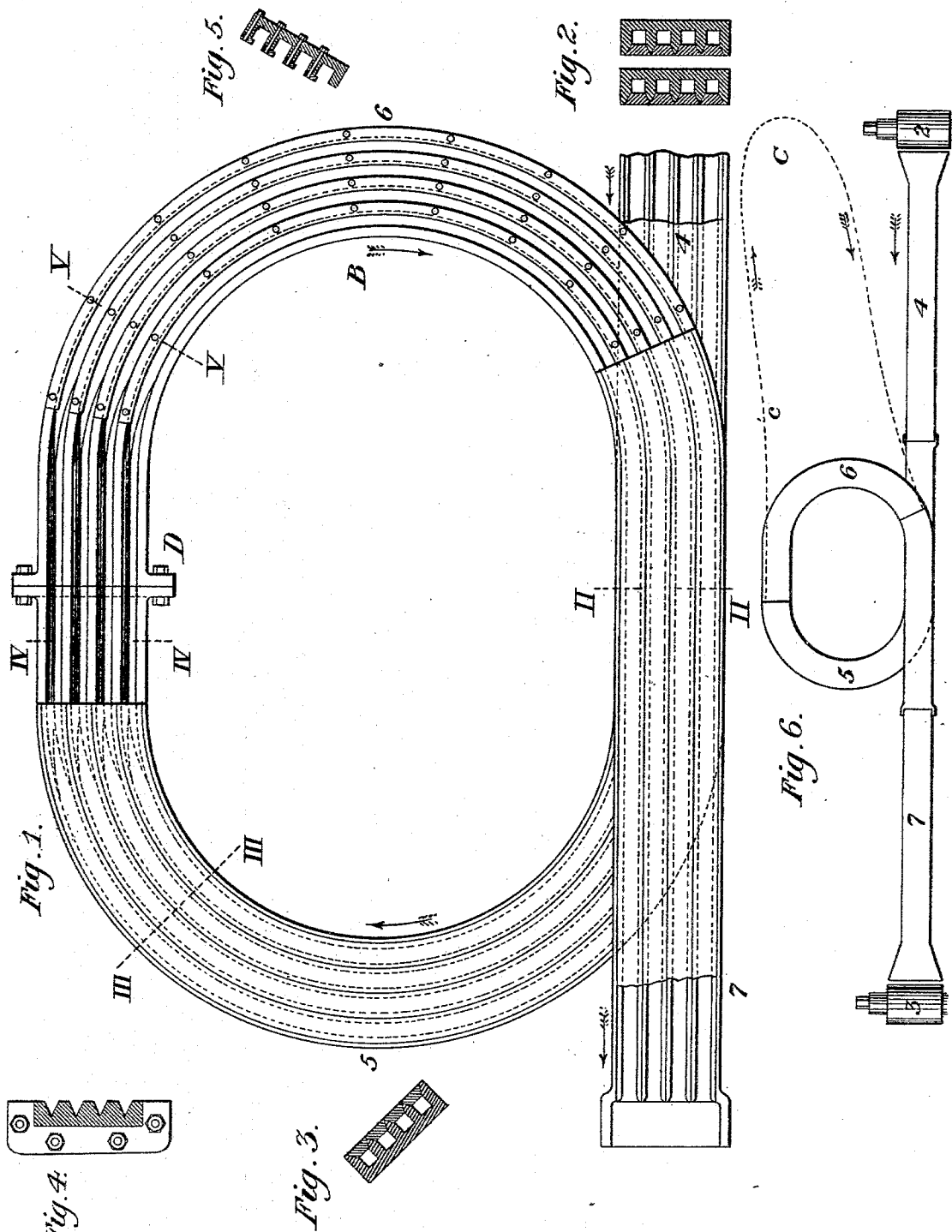


(No Model.)

P. L. DAY.
ROLLING MILL GUIDE.

No. 514,447.

Patented Feb. 13, 1894.



WITNESSES.

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UNITED STATES PATENT OFFICE.

PATRICK L. DAY, OF CLEVELAND, OHIO.

ROLLING-MILL GUIDE.

SPECIFICATION forming part of Letters Patent No. 514,447, dated February 13, 1894.

Application filed May 25, 1893. Serial No. 475,438. (No model.)

To all whom it may concern:

Be it known that I, PATRICK L. DAY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Rolling-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of the device which I employ for deflecting the wire rod, and forming an overfeed loop therein. Figs. 2, 3, 4, and 5 are vertical cross-sections on the line II—II, III—III, IV—IV, and V—V, respectively, of Fig. 1. Fig. 6 is a diagram plan view on a smaller scale, showing the guide which connects the rolls of a continuous set.

The object of my invention is to provide means for disposing of the overfeed of the metal rod as it passes between the rolls of a continuous set in a rolling mill. The difficulty in controlling such overfeed has heretofore caused the manufacturers of continuous sets of rolls generally to proportion the gearing or diameters of the rolls so as to take up the rod by one set as rapidly as it is delivered by the set behind, although the presence of an overfeed is an advantage because it prevents pulling on the rod, and avoids the difficulty which is experienced in continuous mills of having the first and last end of the rod finned, because these parts of the rod are not subject to such tension as is usually exerted upon the intermediate portion. In order to provide for overfeed between the rolls of a continuous set I employ a guiding and deflecting device so arranged and constructed as to cause the rod at a portion of its length between the rolls to assume the form of a loop, one branch of the loop extending laterally and the other branch being reflexed and extending to the rolls across the path of the first branch. The overfeed is formed at this loop and extends preferably in a direction parallel with the line connecting the rolls of the continuous set, though, within the scope of the broad claims of my application, this is not essential, for the overfeed may extend in a direction transverse to this line, as I shall explain later. The means which I prefer to use for forming this loop are shown in diagram in Fig. 6 and in plan view in Fig. 1.

2 and 3 represent adjacent rolls of a continuous set through which the rod travels in the direction of the arrow. These rolls are connected by a trough or channel 4. At an intermediate part of its length the trough extends laterally and is thence reflexed and extends again across the line of the first lateral extension, and above or below the same, to the rolls 3 so as to constitute a deflecting guide for the rod.

In the drawings, 5 represents the first lateral extension of the trough, and 6, 7, the recurrent branch leading toward the rolls 3. The rod therefore in its passage from the rolls 2 to the rolls 3, is caused, by the portion 5, 6, of the trough to travel in the form of a loop passing first laterally and then extending back across its path. The trough 4 and the looped portion thereof is covered in order to prevent the escape of the rod, except that a part of the looped portion, which I indicate in the drawings by the reference letter B, is left open, so as to permit of the escape of the overfeed of the rod at that place.

In the drawings I show the open portion B situate at the rear end of the loop, so that the overfeed C, which escapes therefrom, will travel in a direction substantially parallel with the line connecting the rolls 2 and 3; but it will be understood that the opening B may be located at other portions of the loop, its position being determined by considerations of convenience, depending upon the construction of the mill, for the overfeed will escape and travel in a direction away from the opening, and the floor of the mill opposite to the opening should therefore be suitably arranged to receive it.

When the mill is provided with my improvement, the rolls 2 and 3 may be so geared or proportioned in diameter that the rod shall be delivered from the rolls 2 more rapidly than it is taken up by the rolls 3, thus creating an overfeed and avoiding the objections incident to the use of a continuous set of rolls which I have described above. As the overfeed passes from the opening B, the first or primary branch *c* of the part of the rod constituting the overfeed is impelled by the direct propelling force of the rolls 2, and the overfeed will therefore travel over the floor and can easily be disposed of.

The trough which connects the rolls and is looped as above described is composed of several distinct parallel channels intended to accommodate the passage of more than one rod at a time through the mill, and in order to make the escape of the rod from the open part of the looped trough easy and regular, I prefer to provide a part of the side of the trough which I show at D in Fig. 1, and which is open at the top, with channels of angular shape, as shown in Fig. 4. The angular shape of the channels at this place causes the rod to travel in a central position through them. It also makes it easier for it to escape, and causes the overfeed to leave the trough at this part and to travel regularly in an outward direction. This construction although desirable is not essential to my invention as broadly defined.

Within the scope of my invention as defined in the claims, I may make various modifications in the form and construction of the parts of the apparatus, although those which I have shown I deem to be best suited for the purpose.

My invention broadly considered relates to a mill having suitable guiding and deflecting devices arranged to cause the rod to travel in the form of a loop which crosses the path of its first branch, and in carrying into practice the principle of this invention skilled mechanics may employ mechanism of different forms. I claim—

1. In a rolling-mill, the combination of two

or more sets of continuous rolls, and an intermediate deflecting guide arranged to cause the rod to travel in a loop the second branch of which crosses the first; substantially as described.

2. In a rolling-mill, the combination of two or more sets of continuous rolls, and an intermediate trough connecting the rolls and having a lateral reflexed looped portion, part of which is open to permit escape of the overfeed; substantially as described.

3. In a rolling-mill, the combination of two or more sets of continuous rolls, and an intermediate trough connecting the rolls and having a lateral reflexed looped portion, part of which is open to permit escape of the overfeed, said opening being at an end portion of the loop to project the overfeed in a direction substantially parallel with a line connecting the rolls; substantially as described.

4. In a rolling-mill, the combination of two or more sets of continuous rolls, and an intermediate trough connecting the rolls and having a lateral reflexed looped portion, part of which is open to permit escape of the overfeed, and is provided with an angularly channelled way for the rod; substantially as described.

In testimony whereof I have hereunto set my hand.

PATRICK L. DAY.

Witnesses:

W. B. CORWIN,
H. M. CORWIN.