

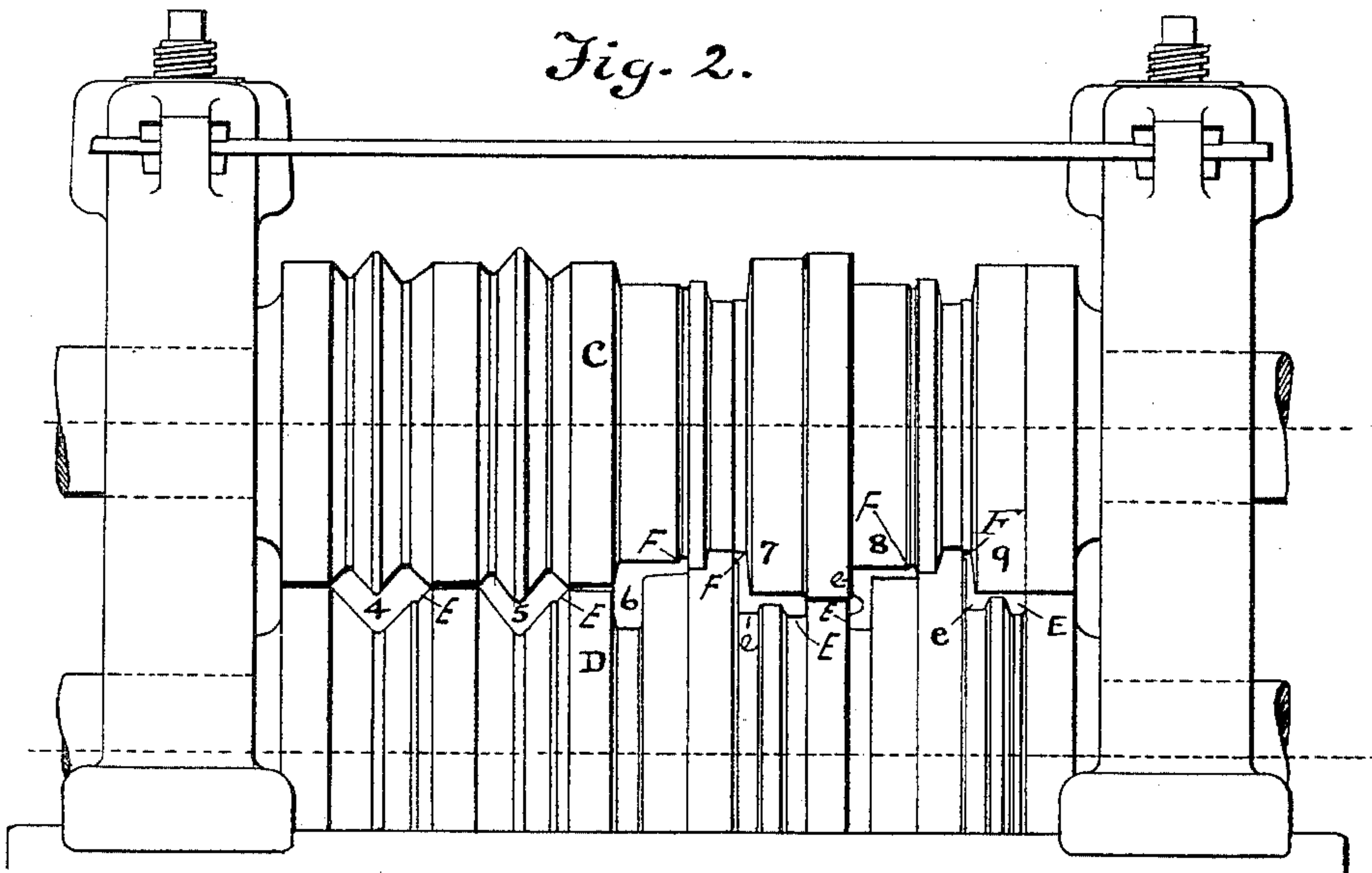
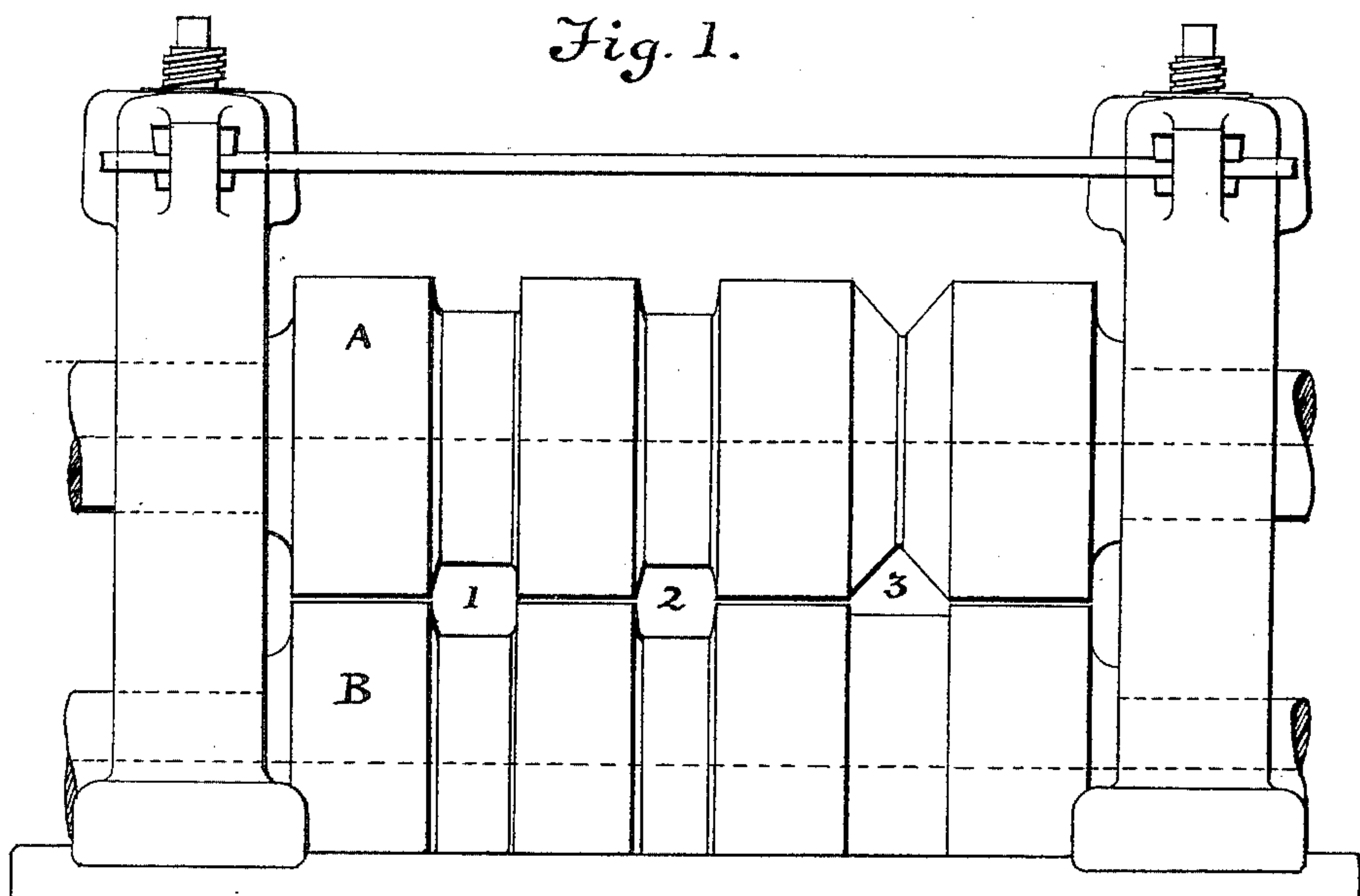
(No Model.)

E. SIMPSON.

MILL FOR ROLLING SIDE FLANGED GUARD RAILS.

No. 394,021.

Patented Dec. 4, 1888.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## MILL FOR ROLLING SIDE-FLANGED GUARD-RAILS.

SPECIFICATION forming part of Letters Patent No. 394,021, dated December 4, 1888.

Application filed February 15, 1888. Serial No. 264,136. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD SIMPSON, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented new and useful Rolls for Rolling Side-Flanged Guard-Rails, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to provide a set of rolls for facilitating the rolling of side-flanged guard-rails having a cross-section indicated by the last or final pass shown in the accompanying drawings.

The invention will first be described in detail, and then set forth particularly in the claim.

In the accompanying drawings, Figure 1 shows in front elevation a pair of preliminary or reducing rolls. Fig. 2 shows in similar elevation a pair of rolls containing shaping and finishing passes.

In said figures the several parts are indicated by letters and numbers of reference as follows:

The upper roll in Fig. 1 is indicated by the letter A and the lower roll by letter B.

The bloom is entered at pass No. 1, and successively rolled through each pass until it assumes the shape indicated by pass No. 3. From pass No. 3 the hot metal is next run successively through the passes numbered from 4 to 9, inclusive, between the rolls C D of Fig. 2. Pass No. 9 is a finishing pass. Said latter pass indicates the shape in cross-section of the finished rail.

Pass No. 3 is a triangular pass, the bloom being entered therein on the diagonal. Nos. 4 and 5 are what may be termed "offset angular passes." It will be observed that in these two passes the forming of the guard portion E is commenced, thus providing for an equalization of flow in the subsequent passes. The advantage of this is obvious when the greater height of the guard portion E in the finished section, indicated by pass No. 9, is observed. In said pass the metal in finished shape of rail-section is rolled upside down, as will be perceived. This is preferable on account of

the delivery of the long side flange, though it is not essential, as the process of rolling could be equally as well effected by reversing the rolls, merely making such difference in their diameters as would be necessary to effect straight delivery on such reversal. In passes Nos. 6 and 8 the side lug, F, on the angle-flange, is formed on the horizontal. In passes Nos. 7 and 9 the forming of this portion is done with the side flange vertical. In passes 6 and 8 there is no grooving action on the head portion, said grooving action being confined to passes 7 and 9.

The rolls are mounted in housings in the usual manner, and starting with the shape of blank, somewhat like that made in pass No. 3, preparatory for the next pass, it is not important how said preparatory shape is obtained by previous processes.

It will be noticed that the guard E of the finished rail is of substantial proportion and protrudes above the level of the head of the rail.

I do not limit myself to the exact number or distribution of passes shown, as the number of passes and their distribution into roughing or reducing and finishing passes is to a certain extent arbitrary, being influenced by the length and diameter of the rolls, a light train of rolls calling for more passes with lighter draft than a heavy roll train. It is also evident that the rolls can, if desired, be made three high instead of two high, as shown.

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

A set of rolls for rolling side-flanged guard-rails having super-elevated guards, as E, provided with passes, substantially as hereinbefore described, having the conformations indicated in the accompanying drawings by the numbers from 4 to 9, inclusive, substantially as and for the purposes set forth.

EDWARD SIMPSON.

Witnesses:

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