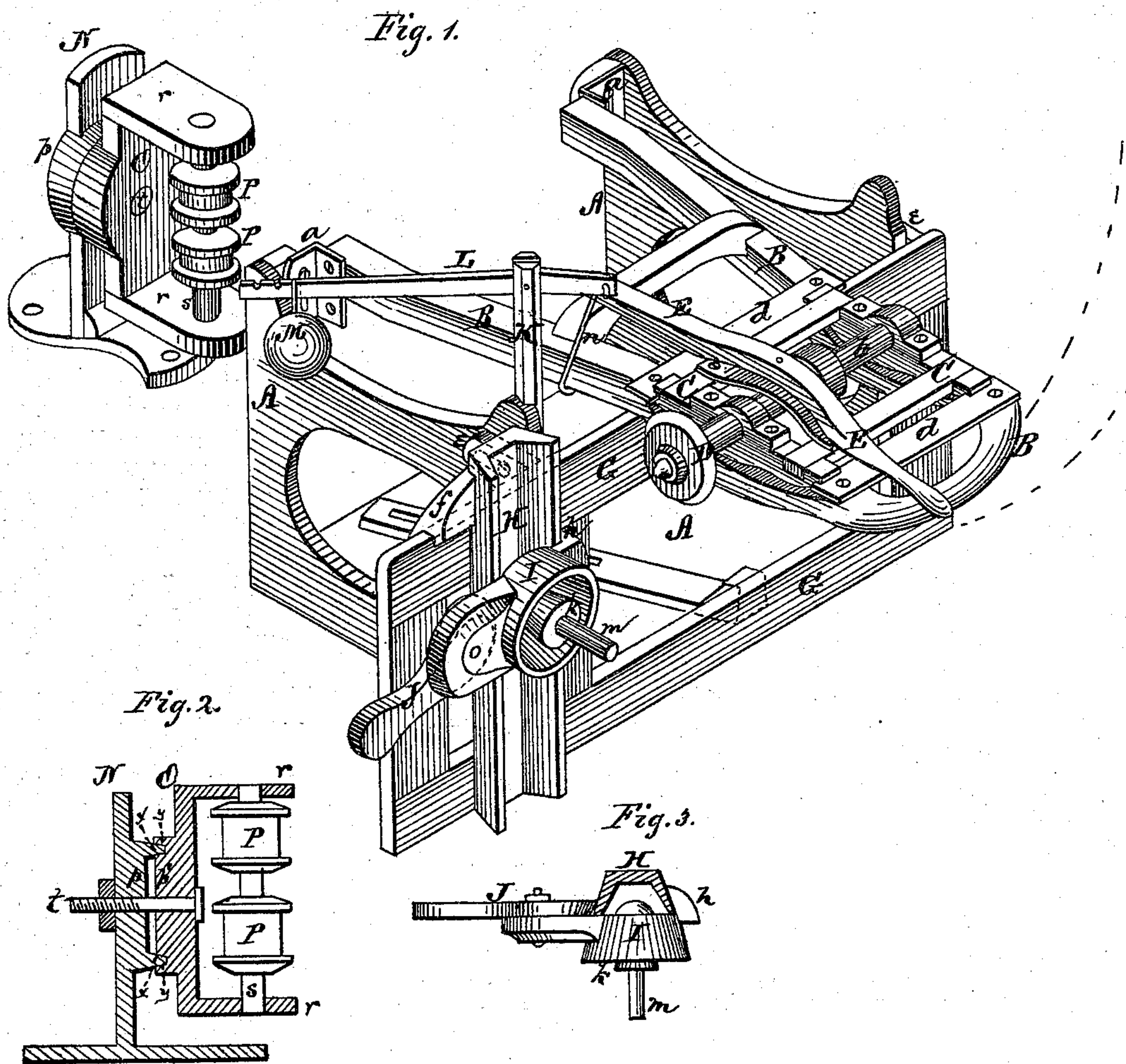


E. W. PHELPS.
Saw-Sharpening Machines.

No. 143,712.

Patented Oct. 14, 1873.



Witness:

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EBENEZER W. PHELPS, OF ELIZABETH, NEW JERSEY.

IMPROVEMENT IN SAW-SHARPENING MACHINES.

Specification forming part of Letters Patent No. 143,712, dated October 14, 1873; application filed January 13, 1873.

To all whom it may concern:

Be it known that I, E. W. PHELPS, of Elizabeth, in the county of Union and in the State of New Jersey, have invented certain new and useful Improvements in Machine for Gumming and Sharpening Saws; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a machine for gumming and sharpening saws, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a perspective view of my entire machine; and Figs. 2 and 3 are sections, showing certain parts of the same.

A represents the main frame of my machine, constructed in any suitable manner to receive the other parts of the machine. To the main frame A is connected a swinging frame, B, by means of L-shaped brackets *a a*. This swinging frame is connected to the brackets by bolts which admit of an up-and-down motion of the frame. The brackets are connected to the main frame A by bolts passing through slots in the brackets, by means of which the swinging frame B can be rocked to the right or left and secured at any angle desired. There are also two or more holes in the brackets for the adjustment of the swinging frame, to admit of still farther rocking the same when desired to throw the emery-wheel out of a perpendicular position, and grind the front of the teeth at any desired pitch, and for other purposes of bevel-work. The object of the swinging frame is to provide for the working of the emery-wheel up and down, or in and out of the teeth of saws and other uneven surfaces. On the swinging frame B is a sliding frame or carriage, C, to which the arbor *b* of the emery-wheel D is connected by suitable journal-boxes, and by means of which a lateral movement of the emery-wheel is obtained. The sliding frame or carriage C is held in position and slides on guide-ways *d d*, and is operated laterally by means of a lever, E, when used for gumming saws and other short surfaces; but

when used for grinding planing-mill knives and other long surfaces it is to be operated by means of a cog-wheel working in cogs on the under side of the carriage, and propelled either by hand or other power; and, by means of a "pattern-rest" to raise and lower the carriage as it moves along in grinding, uneven or irregular surfaces can be ground uniformly to a pattern—for instance, such as the corrugated knives for cutting veneers, molding-bits, &c. The main object of the sliding frame or carriage C is to obtain a lateral movement of the emery-wheel while grinding or gumming and sharpening saws, so as to gum out under the fronts of the teeth to get a hooked front. By means of the lateral movement, as the emery-wheel is worked down into the teeth it can, at the same time, be moved laterally, and accomplish the object desired, which cannot be without this movement of the emery-wheel. The lever E, by means of which the sliding carriage and emery-wheel are operated at will laterally, is secured at one end to the swinging frame B, and the other end extends across the arbor *b*, and is secured to the carriage by a bolt, the end of the lever extending to the end of the swinging frame, so as to be clasped by the hand and moved laterally at the same time as the frame is raised and lowered, working the emery-wheel into the saw-teeth. G represents a swinging adjustable table for holding the saws while being gummed and sharpened, when taken off their arbor. The table G is connected to the main frame A by bolts in the main frame passing through slots in the gooseneck projections *e e* on the swinging table. The object of the slots in the projections *e e* is to provide means whereby the table may be adjusted, either back or forward, parallel with the main frame, or one end of the frame be thrown back and the other forward in cases where the front of the teeth require to be ground beveling for cutting-off saws. The bolts also form a pivot-joint, by means of which the lower edge of the table may be thrown back or forward, in order to bring the saw in the right range with the emery-wheel; for, when the saw ranges directly to the center of the emery-wheel arbor, the wheel will grind the back of the teeth perfectly square; but when the saw ranges either forward or back of the center it will grind the teeth beveling on the back.

I do not confine myself to the slots in the

projections *e e* on the table, but claim the privilege of using slots in either the main frame or in the projections, as both amount to the same, and accomplish the same result.

H represents the adjustable saw holder and guide, on which the cone-seat I slides up and down, said saw holder or guide being beveled back from the front side. This guide is secured to the table G by means of projections on the rear and under side of the cross-piece *f* at its upper end, which hook over and hold the guide on the top edge of the table as it is moved right or left, or to and from the emery-wheel, to adjust saws of different sizes to the emery-wheel, the weight of the saw being all that is required to hold it in place. The cone-seat I, which slides up and down on the guide-arm H at will, is secured and held at any point desired by means of a projecting hook, *h*, on one side of the seat, hooking over the beveled edge of the guide-arm, while on the opposite side a beveled eccentric lever, J, locks over the beveled arm, and locks and holds or sustains the saw by means of its own weight. The up-and-down movement of the cone-seat, in combination with the lateral movement of the sliding guide-arm, provides means whereby circular saws of different diameters can be readily adjusted in any position to the emery-wheel desired, and held in place by means of the cone *k* passing through the hole in the saw, and said cone sustained by and revolving on the center pin, *m*, in the cone-seat.

The swinging frame and emery-wheel are counterbalanced by the following means: To the side of the main frame A, near the top of the left-hand side, is secured a standard, K, extending some eight inches above the frame, with a mortise in the top to receive a lever, L, which is pivoted in the same by a pin through it about eight inches from one end of the lever. From this end of the lever a wire, *n*, connects with the swinging frame B a suitable distance from its outer or free end. At the other end of the lever, some eighteen inches from the standard K, a weight, M, is attached, sufficient to raise and sustain the frame and emery-wheel above the saw-teeth when not in use. When in use, the frame is pressed down, bringing the emery-wheel in contact with the saw, and, by means of the lever E, the emery-wheel is worked laterally at will, at the same time the wheel is raised and lowered by the hand on the swinging frame.

In connection with this machine I use an adjustable rotating counter-shaft holder. This consists of an upright standard, N, say about ten inches high, with a platform or foot sufficient to secure it to the floor. On one side of this standard is a circular plate, *p*, say four inches in diameter, on the outer edge of which is a rim, *x*, one-fourth inch broad and three-eighths deep. This forms the stand or stationary part.

The rotating part, to which the shaft is se-

cured, consists of a bar, O, about two inches wide and eight inches in length, with projections *r r* four inches in length projecting at right angles. Through these the counter-shaft *s* passes, on which the loose pulleys P P run. On the opposite side of the bar O is a circular plate, *p'*, similar to the plate *p*, with a circular groove, *y*, corresponding in width and diameter with the rim *x* on the plate *p*, but tapering in form, so as to wedge in and bind, and thereby create greater friction when the two parts are pressed together by a bolt, *t*, passing through the center, with a nut on the outer side of the standard.

The object of the rotating part of the above-described device is to provide means for adjusting the counter-shaft on the stand, either in a perpendicular or horizontal position, or at any other angle, without moving or shifting the position of the stand. This is found of much value and convenience in setting up these machines, as they have to be set to mills of all descriptions and in all locations, and the belt from the emery-wheel arbor has to run back to the rear of the machine until it comes in line with the driving-pulley, which is sometimes to the right and sometimes to the left, and sometimes above, and at others below.

This device is found to be easily adapted to all locations, as there is no difficulty in running the belt at a half-twist from the horizontal pulley on the arbor to the perpendicular loose pulleys.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the swinging frame B, connected to the main frame by the brackets *a a*, and the sliding frame C, carrying the emery-wheel D, whereby the swinging frame can be adjusted to either side, and rocked up and down, and the emery-wheel given a lateral movement simultaneously, all substantially as set forth.

2. The adjustable swinging table G, for holding the saws while being gummed and sharpened, substantially as herein set forth.

3. The adjustable saw holder or support H, constructed as described, in combination with the cone-seat I, held on the support by means of the hook *h*, and eccentric lever J, substantially as and for the purposes herein set forth.

4. The counter-shaft holder, consisting of the standard N, with plate *p* and rim *x*, and the revolving pulley-holder O, with plate *p'* and groove *y*, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 19th day of December, 1872.

EBENEZER W. PHELPS. [L. S.]

Witnesses:

JOHN H. JAMES,
JAMES W. OWENS.