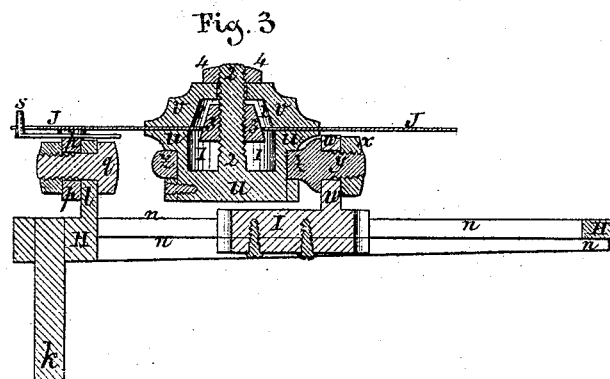
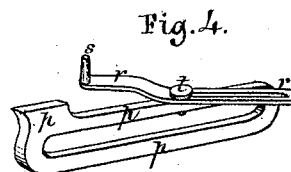
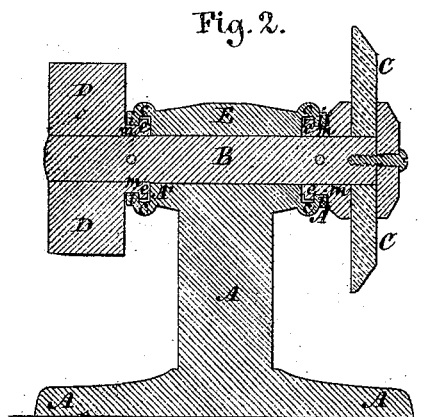
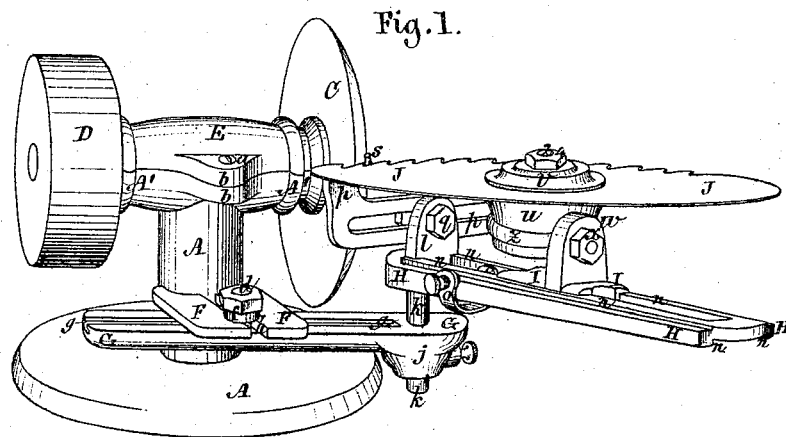


J. L. Otis,
Saw Sharpener.
No. 112,838. Patented Mar. 21. 1871.



Witnesses.
W. H. Stoughton
Edmund Masson } *John L. Otis*
 By atty. A. B. Stoughton

United States Patent Office.

JOHN L. OTIS, OF LEEDS, MASSACHUSETTS.

Letters Patent No. 112,838, dated March 21, 1871.

IMPROVEMENT IN MACHINES FOR GRINDING SAW-TEETH.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, JOHN L. OTIS, of Leeds, in the county of Hampshire and State of Massachusetts, have invented certain new and useful Improvements in Machines or Machinery for using Emery-Wheels for Grinding Saws or other articles; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 represents a perspective view of the machine.

Figure 2 represents a section through the emery-wheel, its shaft, and journal-bearings, and the stand on which it rests.

Figure 3 represents a section through the mechanism for holding, controlling, and gauging the saw.

Figure 4 represents in perspective the gauge and its support for accurately spacing and filing the saw-teeth.

Similar letters of reference where they occur in the separate figures denote like parts in the drawing.

My invention relates, first, to the manner of hanging and shielding the emery-wheel shaft from the grit and dust which so wears or cuts out its bearings.

It further relates to the arrangement for holding, controlling, and feeding a saw or saw-plate up to the emery-wheel.

It further consists in the construction and operation of a gauge for spacing the saw-teeth and gauging their depth.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawing.

A represents a stand, in and on which the shaft B of the emery-wheel C is supported, shielded, and turns.

The emery-wheel C is arranged at one end of the shaft B, and the pulley D, by which it is driven, may be arranged at the opposite end of said shaft.

The horizontal portion A' of the stand is cast on or with the vertical portion A, and is hollow or concave, so that it may receive more or less of the shaft B.

Over this horizontal portion A' a cap, E, fits, which is also hollow or convex, so as to take in a portion of said shaft B, and the cap is fastened to the portion A' by screw and flanges, as at *a b*, a similar fastening being on the other side, but not shown in the drawing.

The bearing-box or shaft-support and cap A' and E are made with a chamber or recess, *c*, at or near each of their ends, in which runs an annular projection, *e*, or flanch, attached to the shaft B, said projection not quite filling the chamber *c*.

The outer ledge *i* of this chamber *c* is made to fit the shaft, or a collar, *m*, on it. As the recess or chamber *c* cuts off the capillary attraction between the lu-

bricator in said chamber and the emery-dust, the latter cannot be drawn into the bearings after being saturated with the oil. The dust is prevented from entering the bearing through the oil-hole by the use of the common brass oil-cup or a well-fitted cap, and thus the shaft-bearings are protected from the only openings through which the emery-dust could find its way to them, and they are thus prevented from being ground or worn away and from being clogged by said dust.

The mechanism for holding and guiding saws while being ground, gummed, or sharpened by emery-wheels is as follows:

To an arm, F, on the stand A, there is connected, by a screw, *d*, and nut *f*, a horizontal rest or support, G. The head of the screw *d* works in an undercut slot, *g*, in the rest G, and its shank passes through a slot, *h*, in the arm F, so that the rest or support G may have two adjustments on the arm F, viz., to and from the stand, and in the line of its own length.

In a hub or enlargement *j* on the end of the rest G rests, and is supported and adjusted, a shaft or journal, *k*, which carries upon its upper end a supporting-arm, H, upon ways *n n*, on which arm H the carriage I, to which the saw J is clamped, may freely slide or be moved.

An adjustable stop, *o*, is arranged upon the arm H, against which the carriage I comes when moved toward the emery-wheel *c*, and which regulates and defines the exact distance that the wheel may cut into the saw or saw-plate J.

On the end of the supporting-arm H, next to the emery-wheel, there is an upright projection, *l*, to which an adjustable saw-plate supporter, *p*, is attached by a set-screw, *q*, the purpose of this supporter being to hold the saw or plate against the action of the emery-wheel. And upon this saw-supporter *p* there is a slotted gauge, *r*, having an upright arm, *s*, upon it, and held, when adjusted, to said supporter by a set-screw *t*. The purpose of this gauge is that its arm *s* may take into the gullet or throat of the saw-tooth just previously cut, ground, or sharpened, and so space and regulate the plate for the next tooth, and thus attain perfect regularity in the teeth of the saw.

The saw-plate holder or clamp is composed of two parts, *u* and *v*, and are held to the carriage I, or an arm, *w*, thereon, by a nut, *x*, running onto a shank, *y*, made on a yoke or ring, *z*, that holds the clamp and allows it to be adjusted therein, and when adjusted the clamp and saw may be turned around to bring a new tooth to the emery-wheel, they turning in said yoke or ring *z*.

In the under portion *u* of the clamp there is a recess, *1*, from and through the center of which rises a screw-shaft, 2, on which a conical nut, 3, can be raised

or lowered, at pleasure, out of or into the recess. The object of this conical nut is that it may receive and snugly fit into the various-sized openings in the centers of saw-plates, and so hold the saws firmly and truly in the clamp. The nut is raised or lowered until a portion of it that is diametrically the same as the opening in the saw is on a level with the top portion of the clamp *u*. The saw is then slipped over it; the top portion *v*, which is hollow underneath, also, to receive the cone 3, is laid onto it, and the nut 4 run down on the screw-shaft 2. In this condition the saw is ready to be run up to the emery-wheel.

Any required adjustment may be attained by the devices and mechanism herein described.

The operation is so obvious that it need not be particularly described, inasmuch as the drawing is very distinct and clear.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a stand for carrying and supporting an emery-wheel shaft, the tubular bearing, composed of the arms *A'* and cap or cover *E*, and their recesses *c*, projections *e*, and flanges *i*, as and for the purpose described and represented.

2. In combination with the stand, the arrangement of the arms *F*, *G*, *H*, and *p*, and their respective adjustments, as and for the purpose described.

3. In combination with the saw-plate clamp and its carriage, the ring or yoke *z*, for supporting the clamp in the carriage and allow it to be turned with the saw, substantially as described.

JOHN L. OTIS.

Witnesses:

STEPHEN B. FULLER,
P. A. OTIS.