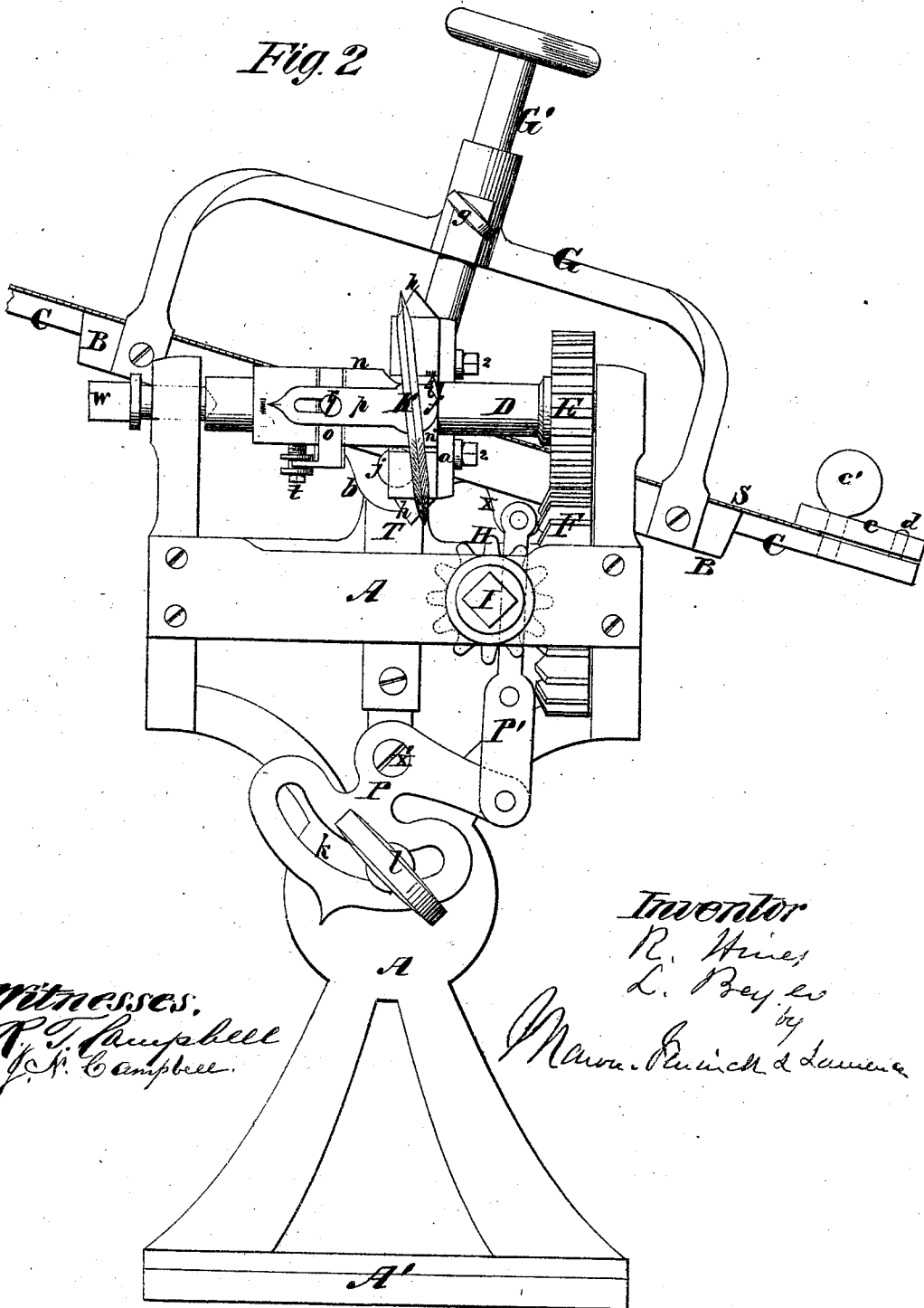
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Fig 2



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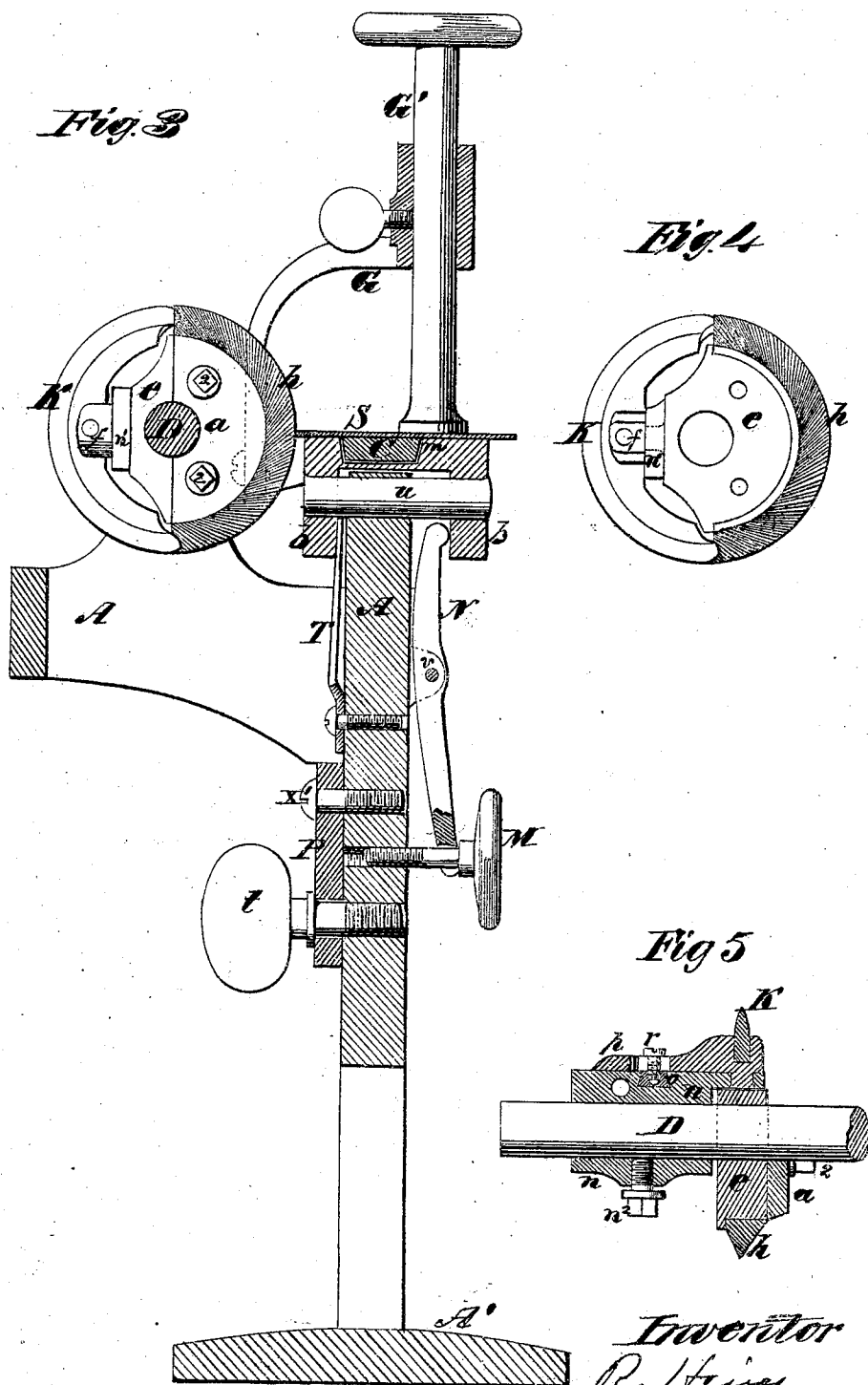
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UNITED STATES PATENT OFFICE.

RUDOLPH HINES AND LOUIS BEYER, OF WASHINGTON, D. C.

IMPROVEMENT IN MACHINES FOR SHARPENING SAWS.

Specification forming part of Letters Patent No. 116,189, dated June 20, 1871.

To all whom it may concern:

Be it known that we, RUDOLPH HINES and LOUIS BEYER, of Washington, in the county of Washington, District of Columbia, have invented a new and useful Machine for Sharpening Saws; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1, Plate 1, is a perspective view of the machine complete, showing a straight saw-blade in process of being sharpened. Fig. 2, Plate 2, is a front elevation of the machine. Fig. 3, Plate 3, is a section taken vertically and transversely through the center of machine. Fig. 4, Plate 3, is an end view of the sharpening and feeding devices, with the clamp-plate of the former removed. Fig. 5, Plate 3, is a section taken diametrically through the sharpening and feeding devices.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to sharpen the teeth of straight and circular saws by means of machinery, so that the work can be performed with great rapidity and accuracy, and at the same time the machinery heretofore used for sharpening saws greatly simplified, and so combined that a self-feeding saw-file, which is capable of filing cross-cut as well as other descriptions of saws, is produced.

To enable others skilled in the art to understand our invention, we will explain its construction and operation.

In the annexed drawing, A represents the frame of the machine, which consists of a horizontal base, A', an upright standard, and a rectangular extension at the upper end thereof. B represents the table or bed upon which the saw S is supported and guided while the teeth are being sharpened. The saw-table is connected to the upper end of the frame A by means of a horizontal transverse rocking-pin, *u*, which is secured to two lugs, *b b*, extending down from the sides of the table at the middle of its length. Between the front lug *b* and the frame A is a spring, T, which tends to press the table forward, and which draws the opposite lug *b* against the upper end of a lever, N, that is pivoted to a frame, A, at *v*, and

provided at its lower forked end with an adjusting-screw, M, shown in Fig. 3. By means of this screw and the spring T the teeth of the saw which is confined upon the table can be fed up to the sharpening device. The table B is also constructed with a lug, X, on its lower front side, to which a rod, P', is pivoted, which rod is also pivoted to an extension of a slotted portion, P. This portion P is pivoted at X' to the front side of the standard of frame A, and through its curved slot *k* passes a set-screw, *l*. By loosening this screw *l* the table B can be adjusted at any desired angle with respect to a horizontal plane, and held in such position by tightening the screw *l* again. Rising from the front edge of the table B, near its extremities, is an arch, G, which is curved backward over the table, and provided with a perpendicularly-adjustable holding-down bar, G', and a clamp screw, *g*, therefore, by means of which the saw S is prevented from rising from the table while having its teeth sharpened. The straight saw S is held in place and guided upon its table by means of a straight carriage or bar, C, which works in a groove, *m*, and to which the saw S is secured by clamps *c c* and set-screws *c'*. One or both of the clamps *c* may be adjustable by having a nut, into which the screw *c'* is tapped and fitted into. By loosening the screw *g* the bar G can be raised, and the saw S with its carriage C can be removed from the table B. In front of the saw-table B, and supported by raised bearings of frame A, is a horizontal shaft, D, having a spur-wheel, E, keyed on one end, and a set-screw, *w*, applied to its opposite end to hold it in place. The wheel E engages with a spur-wheel, F, which is arranged below it, and which has beveled teeth on one side that engage with a bevel-wheel, H, on a shaft, I, carrying a hand-crank, J. By turning the crank J the shaft D will be rotated. On shaft D a semicircular head, *e*, is secured, having a groove formed into its periphery, one side of which is closed by a removable clamp-plate, *a*, that is held by two screws, 2 2. The groove in the periphery of this head has fitted into it a hardened-steel segment, *h*, the exposed surfaces of which present file surfaces, and are concentric to the axis of the shaft D. These file surfaces may

both be beveled, or one may be beveled and the other perpendicular to the shaft D, according to the form of saw-teeth it is desired to sharpen. By removing the plate *a*, as shown in Fig. 4, the segment-file *h* can be taken out and another inserted into its place. There is also placed on the shaft D a block, *n*, which is confined in place by a set-screw, *n*², and which is constructed with a lip, *n*¹, on one end, that lies across the flat surface of the head *e*, and has pivoted to it the thickened portion *f* of an arm, *p*. This arm is connected by a screw, *r*, to a transverse dovetailed slide, *o*, which is fitted into the block *n*, and adjusted by means of a collared screw, *t*, and an extension, *g*, on said slide, which is received between the collars on screw *t*. The outer end of the arm *p* is reduced so as to point at certain marks engraved on the block *n*, as shown in Figs. 1 and 2. The inner back corner of the lip *n*¹ of block *n* is also pointed at *i*, and is directed at certain marks on the surface of the head or file-holder *e*, as shown in Fig. 2. Into the thickened portion *f* of the circularly-adjustable arm *p* is rigidly secured a saw-feeder, *K*, which is the segment of a circle, more or less, and which has its sides beveled, substantially as shown in the drawing, so that its perimeter will work between the saw-teeth. This feeder is arranged oblique to the axis of the shaft D, the desired degree of obliquity being obtained by turning the collared screw *t*, and its center coincides exactly with the plane of the angle of the sharpener *h*, and also with the axis of motion of the arm *p*, so that the extremities of this feeder will be equidistant from the extremities of the angle of the sharpener, and on opposite sides thereof, as shown in Fig. 2. This feed *h* has about the radius of the sharpener, and operates against the teeth of the saw to move it along upon the same principle as the segment of a worm-screw operates upon a rack to move it along. The same feeder will serve for saws having teeth of different sizes by changing its obliquity, so that it will move the saw a greater or less distance at each revolution of the shaft D. This adjustment of the feeder is effected by turning the screw *t*, as above set forth, and the marks at the extremity of the arm *p* will indicate the degrees of adjustment desired. For saw-teeth which have one perpendicular edge a sharpener corresponding in shape thereto is inserted into the head *e* in place of the acute edge-sharpener shown in the drawing. When this is done the screw *n*² is loosened and the blocks

n moved lengthwise until the axis of movement of the arm *p* coincides with the peripheral edge of the sharpener. The feeder *K* can then be adjusted above its axis to give the desired obliquity for feeding the saw.

The machine is adapted for sharpening the teeth of circular saws by forming an extension on the rear side of the table B and connecting this kind of saw thereto by means of a pivot-screw.

When the saw to be sharpened is confined to the carriage C and applied upon the table B, as above described, the teeth of the saw are adjusted up to the sharpener by means of the screw M and its spring T. The shaft D is then rotated by turning crank J, and the sharpener and feeder thus caused to operate alternately upon the teeth, the former to sharpen them and the latter to move the saw upon its table.

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

1. The combination of the spring T with the sliding pin *u*, adjustable lever N, and bed B, substantially as and for the purpose described.
2. The link P', oscillating slotted lever arc P, and clamp-screw *l*, applied between the rocking saw-supporting bed and the saw-sharpener A, substantially as and for the purpose described.
3. The clamp G', yoke G, carriage *c c*, and bed B, arranged on the frame A, in combination with a self-feeding rotary saw-sharpener, substantially in the manner and for the purpose described.
4. The head *e*, carrying a saw-tooth sharpener, *h*, in combination with an adjustable block, *n*, carrying the saw-feeder *k*, substantially as described.
5. A saw-supporting-table, which is adjustable in different planes, in combination with a combined rotary saw-feeder and saw-tooth sharpener, substantially as and for the purpose described.
6. The combination of a rotary self-feeder for feeding the saw longitudinally, a rotary sharpener, and a mechanism for feeding the saw laterally and holding it up to the sharpener, substantially in the manner herein described.

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