

(No Model.)

3 Sheets—Sheet 1.

H. S. SMITH, C. PETTIGREW & W. GARRETT.

ROD MILL.

No. 440,376.

Patented Nov. 11, 1890.

Fig. 1.

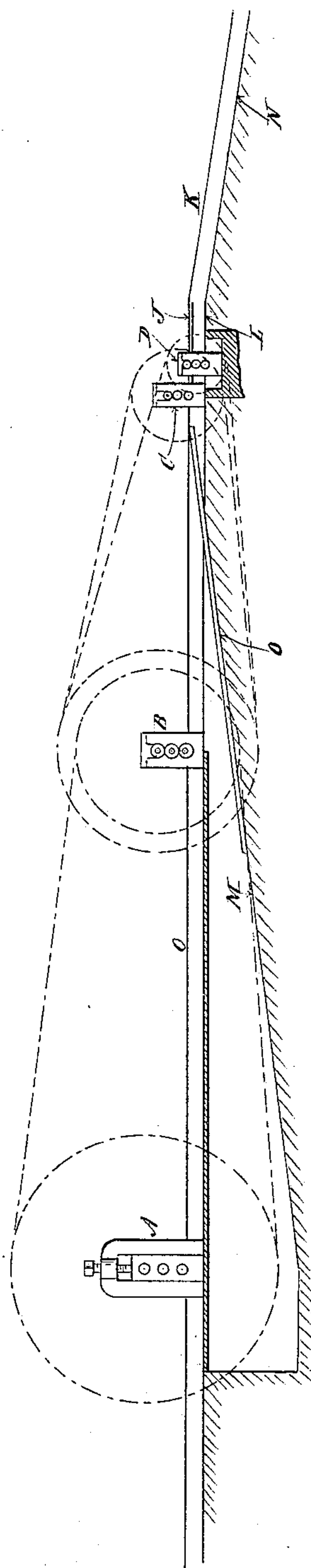
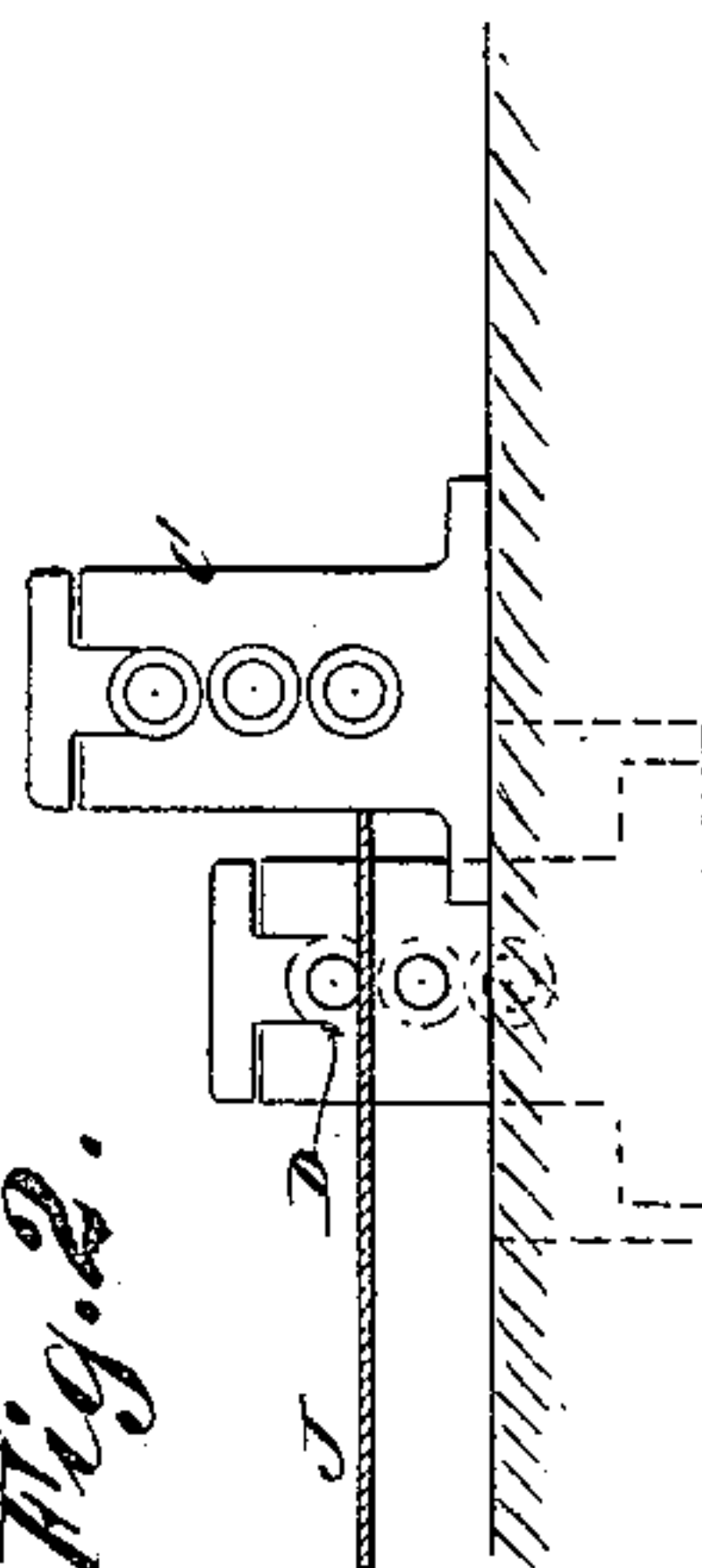


Fig. 2.



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3 Sheets—Sheet 2.

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Fig. 3.

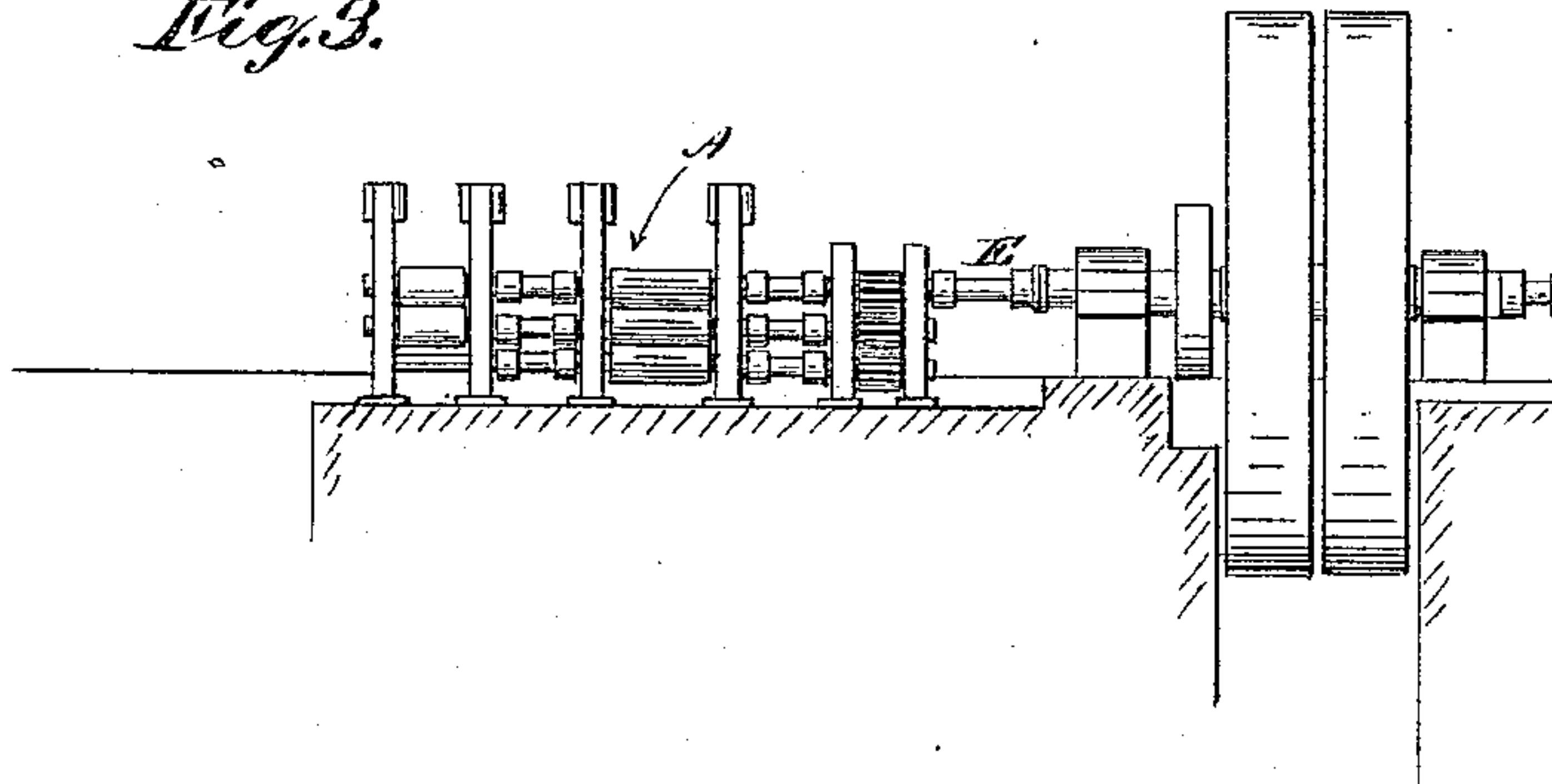


Fig. 4.

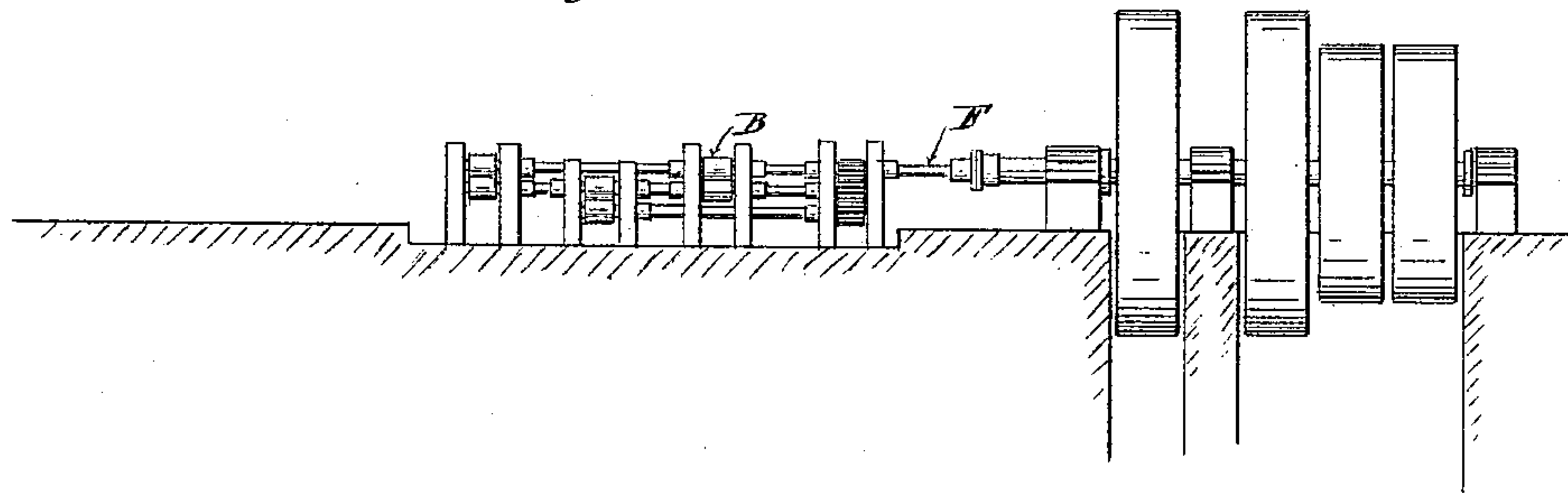
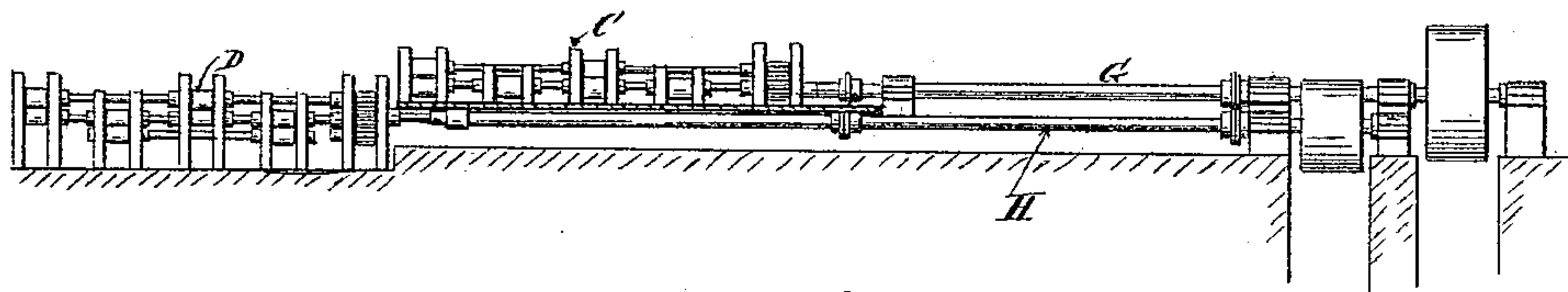


Fig. 5.



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3 Sheets—Sheet 3.

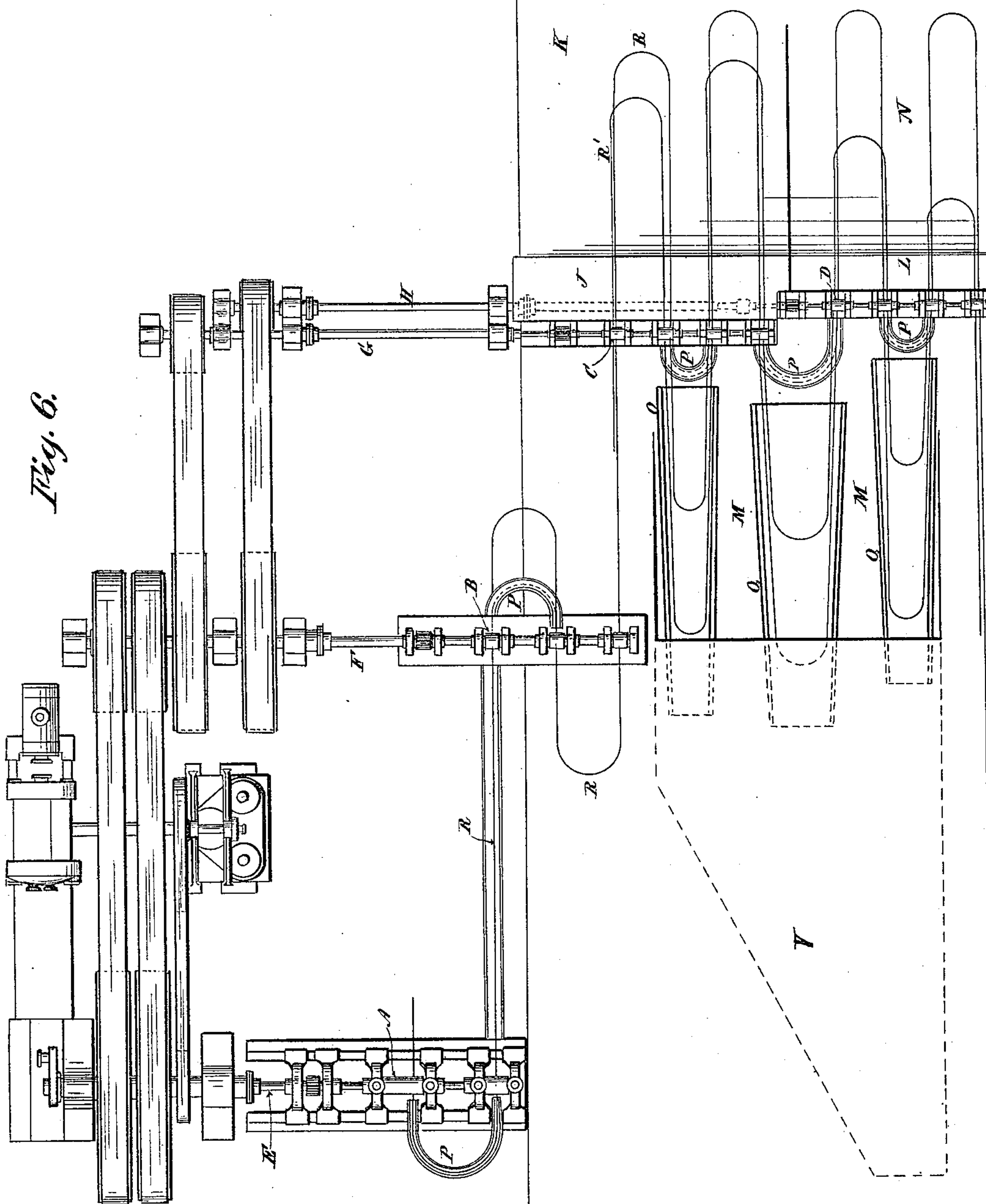
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Fig. 6.



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UNITED STATES PATENT OFFICE.

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ASSIGNORS TO THE ILLINOIS STEEL COMPANY, OF CHICAGO, ILLINOIS.

ROD-MILL.

SPECIFICATION forming part of Letters Patent No. 440,376, dated November 11, 1890.

Application filed July 2, 1889. Serial No. 316,283. (No model.)

To all whom it may concern:

Be it known that we, HORACE S. SMITH, CHARLES PETTIGREW, and WILLIAM GARRETT, all of Joliet, Will county, Illinois, have
5 invented a new and useful Improvement in Rod-Mills, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

Our invention relates to an improved construction of rolling-mills for metallic rods by which the wire is conveniently guided upon inclined floors, thereby preventing the tangling of the wire, while at the same time the mills themselves are operated from one engine, and in such a way as to protect the
10 workmen working upon the third mill from the revolving shaft operating the fourth mill.

Our invention will be readily understood from the accompanying drawings, in which—
20 Figure 1 represents a sectional elevation showing the method of driving the rolls and part of the floor-plans; Fig. 2, a detailed view on the opposite side of the last two rolls; Fig. 3, an elevation of the first set of rolls; Fig. 4, an elevation of the second set; Fig. 5, an elevation of the third and fourth sets, and Fig.
25 6 a plan view showing the general arrangement of the mill.

We do not in this application claim or describe in full detail the method of driving the four sets of rolls at increasing speed, the same having been fully described in the application of Horace S. Smith and William Garrett for United States Letters Patent, filed on
30 the 15th day of June, 1889, Serial No. 314,515.

The four sets of rolls A, B, C, and D are driven from the shafts E, F, G, and H, each at a velocity higher than the preceding one, as shown, the power being applied directly to the shaft E, and thence increased in velocity by
40 belting. These rollers may be of any desired shape, and we do not claim any specific form thereof, our invention being principally exhibited in the combinations of inclined floors and driving mechanism of the last two sets of rollers C D.

The general operating-floor of the mill is represented at O, upon which the rods from the first two mills A and B pass. The second
50 two mills C and D are capable of simulta-

neously running two or more rods, as shown in Fig. 6, and they deliver upon both sides upon inclined floors, so as to prevent the tangling of the double wires. The floor of the third mill C is level, as at J, and then inclined, as at K, to the right of the apparatus, as shown in Fig. 1. The floor to the right of the fourth set of rolls is likewise level, as at L, and inclined, as at N. Upon the left of the rolls C and D the floor is inclined, as at M, Fig. 1, and an over-floor V may extend partially over the floor M, if desired. The floor M may be provided with guiding-chutes O', if desired, tending to keep the loops in the proper relations. The driving-shaft H, which drives the rollers D, passes beneath the floor J, thereby protecting the workmen who are operating the rollers there from the shaft H. We do not in this application describe fully the shape of the passes in the rolls, whether oval or square, or the construction of the repeating-troughs P, which may be of any suitable and practical arrangement, and are well known in the art.

The operation of our apparatus can now be understood. The billet is passed through the first set of rollers A the desired number of times and issues as a rod R. Passing then through the rollers B it is again reduced in size. The rollers A B are of sufficient capacity to supply double the metal required by a single set of rollers C D, and these rollers are therefore arranged to simultaneously pass two rods R R' and convert them into the finished wire. The loops of wire passing out from both sides of the rollers C D are delivered down upon the sloping floors K, M, and N, which prevent tangling of the wire by allowing it to glide down as it is delivered from the rollers. The level floors J L afford platforms for the workmen to stand, and at the same time the floor J protects the workmen from the shaft beneath.

It is to be observed that the rollers C D are both driven from one end only, the other end being free. Power is not transferred from the shaft of the roller C to the shaft of the roller D; but each has an independent driving-shaft. By this arrangement we are enabled to avoid the well-known unequal wear
100

hitherto experienced, which wears the brasses unequally, and as a result makes imperfect rods.

It is to be observed that the rolls C D are both
5 driven from the initial end, thereby transmitting no power through the last set of rolls C D, which are thus left entirely at liberty so far as transmitting power is concerned. By this arrangement we are enabled to keep the
10 finishing stand of rolls in much better line and shape than when the power is transmitted through them, as in the ordinary manner in Garrett mills.

What we claim as our invention, and desire
15 to secure by Letters Patent, is—

1. The combination, in a rod or wire mill, of a roller-mill with a level floor adjacent thereto placed intermediate between two inclined floors upon which the wire delivered
20 from both sides of said mills rests in the process of manufacture, substantially as described.

2. The combination, in a rod or wire mill, of the rollers C D, floors J, K, L, N, and M,
25 and shaft H, the said shaft passing beneath the floor J and above the floor N, substantially as described.

3. The combination, in a wire or rod mill,

of the rolls A, B, C, and D, driven by shafts E, F, G, and H from one motor and at increasing velocities, the inclined floors K, N, and M, and the floor J, protecting the shaft H, substantially as described. 30

4. The combination, in a wire or rod mill, of two sets of rolls, the driving-shafts of which
35 are in different horizontal planes, one of said shafts extending past the other set of rolls, a protector over the latter shaft, and means for applying power at the corresponding ends of the shafts, substantially as described. 40

5. The combination, in a rod-mill, of four sets of rolls A B C D, each driven from an independent shaft, the last two sets of rolls being arranged one beyond the end of the other and between two inclined floors, substantially as described. 45

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HORACE S. SMITH.
CHAS. PETTIGREW.
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Witnesses:

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