

(No Model.)

W. D. GRAY.
ROLLER GRINDING MILL.

No. 444,349.

Patented Jan. 6, 1891.

Fig. 1.
on line x-x

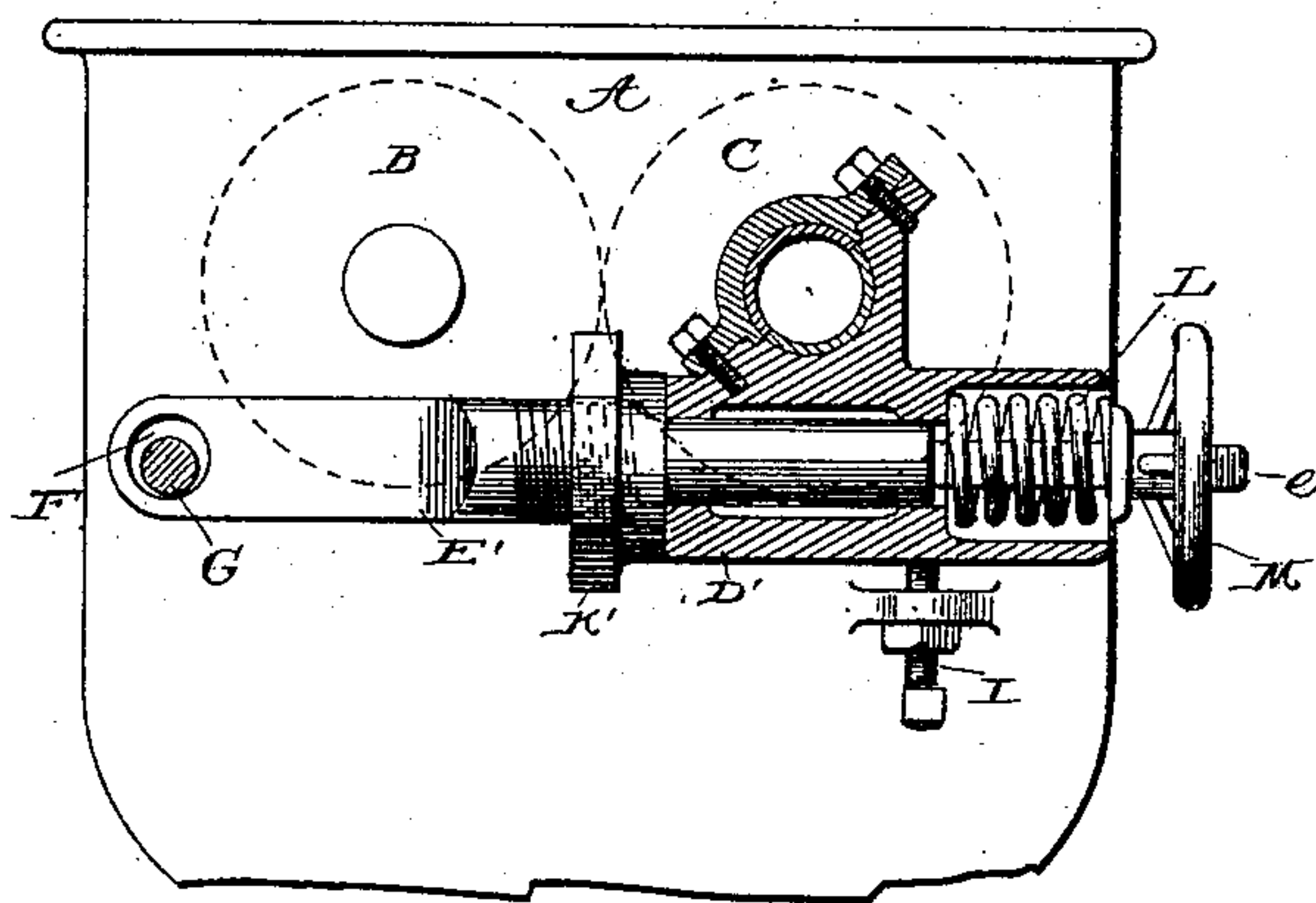
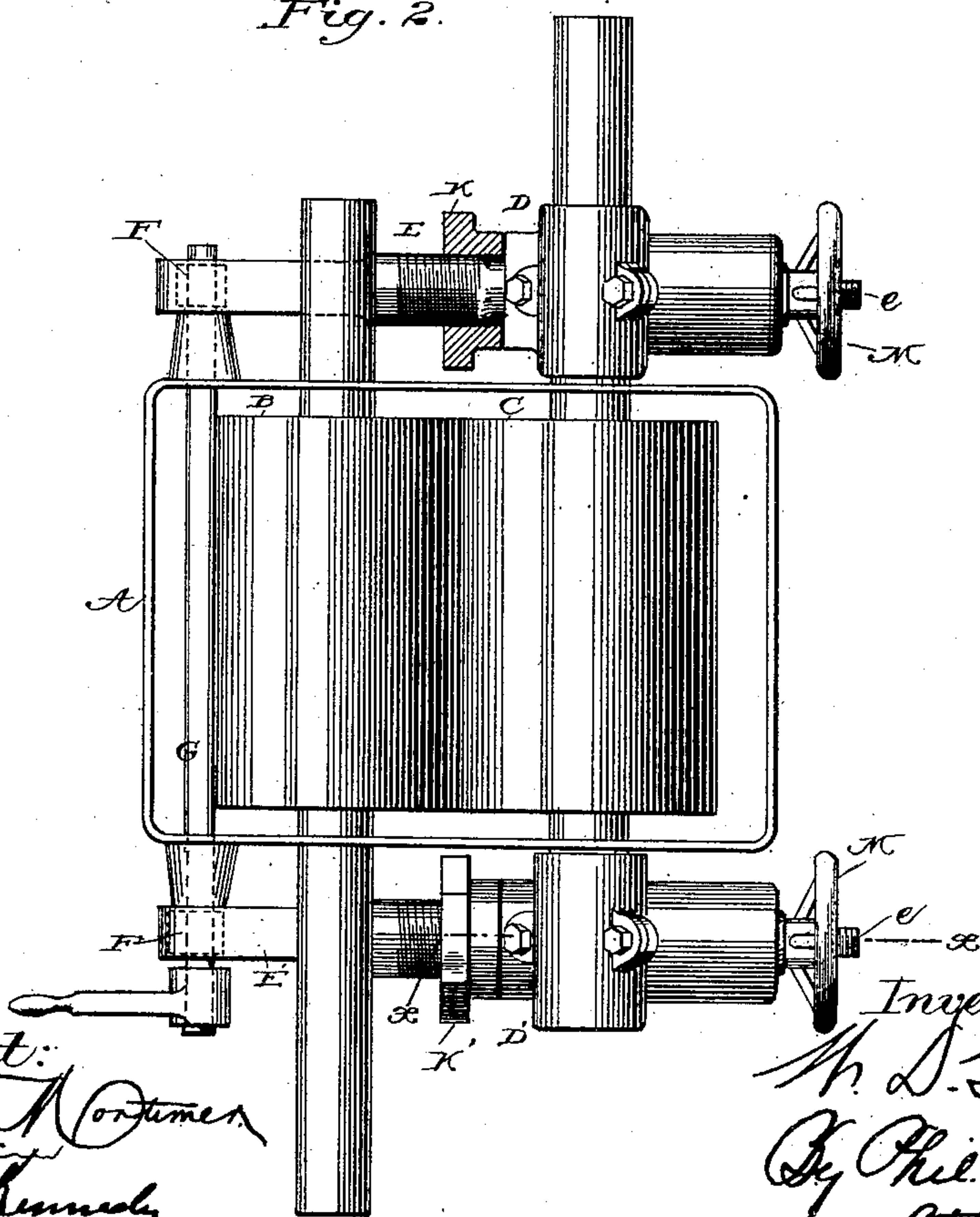


Fig. 2.



Attest:
H. H. Norton
H. R. Kennedy

Inventor:
W. D. Gray
By Phil. Y. Dodge
Atty

UNITED STATES PATENT OFFICE.

WILLIAM D. GRAY, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE EDWARD P. ALLIS COMPANY, OF WISCONSIN.

ROLLER GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 444,349, dated January 6, 1891.

Application filed August 24, 1889. Serial No. 321,813. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. GRAY, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain Improvements in Roller Grinding-Mills, of which the following is a specification.

This invention relates to grinding-mills in which one of two co-operating rolls is mounted in movable supports, and particularly to that type of mill in which the roll boxes or supports are arranged to slide to and from the opposing roll on sustaining-arms, which are laterally adjustable to effect the alignment of the rolls, as represented in my application, No. 321,812, of even date herewith.

The invention consists in various details of the supporting and adjusting devices based upon and subordinate to the general construction set forth in said application.

In the accompanying drawings, Figure 1 is a side elevation of the principal parts of a roller-mill having my invention embodied therein, portions of the supporting and adjusting devices being shown in vertical section on the line $x x$, Fig. 2. Fig. 2 is a top plan view of the parts represented in the preceding figure.

Referring to the drawings, A represents the main frame, which may be of any suitable construction; B, a horizontal roll mounted in stationary bearings, as usual, or otherwise suitably supported, and C the co-operating roll mounted in movable bearings D D' and hereinafter designated as the "movable" roll. The bearings or boxes are fitted to slide, respectively, on the cylindrical ends of horizontal arms E E', this sliding motion carrying the movable roll to or from its companion. The arms E E' are mounted at their inner ends on horizontal pivots or axes, around which they may swing vertically to a limited extent, in order to raise or lower the respective boxes D D' on the ends of the movable roll, so as to secure an exact alignment of said roll with the roll B. The pivotal supports for the arms may be of any ordinary character which will allow their forward ends to rise and fall; but I prefer to employ as the pivotal supports the eccentrics F, mounted on a common rock-shaft G, by which they may be turned in or-

der to carry the arms and boxes horizontally to effect the closing or spreading of the rolls.

The sliding boxes of the movable rolls are sustained by means of vertically-adjustable supports I, bearing against their under surfaces. These supports are preferably in the form of vertical screws passing through ears on the main frame, acting at their upper ends against the boxes, as shown; but it is to be distinctly understood that any equivalent vertically-adjustable support for the boxes may be employed, many devices suitable for the purpose and mechanical equivalents of the screw being known to every skilled mechanic.

In order to limit the approach of the rolls and prevent them from coming in contact, the supporting-arms are threaded externally and provided with nuts K K', against which the inner sides of the sliding boxes abut.

The sliding boxes are urged inward to hold the movable roll in grinding position by the spiral springs L. One of these springs is seated in the outer side of each box, and a threaded neck e , forming a continuation of the box-supporting arm, is projected outward through the spring and provided at the outer end with a hand wheel or nut M, by which the spring may be compressed, so that it will urge the box inward with more or less pressure, as circumstances may require. In this manner the roll is held to its work by a variable spring-pressure. The construction, however, permits the roll to retreat from its companion in the event of refractory substances entering between them.

I do not claim, broadly, herein the combination of sliding roll-sustaining boxes with horizontal sustaining-arms adjustable horizontally and vertically, nor the combination of said parts with spring-pressure devices sustained by the arm and acting on the boxes, as these features form the subject of application No. 321,812, hereinbefore referred to.

What I claim is—

1. In combination with a main frame, the fixed roll B, and the opposing roll C, the boxes sustaining the latter, the horizontal continuous guide-arms whereon the boxes slide, pivotal supports allowing said arms to swing upward and downward, vertically-adjustable

supports whereon the boxes slide and by which they are directly sustained, and spring-pressure devices mounted on the free ends of the arms to urge the boxes inward.

5 2. In a roller grinding-mill, a fixed roll, a second roll co-operating therewith, boxes sustaining the second roll, horizontal vertically-swinging guide-arms whereon the boxes slide, means for sustaining the boxes and arms,
10 spring-pressure devices mounted on the free ends of the arms and acting against the boxes to close the rolls, and stop-nuts encircling the guide-arms and adjustable thereon to limit the motion of the boxes.

15 3. In a roller grinding-mill, a roll and its

sustaining-boxes, in combination with round guide arms or rods whereon the boxes slide and whereby they are maintained and guided, stop-nuts encircling said rods to limit the motion of the boxes in one direction, springs encircling the arms and urging the boxes toward the stop-nuts, and nuts applied to the arms to confine and compress the springs.

In testimony whereof I hereunto set my hand in the presence of two attesting witnesses. 25

WILLIAM D. GRAY.

Witnesses:

RICHARD HOPPIN,

EDW. F. BYRON.