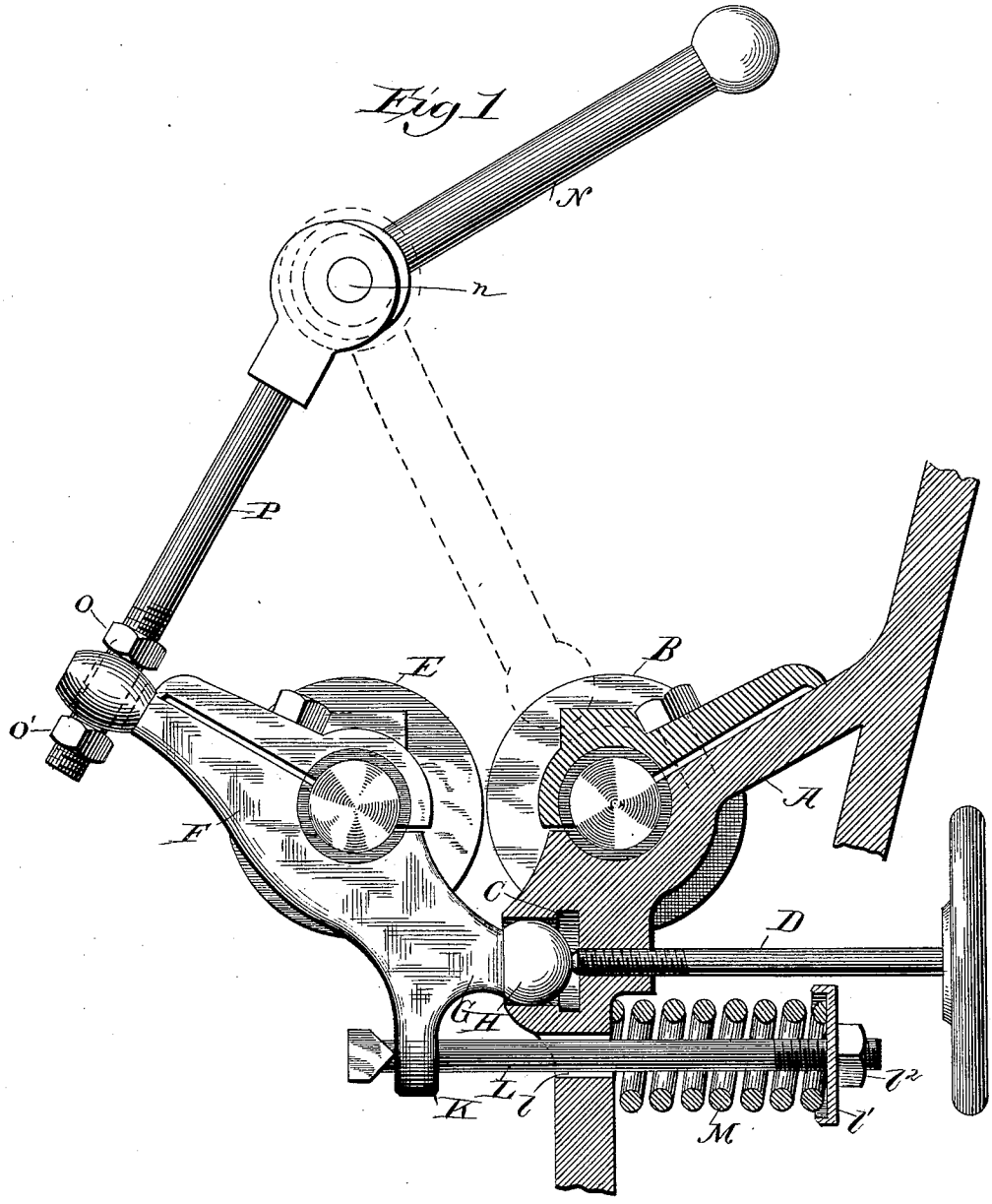
(No Model.) 2 Sheets—Sheet 1.

T. W. GRAHAM.

ROLLER GRINDING MILL.

No. 434,707. Patented Aug. 19, 1890.

Fig 1



Witnesses:
F. P. Cornwall,
Geo. S. Hodges

Inventor
Thos. W. Graham,
By L. S. Bacon
his Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

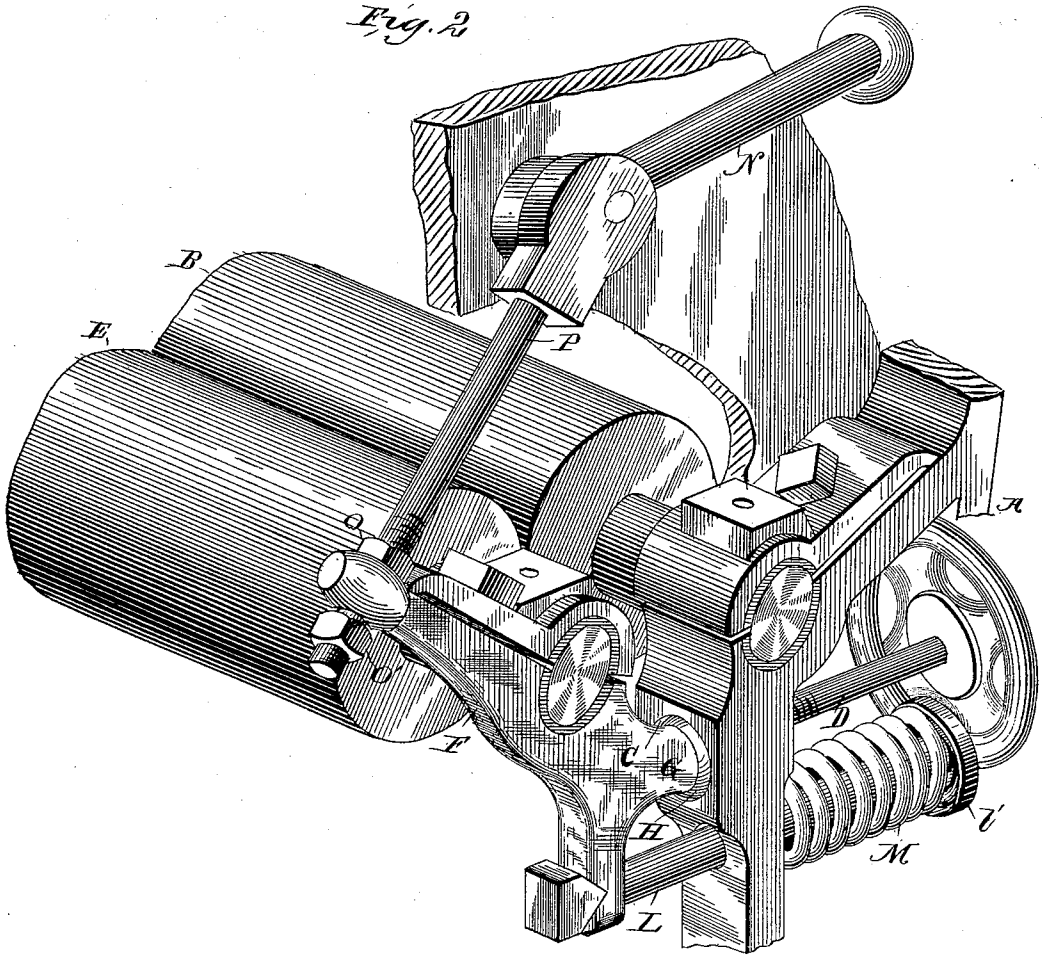
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T. W. GRAHAM.

ROLLER GRINDING MILL.

No. 434,707. Patented Aug. 19, 1890.

Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS WILLIAM GRAHAM, OF DUBUQUE, IOWA, ASSIGNOR OF TWO-THIRDS TO F. H. WILLIAMS AND F. THOMELY, BOTH OF SAME PLACE.

ROLLER GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 434,707, dated August 19, 1890.

Application filed May 31, 1890. Serial No. 353,878. (No model.)

To all whom it may concern:

Be it known that I, THOMAS WILLIAM GRAHAM, a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, 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.

My invention relates to an improvement in roller grinding-mills; and it consists in the construction and arrangement of parts hereinafter described, and definitely pointed out in the claims.

The object of my invention is to provide an improved means for adjusting and aligning the rolls relatively to each other in a simple and effective manner. I attain this object by the construction illustrated in the accompanying drawings, wherein like letters of reference indicate corresponding parts in the several views, and in which—

Figure 1 is an end elevation of the device, showing part of the same in section. Fig. 2 is a perspective view of part of a mill with my attachment.

In the drawings, A represents the frame, and B the fixed roll journaled therein in any suitable manner. In the frame below the fixed roll is formed a recess or bearing-pocket C, having straight upper and lower walls. Through the rear walls of this pocket is formed a threaded aperture in which is a horizontally-movable adjusting-rod D, having a hand-wheel on its outer end, for the purposes hereinafter stated.

E represents the adjustable roll journaled in a supporting-frame F in any suitable manner.

Extending out from the lower part of the frame F to a point beyond the periphery of the roll E is an arm G, having a spherical or ball-shaped bearing H formed on its end, the diameter of which is such as to admit of its being inserted in the pocket formed in the frame, which acts as a seat therefor, in which it has a horizontal and oscillating play, thus allowing a vertical and horizontal adjustment of the roll E, the horizontal adjustment being acquired by movement of the adjusting-rod D, which has a seat *d* on its end which bears against the bearing H.

To prevent injury to the rolls by the presence of hard foreign substances, I form a pendent arm K on the frame F, against the outer face of which bears the knife-edged head of a horizontally-disposed rod L, the apex bearing against the arm K. The rod L passes through an aperture I in the frame, and has a collar I′, movably held on its outer end by an adjusting-nut I^2 on the end of the rod. A coiled spring M is sleeved on the rod L, between the frame and the collar I′, so that the movement of the collar by the nut I^2 regulates the tension of the spring.

The vertical adjustment and spreading of the roll E is effected by an arm or lever N, mounted on a shaft in the frame above the rolls, and by adjusting-nuts O O′, placed, respectively, above and below the outer end of frame F, on a pitman P, which passes through an aperture in the end of the frame. The upper end of the pitman P is eccentrically connected with lever N, so that the upward movement of the latter spreads the rolls apart, and moving the same down forces the rolls together, and also increases and decreases the tension of the spring M.

By the above construction it will be noted that the adjustable roll will be permitted a vertical, horizontal, and tilting movement to compensate for the wear of the journals, the spherical arm and bearing acting as ball-and-socket connection, the ball having a horizontal as well as rotary movement, as stated.

It will of course be understood that a number of sets of rolls may be employed in lieu of the single set shown and described.

The construction and arrangement of the parts as described simplifies and greatly improves the manner and ease of adjusting the rolls. The spring takes up all lost movement of the roll, overcoming that objection. The conical head of the rod L permits the movement of the parts without twisting. The arrangement of the spring is such that the strain thereon is released when the rolls are spread.

I am aware that many minor changes in the construction and arrangement of parts of my device can be made and substituted for those shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a roller-mill, the combination, with a fixed roll, of an adjustable roll having spherical bearings extending laterally beyond its axis, rests for said bearings, means for adjusting the bearings horizontally, and tension devices below the bearings, substantially as described.

2. In a roller-mill, the combination, with the casing and a fixed roller, of a rest below the roller, an adjustable roller having a forwardly-extending spherical bearing supported in said rest, an adjustable rod impinging against said bearing for moving the same horizontally, and tension devices below the bearing, substantially as described.

3. In a roller-mill, the combination, with a frame and a fixed roll, of an adjustable roll, a frame extending laterally beyond the periphery of the adjusting-roll supporting the same, spherical bearings on the frame, means for adjusting the frame vertically and horizontally, and tension devices secured to the casing below the bearing and engaging with the lower end of the adjustable frame, substantially as described.

4. In a roller-mill, the combination, with a fixed roll, of an adjustable roll, bearings for said adjustable roll extending laterally beyond its axis and constructed to allow a movement in horizontal and vertical planes, rests for said bearings, means for adjusting the bearings horizontally in the rests, and tension devices below the bearings, substantially as described.

5. In a roller-mill, an adjustable grinding-roll having spherical bearings extending laterally beyond its axis, means for adjusting the bearings horizontally, and tension devices consisting of a rod having a knife-edged end bearing against the bearing and a spring on the rod, substantially as described.

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

THOMAS WILLIAM GRAHAM.

Witnesses:

J. C. LONGUEVILLE,

T. H. DUFFY.