

(No Model.)

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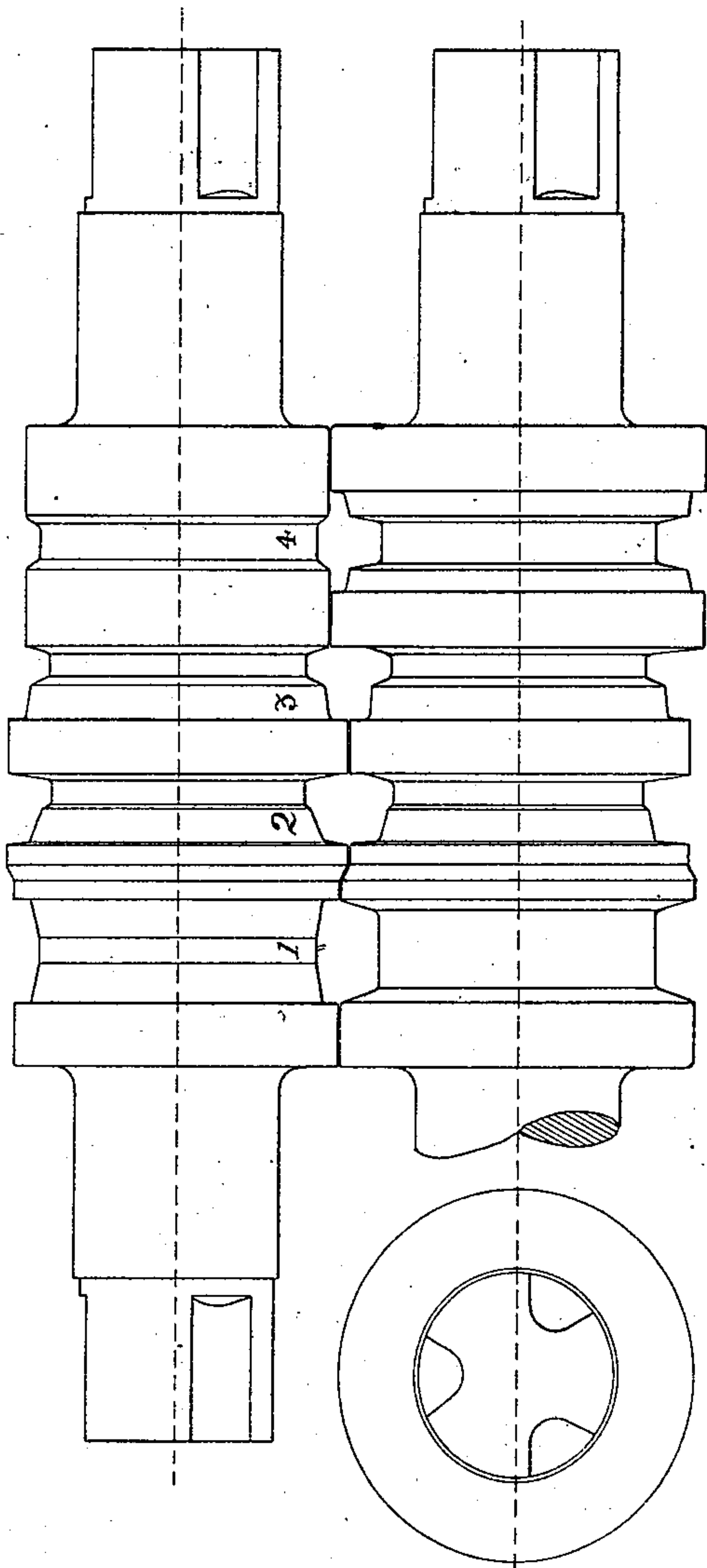
A. J. MOXHAM.

ROLLS FOR ROLLING CENTER BEARING GIRDER RAILS.

No. 355,781.

Patented Jan. 11, 1887.

Fig. 1.



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(No Model.)

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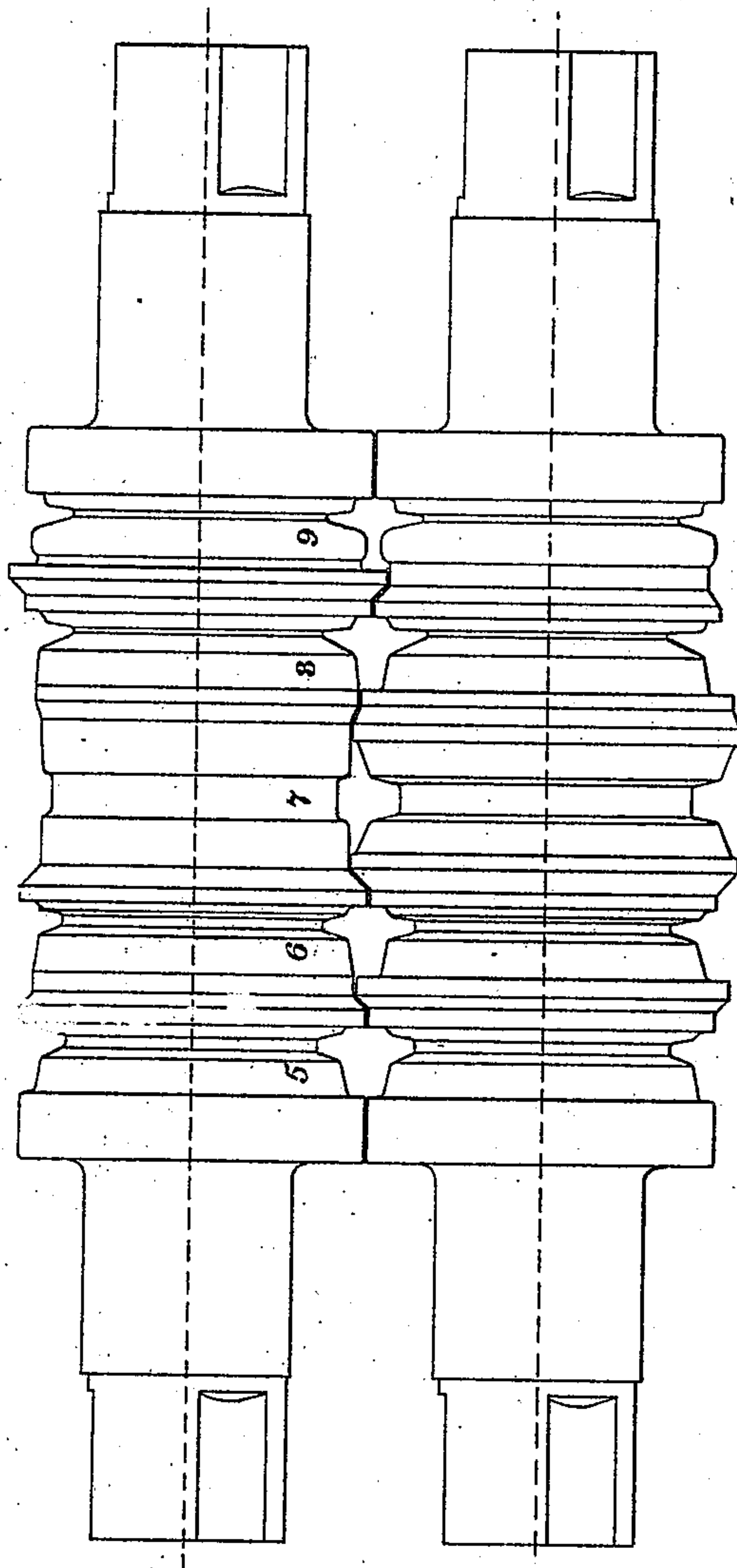
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Fig. 2.



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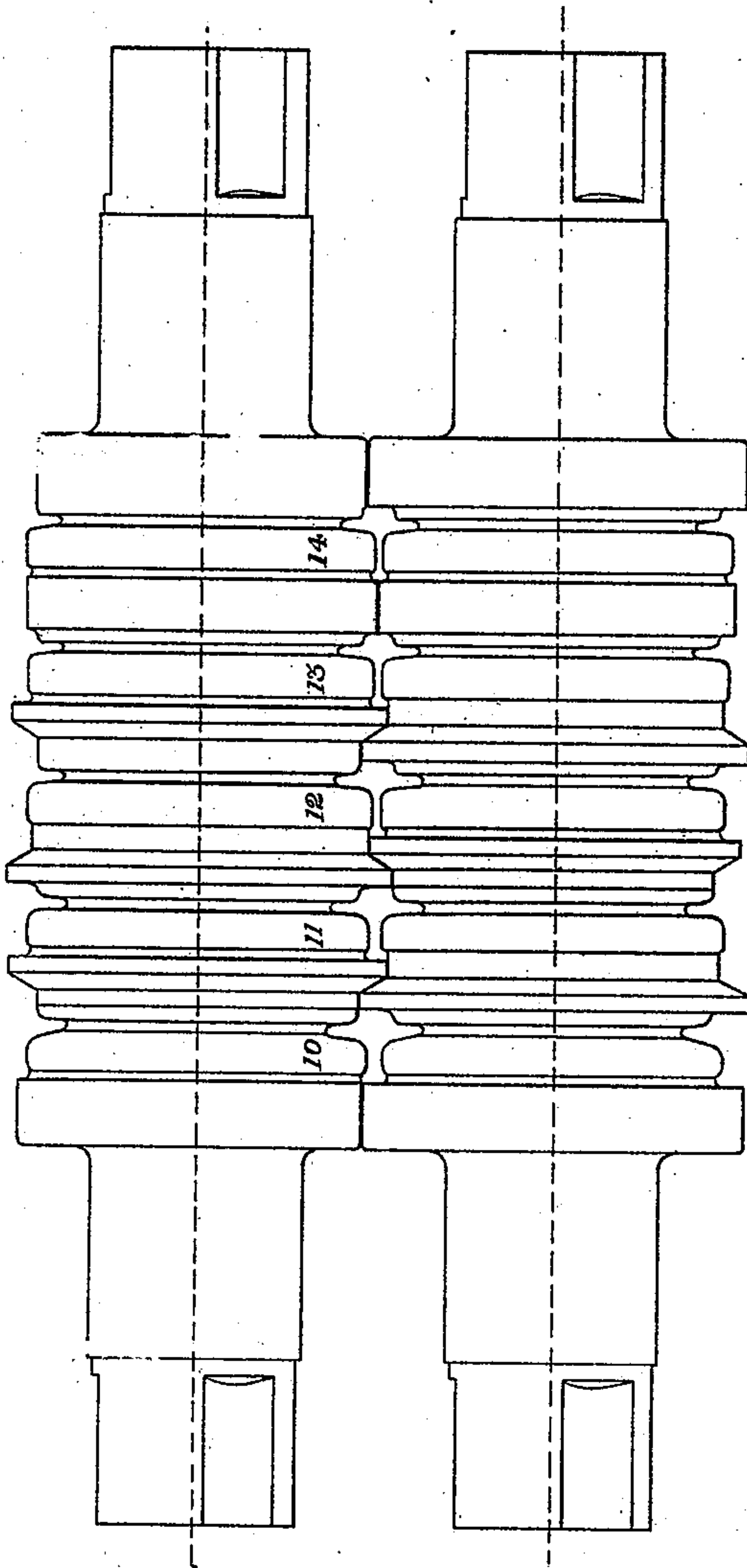
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Fig. 3.



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UNITED STATES PATENT OFFICE.

ARTHUR J. MOXHAM, OF JOHNSTOWN, PENNSYLVANIA.

ROLLS FOR ROLLING CENTER-BEARING GIRDER-RAILS.

SPECIFICATION forming part of Letters Patent No. 355,781, dated January 11, 1887.

Application filed September 16, 1886. Serial No. 213,672. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR J. MOXHAM, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented new and useful Improvements in Rolls for Rolling Center-Bearing Girder-Rails, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to facilitate the rolling of girder-rails in which the lower flanges are dispensed with, the heads or other parts remaining of desired proportions.

The invention consists in the shape or conformation of the passes introduced in the rolls illustrated in the accompanying drawings, as hereinafter described, and set forth in the claim.

In said drawings, Figure 1 shows a pair of rolls in front elevation, "two-high," the lower roll being also shown in end view to the left. Figs. 2 and 3 also show, each in front elevation, a pair of rolls, completing the train for rolling the finished rail. Fig. 1 contains four passes as numbered on said figure. Fig. 2 contains five passes, numbered from 5 to 9, inclusive. Fig. 3 contains five passes, numbered from 10 to 14, inclusive.

Of said passes, No. 1 is a flattening pass, Nos. 4 and 7 are dummy passes, and all the rest are edging passes.

The hot metal is first entered into and passed through pass No. 1, and then successively, as will be well understood in the art, through the remaining passes, the rail emerging complete from pass No. 14.

Some advantages arising from the action obtained in the course of rolling by these rolls will now be set forth.

In rolling center-bearing girder-rails of the shape shown, in which the lower flange is dispensed with, it is a more difficult problem to secure the more rapid reduction of the web and lower portion of the rail, as compared with the large volume of material in the head, than would be the case were the lower flange existing, for with a lower flange of the proportions usually adopted in girder-rails, which proportions are largely influenced by the contingencies of manufacture, the extreme points

are much farther from the center line of the rail, and these exposed points or edges of the lower flange serve largely to retain the mass of metal while the center or web portion is being rolled down to the desired thickness. By this means the tendency to wire-draw is to a great extent neutralized. The absence of this effect in the rolls herein shown is compensated for by the special provisions herein made.

It will be noticed that in passes from 1 to 9, inclusive, provision has been made for rapidly working down this lower portion of the rail, and at the same time, by means of the action of the dummy passes on the head portion of the rail, to secure a sufficient width of head to compensate for the wire-drawing that ensues in the finishing passes 10 to 14, inclusive. In these passes the reduction of the web portion is more rapid in Nos. 10, 11, and 12 than subsequently, the elongation of the head portion being at the same time sufficiently great to equalize the flow of the metal and to overcome the tendency to curvature beyond safe limits.

I do not confine myself to the exact relative locations of the dummy passes and edging passes in the rolls, as it is obvious that by slightly altering in detail the proportions of the passes their relative locations may be changed within certain limits—as, for example, the dummy pass No. 4, by a slight change, can be made to replace either pass No. 3 or pass No. 5; and so also with pass No. 7, which may be made, by slight change, to replace either pass No. 6 or pass No. 8. These passes herein described may be distributed in rolls "three-high" instead of "two-high," as shown, if preferred, and also, while the passes as distributed in the drawings are shown in Figs. 1 and 2 as what are technically called "first" and "second" roughing, and in Fig. 3 as "finishing," yet, as will be well understood in the art, these divisions between the finishing and roughing passes, as thus distributed, are purely arbitrary, the main point in practice being to distribute the passes used to the best advantage in the particular train of rolls employed, the lengths and diameters

of which will vary according to local circumstances.

Having thus fully described my said improvements, as of my invention I claim—

- 5 A set of rolls for rolling center-bearing girder-rails, provided with passes having substantially the shapes or conformations respect-

ively shown in the accompanying drawings, and numbered from 1 to 14, inclusive, substantially as set forth.

ARTHUR J. MOXHAM.

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