(No Model.)

C. D. MILLER.

FILE GRINDING MACHINE.

No. 248,874. Patented Nov. 1, 1881.

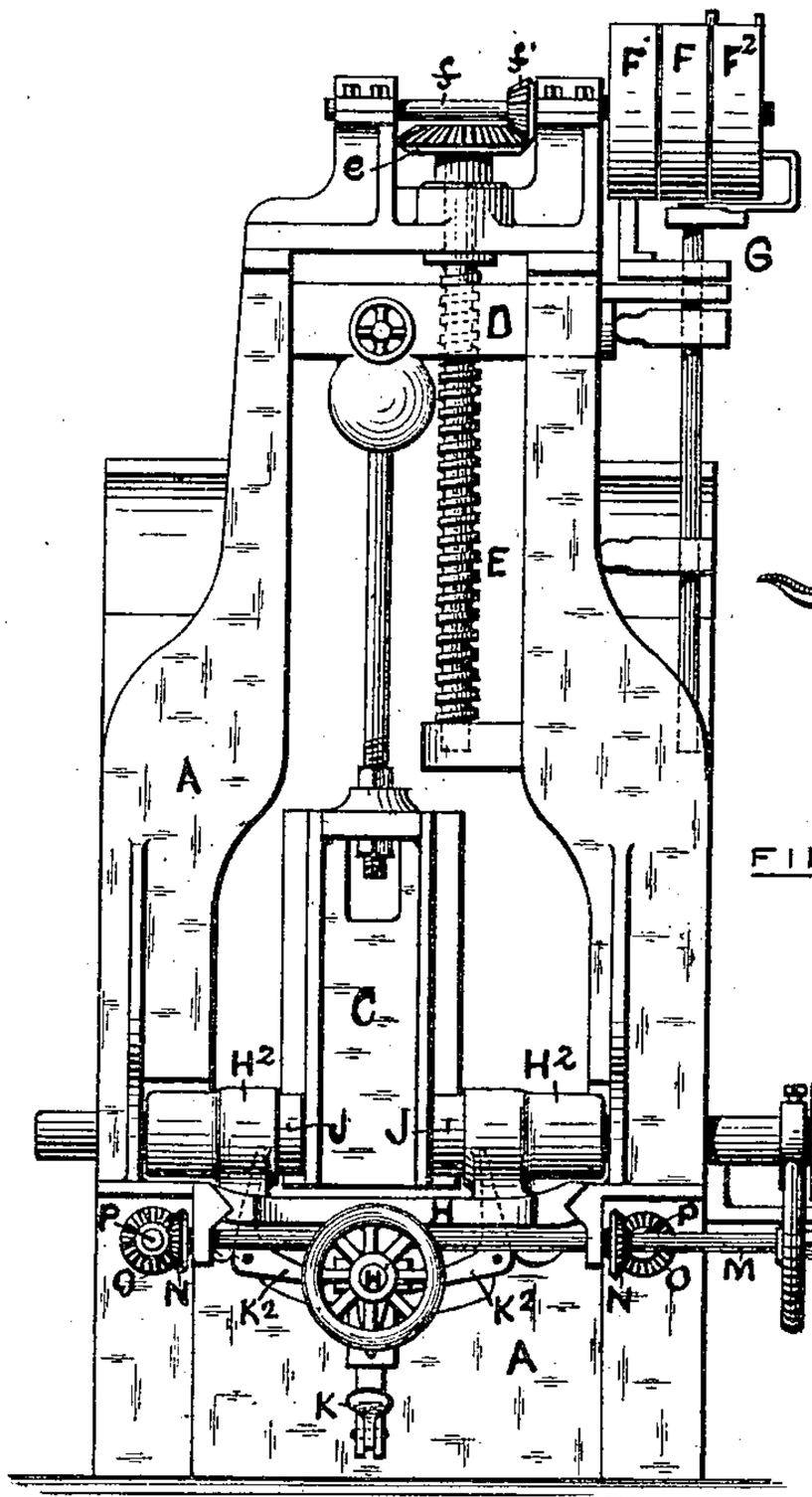

FIG. 1.

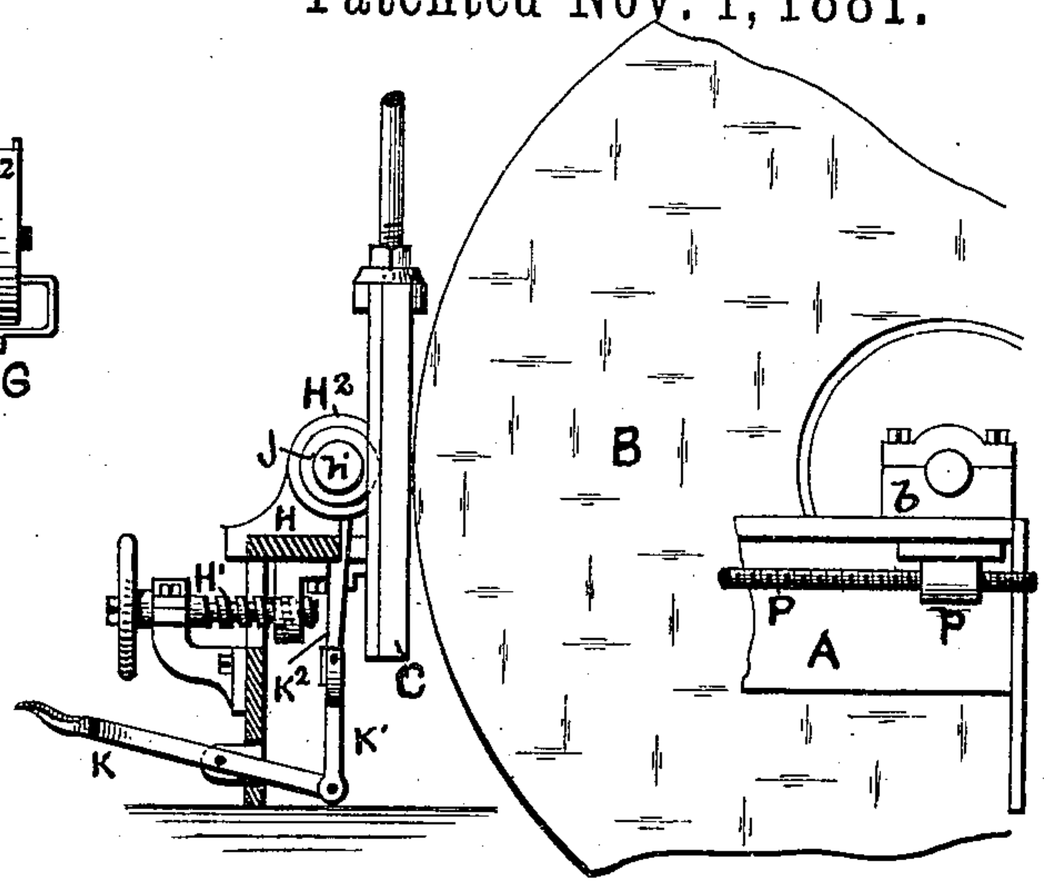

FIG. 2.

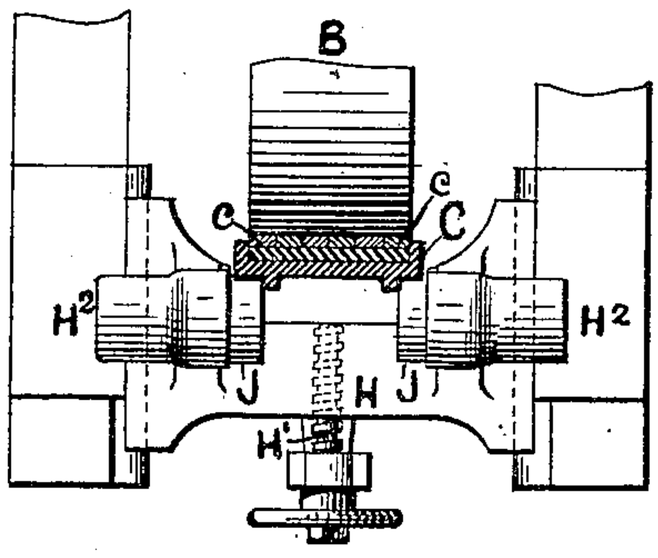

FIG. 3.

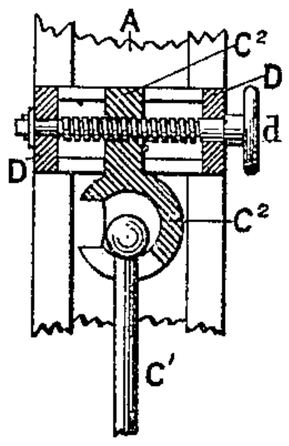

FIG. 5.

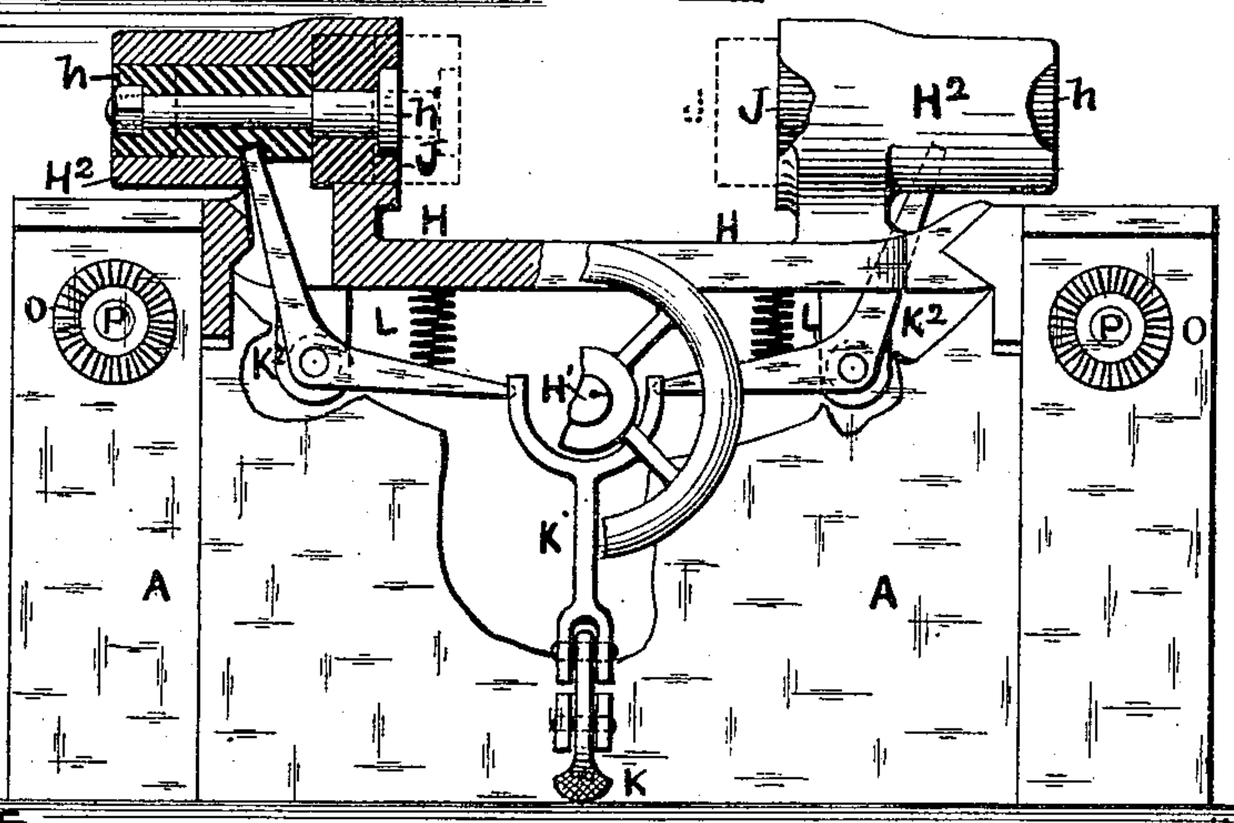

FIG. 4.

WITNESSES.

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FILE-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 248,874, dated November 1, 1881.

Application filed June 24, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. MILLER, of Warwick, in the county of Kent and State of Rhode Island, have invented a new and useful Improvement in File-Grinding Machines; and I do hereby declare that the following specification, taken in connection with the accompanying drawings, forming a part of the same, is a full, clear, and exact description thereof.

My invention relates to a machine for grinding files, which embodies a rotating stone or equivalent, a plate or apron for holding the files during the grinding operation, a pair of friction-rolls against which the said plate takes bearing, and a yoke or block on which the said rolls are mounted.

My improvement consists in mounting the friction-rolls in the yoke so that they can be retreated laterally clear of the plate or apron which holds the files, and can be projected laterally to support said apron.

It also consists in arranging the yoke containing the movable friction-rolls so that said yoke can be adjusted to and from the stone.

The objects of my improvement are, by arranging the friction-rolls so that they can be retreated clear of the apron and also be projected behind the same to allow of the apron being turned or reversed, in order that the work may be inspected or removed and new work introduced and yet give the apron a support during such time, and, by arranging the yoke so that it can be moved to and from the stone, to provide for the proper adjustment of the apron to the stone as the latter wears away.

Referring to the drawings, Figure 1 represents, in front elevation, a machine embodying my improvement. Fig. 2 shows a portion of the same in side elevation and partial section. Fig. 3 represents a portion of the machine in plan. Fig. 4 shows an enlarged view of a portion of the machine in elevation. Fig. 5 represents certain details of construction.

A is the frame of the machine, upon which the various parts are mounted.

B is the stone or equivalent, which is mounted to rotate in bearings *b*, Fig. 2.

C is the plate or apron, in which the files *c*, Fig. 3, are held while being ground. This apron is secured to the lower end of a rod, C′, the upper end of which is provided with a ball pivoted in a socket, C^2, Fig. 1, which socket-member is attached to a cross-head, D, in any preferred manner. For the purpose of adjusting the apron C in a proper plane with relation to the stone B, however, I prefer that the socket-member C^2 be engaged by a screw provided with a hand-wheel, *d*, Figs. 1 and 5, by means of which the socket C^2, and consequently the rod C′ and apron C can be moved horizontally. The cross-head and apron have reciprocating vertical motions imparted to them by a screw, E, the said screw being rotated by a pulley, F, secured to a shaft, *f*, which bears a bevel-gear, *f′*, meshing with a gear, *e*, upon the end of the screw. Also mounted upon the shaft *f* are two loose pulleys, F′ F^2, which are respectively engaged by a cross-belt and a straight belt when the shaft *f* is not being revolved. By means of proper shipping mechanism, G, these belts are brought into engagement alternately with the pulley F, and the screw E is revolved in opposite directions, thereby producing the upward and downward movements of the apron C.

H is the block or yoke, which is mounted to slide on the frame A, its adjustment with relation to the stone B being effected by a screw, H′. This yoke carries tubular portions H^2, in which are mounted sliding blocks *h*, and secured to these blocks are studs *h′*, one of which is shown in Fig. 4, upon which are mounted the friction-rolls J J. When in normal position the rolls J J project from the inner faces of the portions H^2 of the yoke H, as shown in Figs. 1 and 3 and by dotted lines in Fig. 4, and furnish a support for the apron C during the operation of grinding, the said apron being pressed against the rolls by the stone.

In order that the files may be quickly removed from engagement with the stone, should occasion require, and in order that a convenient arrangement may be provided whereby the work may be inspected at any stage, or the files be removed and replaced by others, mechanism is provided for retreating the rolls clear of the apron—that is, increasing their distance from each other, as shown in Fig. 4, so that the apron may be swung out and reversed. The retreat of the rolls is accomplished by pressing upon a foot-lever, K, pivoted to the frame

of the machine, as shown in Figs. 1, 2, and 4. This lever is connected to a rod, K′, which engages a pair of bell-crank levers, K^2, pivoted to the yoke, the said levers being in engagement with the sliding blocks *h*, as shown in Fig. 4. By depressing the outer end of the foot-lever the rolls are retreated, and when said lever is released the rolls are returned to their normal position by springs L L, which bear upon the yoke and upon the levers K^2 K^2 to support the apron.

The yoke H is adjustable with relation to the stone B only within certain limits. In order, therefore, that stones of various sizes may be used, and that a large stone may be employed continuously until it has been worn away to the minimum size, the stone B and its bearings *b b* are made adjustable with relation to the yoke H and the friction-rolls mounted thereon. For the purpose of this adjustment a hand-wheel attached to a shaft, M, Fig. 1, is employed. The shaft M bears a pair of bevel-gears, N N, which mesh with a pair of bevel-gears, O O, secured to the ends of screws P P upon both sides of the machine, as shown in Figs. 1 and 4. The screws P P engage lugs *p p*, secured to the bearings *b b* of the stone, as shown in Fig. 2. When, therefore, the hand-wheel on the shaft M is turned the stone and its bearings are adjusted with relation to the yoke and its rolls. When this adjustment is effected the pulley Q, which drives the stone, is changed in size, or its belt varied in length, or both, as may be desired.

As is usual, the machine is provided with means for laterally reciprocating the stone B during its revolution, the said means consisting of an arm, R, fixed upon the frame of the machine and engaging a grooved cam, S, secured to the grindstone-shaft, as shown in Fig. 1.

From the foregoing description it will be understood that the friction-rolls J J support the apron while the files are being ground; that said rolls can be retreated to allow the apron to be swung out and reversed when the work is to be inspected, removed, or new work put in; that the said rolls can be projected to support the apron while the work is being inspected, removed, or put in; that the yoke H and its friction-rolls can be adjusted to and from the stone, and that the stone and its bearings can be adjusted with relation to the yoke and its rolls.

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

1. In a grinding-machine, the combination, with the yoke, of friction rolls mounted thereon so that they can be retreated and projected laterally, and suitable means for operating said rolls, substantially as and for the purposes specified.

2. In a grinding-machine, the combination of the adjustable yoke H, the friction rolls J J, mounted thereon so that they can be retreated and projected laterally, and suitable means for operating said rolls, substantially as and for the purposes specified.

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