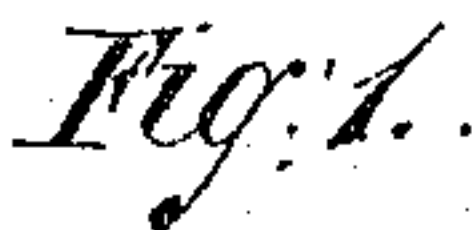


Improvement in Grinding Machines.

Patented April 9, 1872.



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UNITED STATES PATENT OFFICE.

WILLIAM BATTELL AND MILTON E. WORRELL, OF QUINCY, ILLINOIS.

IMPROVEMENT IN GRINDING-MACHINES.

Specification forming part of Letters Patent No. 125,434, dated April 9, 1872; antedated March 30, 1872.

To all whom it may concern:

Be it known that we, WILLIAM BATTELL and MILTON E. WORRELL, of Quincy, in the county of Adams and State of Illinois, have invented a new and Improved Grinding-Machine; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Our invention consists in the improvement of grinding-machines, as hereinafter fully described and subsequently pointed out in the claims.

Figure 1 is a sectional elevation of our improved machine taken on the line *xx* of Fig. 1, and Fig. 2 is a plan view of the same.

Similar letters of reference indicate corresponding parts.

A is a metal or other stand, for the support of the cutter-holder and adjusting apparatus; and B, a vertical extension thereof at one side for the support of the mandrel C of the grinding-wheel D. This stand A has a large, circular, vertical hole for the reception of the grooved stem E, on the top of which is a dove-tailed support, F, for the slide G, moved back and forth by the feed-screw H. I is a toothed wheel, on a transverse shaft fitted in the stand, and gearing with the grooved stem E, for raising or lowering it, which is done by means of a lever or wrench attached to the shaft of the said wheel I in the usual way. The said stem is held in the required elevated position by a set-screw, L, screwing against a plane rib, M, fixed to it. N is another feed-slide. It is arranged on a support, O, attached to the slide G so as to feed at right angles thereto. It is operated by a feed-screw, P.

The arrangement above described is similar to others now in use, and we do not claim it, except in connection with our improved apparatus, as follows: Q is a table, which we support on the slide N by means of an adjusting-screw, R, and the dowel-pins S, so that it may be raised either at the front or rear, or at both points, as required. The screw works at one end in a screw-threaded hole in either the slide or the table, and bears at the other end on the one or the other, and the pins are attached to an oscillating bar, V, on the oppo-

site end of one, and work in holes in the other. For raising or lowering the end of the table having the pins, we provide a rock-shaft, T, with arms U projecting from it, and taking under the cross-bar V at the under side thereof, journaled in lugs V', and a hand-lever, W, the latter being connected by a rod, X, to a foot-treadle, y, attached to the base of the stand, and we cushion the table on the ends of the arms U by rubber springs U', so that it will yield under the action of the stone and prevent chattering. On this table we mount a revolving disk, Z, with friction-rollers Z¹, to support it, a toothed rim, Z², and a pinion, Z³, to work it, the latter having a projecting-shaft, Z⁴, by which to turn it by a hand-crank. The disk Z also has a central stud-pin or bolt, y', which confines it centrally and revolves with it. This bolt is connected to the table by its head and a collar, x, or other means, and rises above the top of the disk for clamping the cutters or other articles to the said disk by a nut, x², screwing down upon it and clamping the collar x³ of the disk to collar x¹ of the bolt. The upper face of the disk has a circular recess, W', around the bolt to make room for nuts or collars on the cutters or other things to be ground.

By this means of clamping the cutters or other articles to the disk, the pressure of the disk on the rollers is not increased, although the same bolt which holds the disk to the table is also used as the clamping-bolt.

It will be seen that by means of our improved arrangement of the adjusting devices for the disk it may be supported so as to present the cutters to be ground to an edge, or thicker at the edge than at the center, or to the same thickness, as may be required.

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

1. The table Q, provided with guide-pins S on a rock-bar, V, and fitted to corresponding sockets in the slide-rest N, in a manner to permit free vertical motion while preventing lateral motion, substantially as specified.

2. The rock-shaft T and arms U, in combination with the rock-bar V, and provided with a lever and foot-treadle for varying the plane of the disk Z, substantially as specified.

3. The combination of the rock-shaft T, arms

U, oscillating bar V, pins S, and the slide N, and table Q, substantially as specified.

4. The combination, with the rock-bar V, guide-pins S, and arms U, of the cushions U', substantially as specified.

5. The combination, with the grinding-wheel and vertically-adjustable (forward and back) and laterally-feeding slides G N, all mounted on a stand, A B, of a table, Q, and revolving

disk Z, arranged, substantially in the manner herein described, for varying the plane of the article being ground and revolving it past the guide, all substantially as specified.

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Witnesses:

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