E. W. PHELPS.

Saw-Sharpening Machine.

No. 214,002. Patented April 8, 1879

Fig. 1.

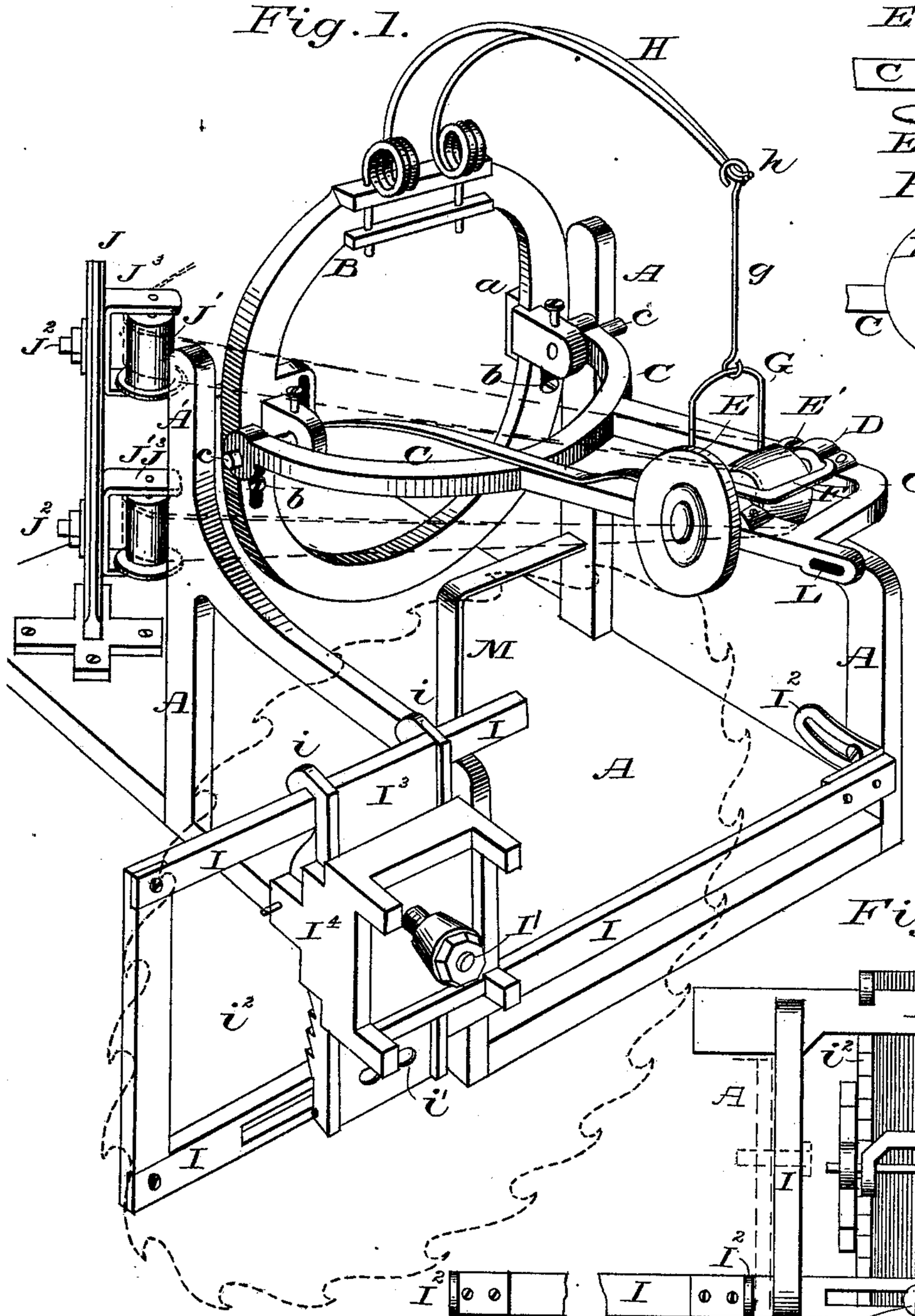


Fig. 3.

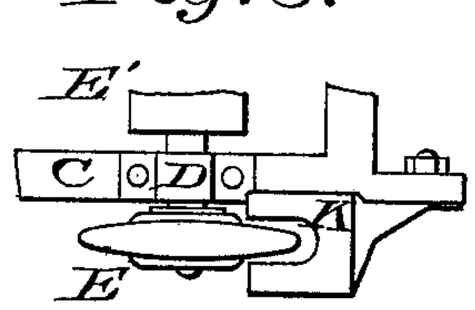


Fig. 4.

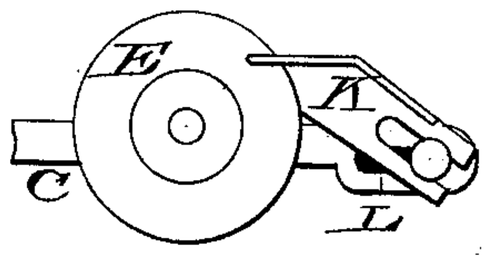
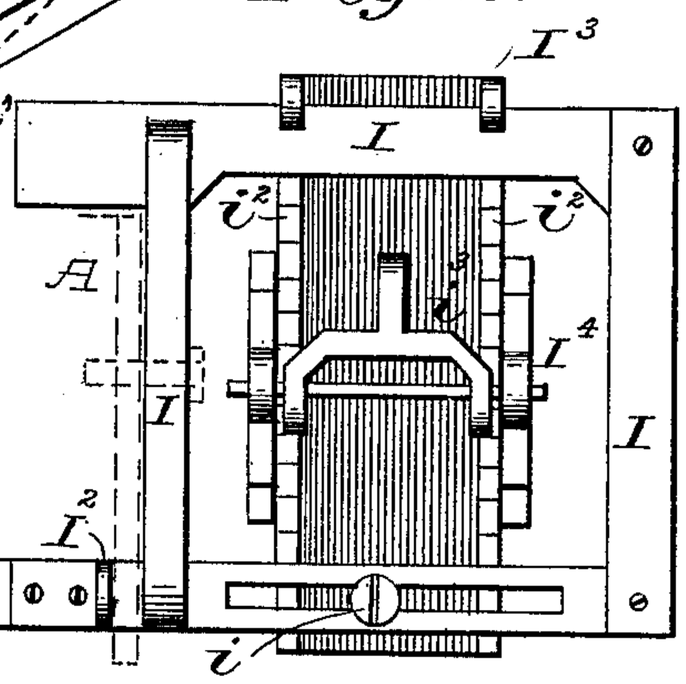


Fig. 2.



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UNITED STATES PATENT OFFICE.

EBENEZER W. PHELPS, OF CHICAGO, ILLINOIS, ASSIGNOR TO WILSON HAIGHT AND MARY F. PHELPS, OF SAME PLACE.

IMPROVEMENT IN SAW-SHARPENING MACHINES.

Specification forming part of Letters Patent No. **214,002,** dated April 8, 1879; application filed May 4, 1878.

To all whom it may concern:

Be it known that I, EBENEZER W. PHELPS, of Chicago, in the county of Cook and State of Illinois, have invented certain improvements in Saw Gummers and Sharpeners, of which the following is a specification.

In the accompanying drawings, Figure 1 is a perspective view of the apparatus. Fig. 2 is an elevation of the saw-holder frame. Figs. 3 and 4 are detached views of emery-wheel and adjustable tool-rest.

Like letters indicate like parts in all the figures in which they are used.

The main frame A of the machine has upright standards A′, provided with flanges *a*, to which is secured a circular or ring-shaped piece, B, by slots and bolts *b*, in such manner as to provide for the rocking to the right or left of said ring-shaped piece, in order to adjust permanently the swinging frame to different pitch or inclination laterally, to enable the emery-wheel to grind under the front of the saw-teeth at any angle desired. The swinging frame C, which carries the emery-wheel, is supported upon this ring B by pins *c c*, which give it a hinge-motion vertically and a free sliding motion on the pins laterally to the extent of the length of the pins. Said pins are secured by set-screws in lugs upon the front of the ring B, but fit loosely in the ends of the swinging frame. Upon the outer end of this swinging frame is carried a shaft, D, which bears the emery-wheel E and its driving-pulley E′. In order that the swinging frame may be held approximately without effort, I provide a bail, G, which is connected by connection *g* (which in the drawings is shown to be a rod, but which, in fact, I prefer should be a chain) to the flexible end of a double spiral spring, H. The construction of this spring and its method of attachment to the ring-piece will be clearly understood from the drawings.

Several notches filed in the part *h* at the limber end of the spring afford a means of increasing or diminishing the tension to accommodate emery-wheels of different weight and sizes. In case a chain is used at *g* the links will afford a means of adjusting the height of the wheel. In order to afford a convenient and easy method of swinging the frame laterally upon its pivots without binding, I provide the lever F, fulcrumed to the swinging frame, and connected with a slot to the ring-piece B. This lever can be operated by the thumb and finger to swing the frame laterally, while the hand is used at the same time to raise and lower it. By means of this combined movement of the emery-wheel both up and down and laterally I am enabled to employ one kind of wheel for all kinds of work, and the saw-teeth can be easily gummed out and sharpened without case-hardening the metal, which is apt to be the result if a wheel is used of the requisite size to gum out the teeth with the single up-and-down movement, which requires the cutting to be done very rapidly at a single point. By my combined movement I am enabled to move the cutting-edge of the wheel lightly in any direction desired.

The saw to be operated upon is secured to the adjustable holder I by the bolt I¹. The frame I is connected to the main frame by slotted quadrants I², and is pivoted near the vertical center of the frame I by the main frame.

The pivots may be of iron, brass, or any suitable metal or material, and of any size expedient. They may be secured either to the main frame or to the frame I. If to the former, they should penetrate the latter; if to the latter, they should penetrate the former. They are located, as above hinted at, about midway between the top and bottom of the frame I. The advantage of thus placing the pivots at each end of frame I centrally, instead of at the upper or lower edge, consists in the fact that when pivoted at the center a slighter motion on the pivot will be felt at the saw, or in change of the position of the saw, and thus greater capability of adjustment is attained without the necessity of throwing the bottom of the frame out so far as usual, enabling the saw to be adjusted to different planes, vertical or somewhat varying from the vertical, so that the teeth may be ground square or with any desired bevel.

The bed-piece I³ is secured to the frame I by lugs *i*, hooking over the top piece of the frame, and a bolt, *i*¹, through the bottom piece, ren-

dering the bed-piece adjustable laterally. The holder itself, which carries the bolt I^1, is adjustable vertically upon said bed-piece. A ratchet-bar, i^2, at each side of the back of the bed-plate is engaged by a forked weighted pawl, i^3. By operating this pawl the saw is raised and lowered, as desired.

J is what I call an "upright counter-shaft," carrying guide-pulleys J^1 J^1, for guiding the belt to the emery-wheel pulley upon the swinging frame. The upright standard J is slotted to receive the bolts J^2 from the U-shaped pulley-carriers J^3, in which the pulleys J^1 are pivoted.

The belt-holding pulleys are each independently adjustable, up or down, by means of the slots and bolts; and each may be adjusted as to its plane of running, to guide the belt in any direction desired, independently of the adjustment of the other. This double device entirely overcomes the difficulty experienced in the single-shaft pulley heretofore used, for with the last-named both pulleys must always stand at the same angle, and in adjusting one to run the belt in the direction desired it would in most cases throw the other pulley into such a position as to require an additional or guide pulley to keep the belt from running off. By this simple and perfectly-adjustable device I am enabled to run the gummer by a continuous belt from the driving-pulley of the engine.

Figs. 3 and 4 show the adjustable tool-rest K, secured from its slotted shank, through the slot at L, to the swinging frame. When this rest is used upon the saw-gummer in planing-mills, furniture-factories, &c., where planing-bits are used, and required to be ground, the swinging frame is unhooked from the spring and let down upon the bracket M as a support The rest K is now adjusted to the desired angle, and the bit to be ground is placed upon the rest and brought in contact with the wheel.

I am aware that many of the emery-wheel grinders are provided with what are termed "adjustable rests," that can be raised or lowered, or moved to and from the emery-wheel; but such rests are narrow, and afford no positive means of retaining the article in the same position while being moved in the grinding, or of replacing it in the same position when taken off for inspection, while, on the contrary, this rest, having a broad flat surface, provides a positive, sure, and easy means to grind any article or number of articles to precisely the same bevel always alike, and to be determined by the adjustment.

I claim—

1. The lever F, fulcrumed to the swinging frame, and one end inserted in a slot in the ring-piece B, in combination with the swinging frame C and spring H, substantially as specified.

2. The adjustable saw-holder frame I, pivoted midway between its top and bottom by horizontal pivots to the main frame, substantially as specified.

3. The upright counter-shaft provided with two independently-adjustable pulleys supported from pulley-holders held in vertical slots by bolts, substantially as specified.

4. The broad-surfaced adjustable rest K, with slotted shank, in combination with the emery-wheel.

E. W. PHELPS.

Witnesses:
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