

(No Model.)

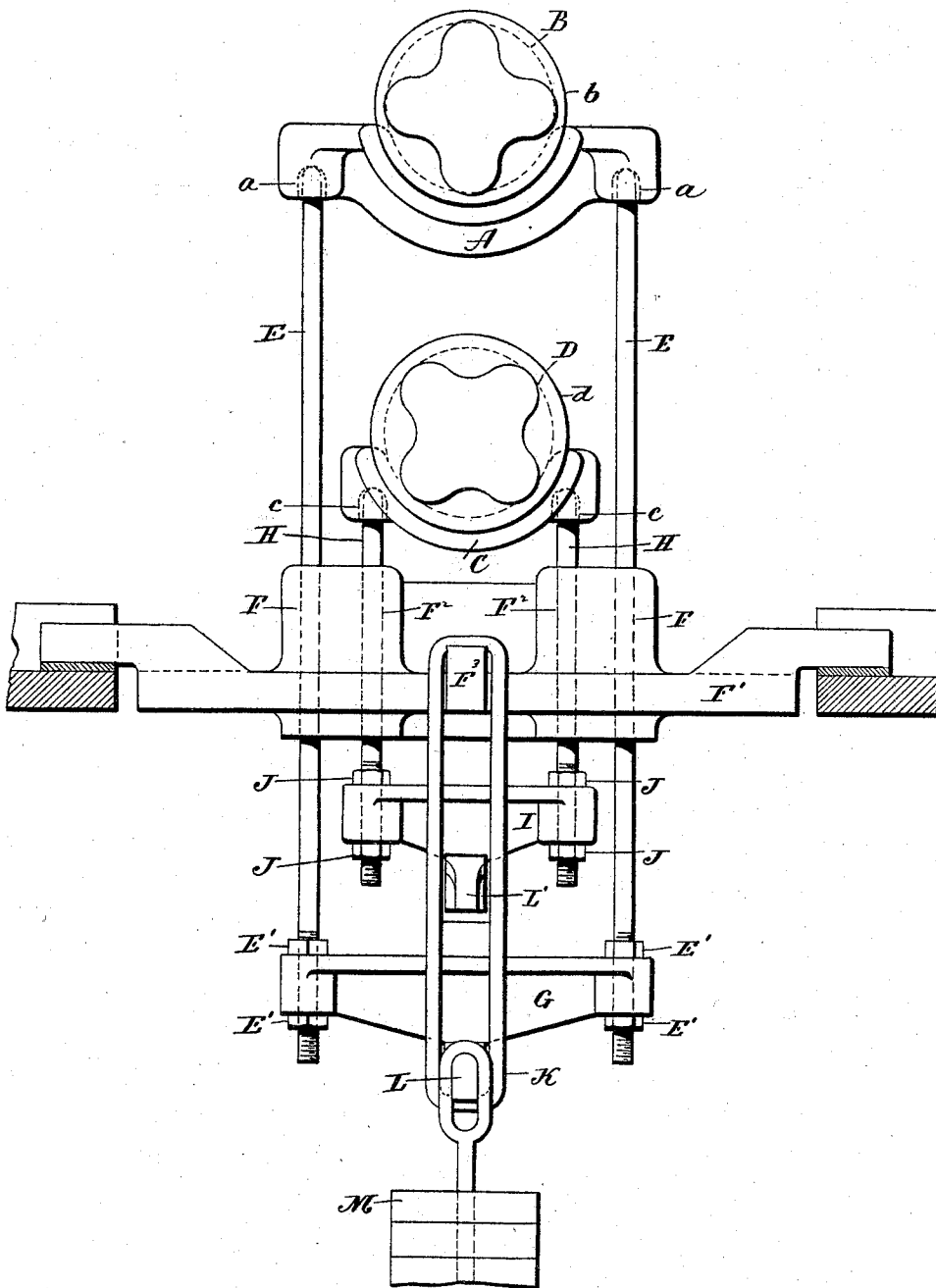
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T. L. JAMES.
ROLLING MILL.

No. 581,993.

Patented May 4, 1897.

Fig. 1.



Witnesses:
J. H. Shumway
William D. Kelsey

Thomas L. James
Inventor
By Atty. Earle Seymour

(No Model.)

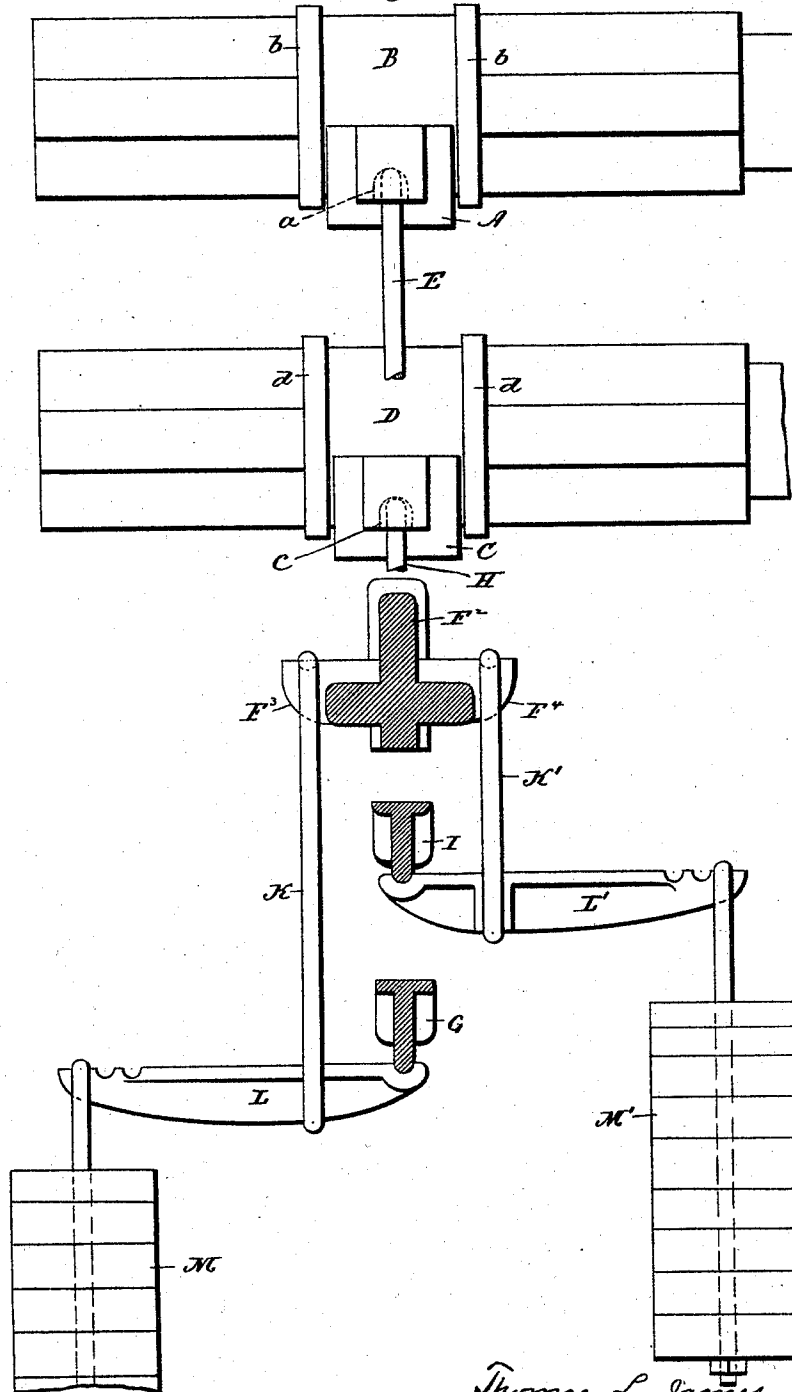
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Fig. 2



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UNITED STATES PATENT OFFICE.

THOMAS L. JAMES, OF SEYMOUR, CONNECTICUT, ASSIGNOR TO THE NEW HAVEN COPPER COMPANY, OF SAME PLACE.

ROLLING-MILL.

SPECIFICATION forming part of Letters Patent No. 581,993, dated May 4, 1897.

Application filed April 29, 1895. Serial No. 547,543. (No model.)

To all whom it may concern:

Be it known that I, THOMAS L. JAMES, of Seymour, in the county of New Haven and State of Connecticut, have invented a new
5 Improvement in Rolling-Mills; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the
10 same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, an end view of a rolling-mill constructed in accordance with my invention; Fig. 2, a view, partly in section and partly in
15 elevation, of the mechanism; Fig. 3, a detached view of the bearing-plate.

My invention relates to an improvement in rolling-mills, and more particularly to mechanism for braking the shafts which actuate the rolls, the object being to provide simple,
20 durable, and effective means for taking up the wear of the teeth of the gears by means of which the shafts of the gears by means and for maintaining the teeth in contact, so
25 that the action of the gears will be smooth and uniform and so that one gear will not run ahead of the other and clash and break or strain the mill.

With these ends in view my invention consists in a braking apparatus having certain
30 details of construction, as will be hereinafter described, and pointed out in the claim.

As herein shown, a braking-shoe A is applied to the shaft B of the upper roll between
35 annular shoulders *b b*, formed on the said shaft, and a corresponding but shorter shoe C to the shaft D of the lower roll between annular shoulders *d d*, formed on said shaft. The shoe A is constructed at each end with
40 a downwardly-opening socket *a*, the said sockets respectively receiving the upper ends of vertically-movable supporting-rods E E, arranged parallel with each other and extending downward through vertical openings F F,
45 formed in a bearing-plate F', designed to be set into the floor of the room containing the mill. The extreme lower ends of the said rods are threaded and entered into the respective
50 ends of a yoke or cross-bar G, in which they are adjustable by means of jam-nuts E', bearing

ends of the bar. The shoe C, which is enough shorter than the shoe A to be accommodated between the vertical rods E E, just mentioned, is constructed at its opposite ends with downwardly-opening sockets *c c*, receiving the upper
55 ends of vertically-movable rods H H, which pass downward through vertical openings F² F², formed in the said bearing-plate, and also through the opposite ends of a yoke I, the said lower ends of the rods H H being
60 threaded and adjustably mounted in the ends of the yoke I by means of jam-nuts J.

It will be observed by reference to Fig. 1 of the drawings that the yoke I is enough
65 shorter than the yoke G to be easily accommodated between the lower ends of the vertical supporting-rods E E. The bearing-plate F is constructed with two centrally-arranged outwardly-projecting hooks F³ F⁴, with which
70 the upper ends of long depending links K and K' are engaged. The link K' at its lower end supports a balance-lever L, the inner end of which bears upon the lower edge of the yoke G, while its outer end supports a string of weights
75 M. The link K' supports at its lower end a balance-lever L', the inner end of which bears upon the lower edge of the yoke I, while its outer end supports a string of weights M'. The
80 said links thus form fulcrum for the balance-levers. It will be understood that under this arrangement the weights M will act, through the medium of the lever L, to lift the yoke G upward, which in turn will lift the supporting-
85 rods E E and press the shoe A against the shaft B with a pressure proportionate to the weight of the weights, while, on the other hand, the weights M' will act, through the medium of the balance-lever L', to lift the
90 yoke I, which in turn will act, through the supporting-rods H H, to lift the shoe C against the shaft D with a pressure represented by the weight of the weights. The braking-
95 shoes A and C will thus be constantly pressed against the shafts and will form an additional though not heavy load, which must be overcome in running them. The friction which they represent will be sufficient to entirely or partially overcome the inertia of the
100 shafts, so that when the mill is stopped the shafts will not rotate thereafter, but will also stop at once with their teeth in contact, so

that when the rolls are started up again there will be no clashing of the teeth, which are in that way often broken or the mill strained. The teeth of the gears are also kept in contact during the ordinary operation of the mill, which is thus made smoother, as vibration is thus avoided.

I particularly wish to call attention to the fact that my improved mechanism is organized independently of the mill itself, its several parts being assembled, as it were, by the bearing-plate.

It is apparent that in carrying out my invention some changes from the construction herein shown may be made, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes therefrom as fairly fall within the spirit and scope of my invention. I am aware, however, that balancing-supports for rolls of rolling-mills have been employed, and therefore do not wish to be understood as claiming, broadly, such as my invention.

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

In an independently-organized brake mechanism for the rolls of rolling-mills, the combination with a bearing-plate located directly

below the shafts of the two rolls of the mill which are located one over the other, of a pair of vertically-movable supporting-rods mounted in the said plate, and projecting above and below the same, a brake-shoe located below the upper roll and having its opposite ends connected with the upper ends of the said rods, a yoke located below the plate and connecting the projecting lower ends of the said rods, a shorter brake-shoe located between the lower roll and the plate, two shorter vertically-movable supporting-rods mounted in the plate between the rods before mentioned, and connected with the projecting upper ends of the shorter brake-shoe, a shorter yoke located between the plate and the yoke first mentioned, and connecting the projecting lower end of the shorter rods, two balance-levers respectively coacting with the said yokes, two weights respectively applied to the said balance-levers, and means for suspending the said balance-levers from the bearing-plate and forming fulcra for them, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS L. JAMES.

Witnesses:

H. S. HALLIGAN,
FRED. A. RUGG.