

(No Model.)

H. BIRKHOLZ.

2 Sheets—Sheet 1.

ROLLER GRINDING MILL.

No. 269,623.

Patented Dec. 26, 1882.

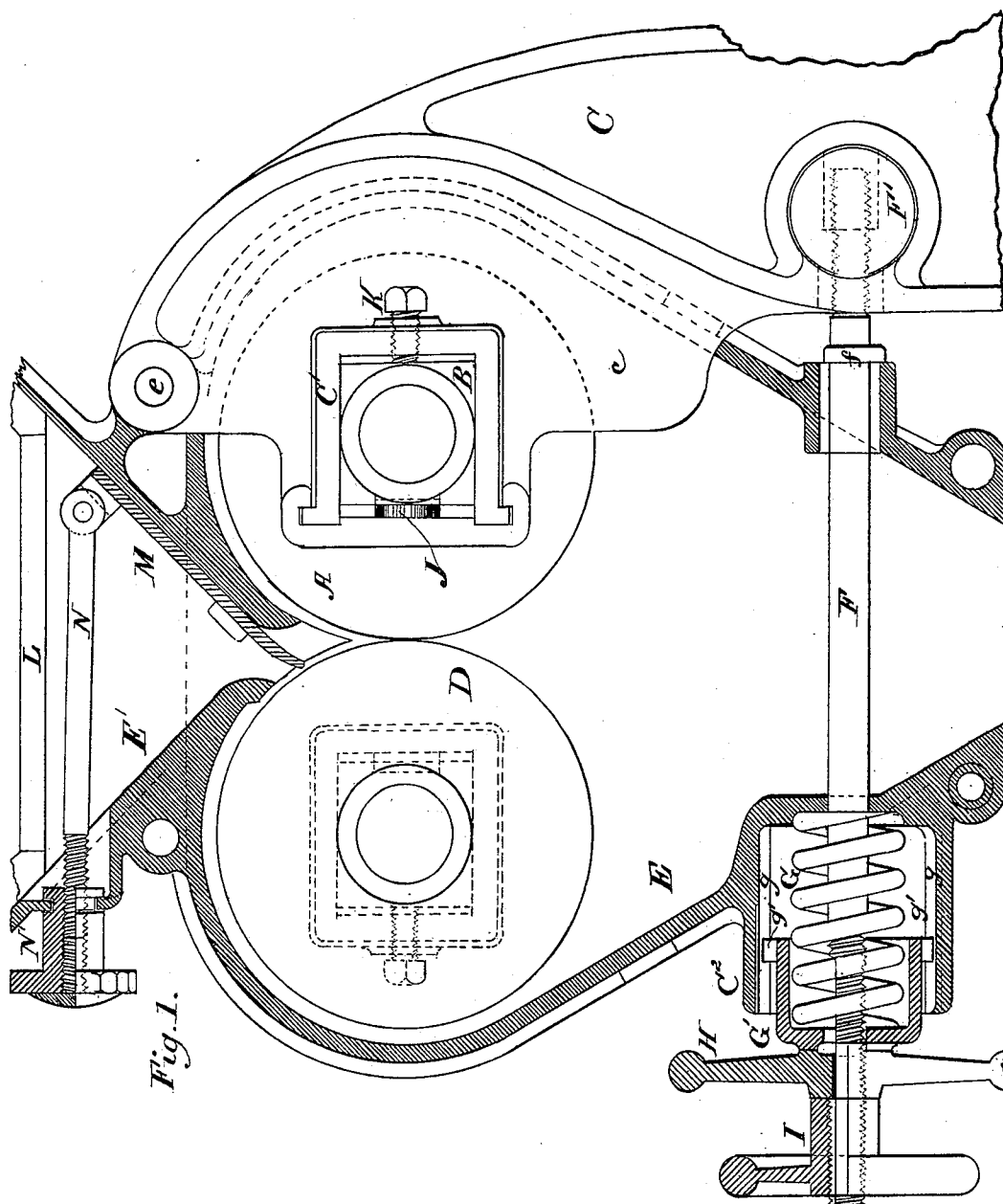


Fig. 1.

Witnesses:

E. F. Walker

M. F. Haeck

Inventor.

H. Birkholz
by his attorney
A. E. Eide

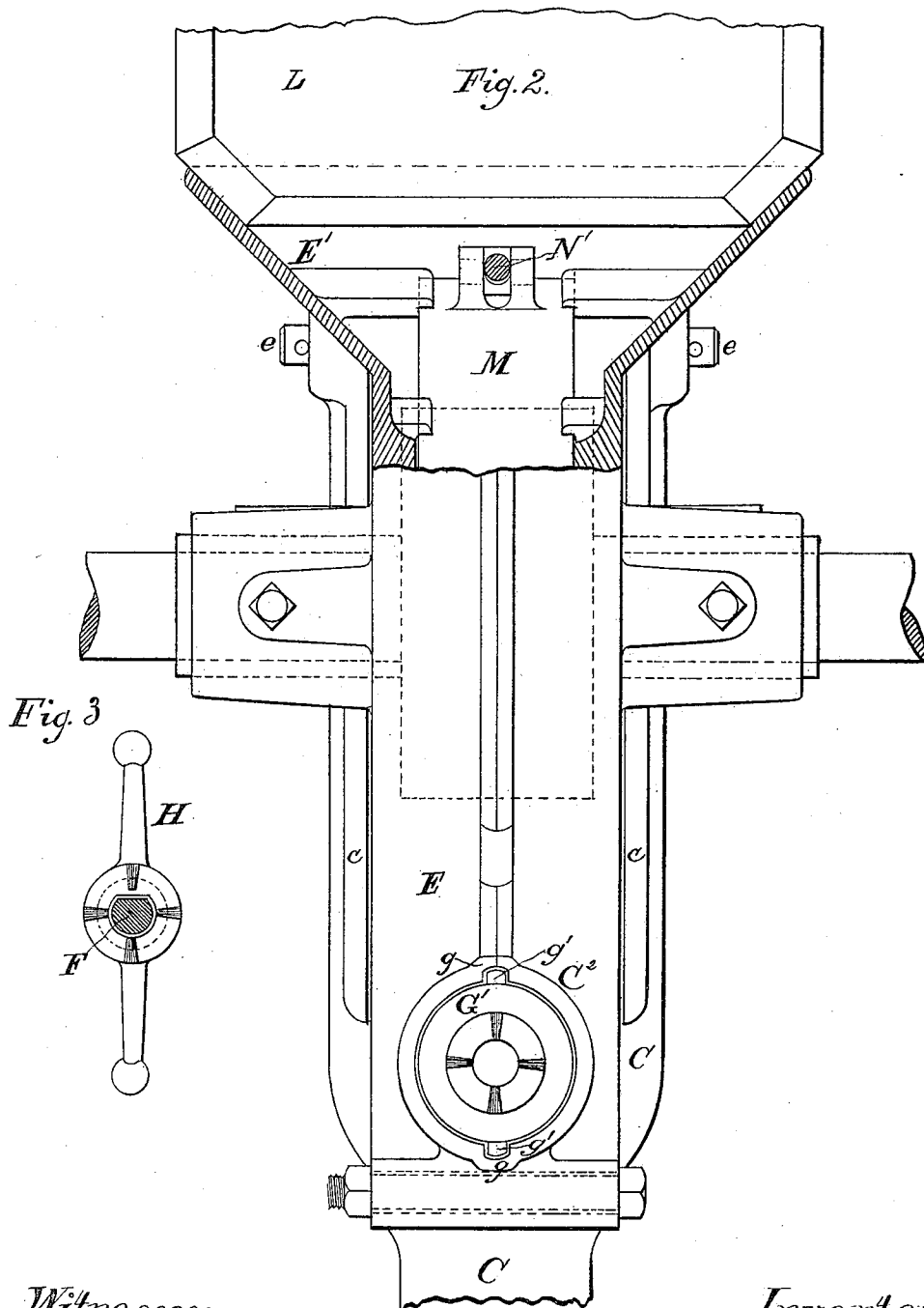
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E. J. Walker
M. F. Halleck

Inventor.
Hans Birkholz
by his attorney
J. E. Bids

UNITED STATES PATENT OFFICE.

HANS BIRKHOLZ, OF RACINE, WISCONSIN.

ROLLER GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 269,623, dated December 26, 1982.

Application filed May 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, HANS BIRKHOLZ, formerly a subject of the Emperor of Germany, having filed a declaration of intention to become a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Roller Grinding-Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to roller grinding-mills in general, though some features thereof were designed more especially with a view of improving portable roller grinding-mills in which the grinding-rollers are so mounted that one gravitates, and, in operation, has a tendency to crowd toward the other—a mill, for instance, such as described in United States Letters Patent No. 255,715.

The object of my improvement is to combine the spring which regulates the pressure of the movable roller toward the fixed roller with the rod for gaging the space between the rollers in such a manner that the gage-rod may be adjusted without affecting the tension of the spring, and that, on the other hand, the tension of the spring may be changed without disturbing the adjustment of the gage-rod.

In order that my invention may be clearly understood, I have illustrated in the annexed drawings, and will proceed to describe, the best form thereof when applied to a portable roller grinding-mill of the above-stated character at present known to me.

Figure 1 is a partly-sectionized side elevation of such roller grinding-mill embodying my improvements. Fig. 2 is a partly-sectionized front elevation of the same, the gage-rod being omitted, as well as the hand-lever for adjusting it, and the nut for regulating the tension of the spring. Fig. 3 is a detail view of the hand lever or bar for adjusting the gage-rod.

The same letters of reference are used in all the figures to designate identical parts.

The fixed roller A is journaled in journal-boxes B, fitted in hollow bosses or guides C

on the cheek-plates *c c*, formed on the upper end of the column or standard C of the mill. The movable roller D is journaled in similar journal-boxes fitted in hollow bosses or guides on the divided casing E, which is pivoted or hinged on a bolt, *e*, between the cheek-plates of the standard C, so that the rollers will be entirely inclosed in such casing. The holes in the sides of the casing through which the journals of roller A pass must be somewhat elongated in the direction of the swing of the casing, so that the latter may swing to a limited extent without being obstructed by such journals.

The movable roller is prevented from running in immediate contact with the fixed roller, and the normal space between the rollers is determined by the gage-rod F, which engages a circular nut, F', fitted in a circular recess or hole in standard C, and passes through the lower end of the casing, being provided with a collar, *f*, for limiting the approach of the casing to the standard. The nut F' is capable of turning or swiveling in its seat in the standard, so as to be able to accommodate itself to changes in the position of the gage-rod, due to the movement of the casing and its roller. The holes in the standard and the adjacent rear side of the casing through which the gage-rod passes are vertically elongated to provide for free motion of the movable parts.

At the front side of the casing the gage-rod passes through a box, C², formed thereon, and is encircled by a stout spiral spring, G, bearing with one end against the bottom of said box and with the other end against a cap, G', slipped on the gage-rod, and provided with lugs *g' g'*, which enter longitudinal grooves *g g* in the shell of the box, so that the cap may slide but cannot turn in the box.

In order that the gage-rod may be turned in its nut F' to gage the space between the rollers, it is provided with a cross-bar or hand-lever, H, fitted on it next to the cap G', the gage-rod being in this instance flattened on one side, to so engage the correspondingly formed eye of the hand-lever that the latter may slide on it. Interlocking recesses and projections are formed respectively on the adjoining faces of the cap G' and hand-lever H, so that the latter can be turned only on the applica-

tion of considerable force to it, or after the cap has been first disconnected from it, according as the interlocking recesses and projections are rounded or square-cornered.

5 The outer flattened end of the gage-rod is screw-threaded and carries a nut, I, constructed with a hand-wheel for turning it with facility. By adjusting this nut I the tension of spring G can be regulated without changing the ad-
10 justment of the gage-rod.

The journal-boxes of the rollers are accurately fitted at top and bottom in their guides, but have considerable lateral play therein. Each journal-box is provided at the center of the
15 side facing the bite of the rollers with a shallow recess, in which is seated an elastic cushion, J, of rubber or wood, made long enough to protrude a little from the recess in the box. A set-screw, K, bears on the opposite side of the
20 box, being fitted in a screw-threaded hole in the side of the supporting-guide of the box.

When the box has been properly adjusted the elastic cushion will be somewhat compressed, bearing with considerable friction against the
25 guide, which, together with the frictional pressure of the set-screw on the opposite side, will hold the box so firmly as to prevent it from moving endwise in its supporting-guide, allowing it, however, to accommodate itself to slight
30 inaccuracies of alignment. By proper adjustments of the set-screws K the required parallelism of the rolls may be easily obtained, and lost motion, due to the wear of the boxes and journals, may also be readily taken up.

35 The casing E is at the top constructed with a funnel, E', upon which a hopper, L, is to be superimposed. The feed from the funnel to the rollers is governed by a feed-slide, M, as usual. The feed-slide is arranged to slide in
40 guides on one side of the funnel. To its upper end is pivoted a rod, N, which extends from the slide at an acute angle of about forty-five

degrees, more or less, across and through the opposite side of the funnel, its outer end being screw-threaded and entering a nut, N', which
45 is swivelingly connected to the funnel, as clearly shown in Fig. 1. This arrangement of the feed-slide and its adjusting rod and nut relatively to one another causes a reciprocal locking
50 of each by the other, so that no jam-nut or other supplementary locking device is required for preventing the shifting of the feed-slide by the vibrations of the mill.

In mills having a stationary casing the gage-rod and its adjuncts would be applied to the
55 frame or yoke carrying the movable roller.

I do not herein claim the feed-slide arrangement shown and described, but reserve the right to claim it in a separate patent.

Having thus described my invention, what I
60 claim as new is—

1. The combination, substantially as before set forth, of the fixed roller-supporting standard, the movable roller-carrying casing pivoted thereto, the adjustable gage-rod, the nut there-
65 of, held by the standard, and the spring connected with said rod and adjustable in tension independently thereof.

2. The combination, substantially as before set forth, of the fixed roller-supporting stand-
70 ard, the movable roller-carrying casing pivoted thereto, the adjustable gage-rod, the swiveling nut thereof, held by the standard, the spring, the sliding cap, the hand-lever for rotating the gage-rod, detachably locked to the sliding cap,
75 and the nut for adjusting the tension of the spring.

In testimony whereof I affix my signature in presence of two witnesses.

HANS BIRKHOLZ.

Witnesses:

CHARLES H. LEE,
GEO. L. EDDY.