

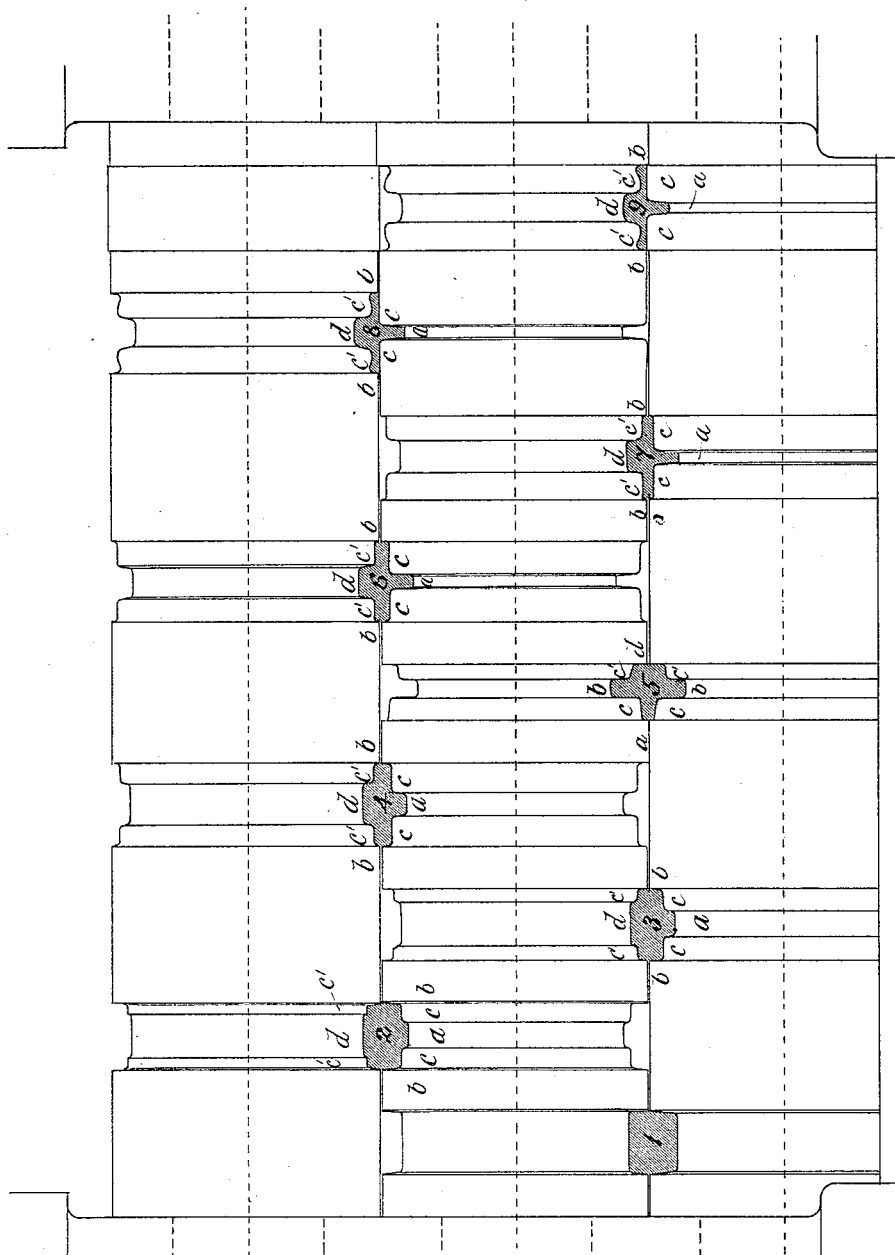
(No Model.)

A. J. MOXHAM.

ROLLS FOR ROLLING GIRDER RAILS.

No. 344,396.

Patented June 29, 1886.



Witnesses:

Francis P. Reilly
John Tully.

Inventor

A. J. Mopham
by P. H. Toorhus
Attorney

UNITED STATES PATENT OFFICE.

ARTHUR J. MOXHAM, OF JOHNSTOWN, PENNSYLVANIA.

ROLLS FOR ROLLING GIRDER-RAILS.

SPECIFICATION forming part of Letters Patent No. 344,396, dated June 29, 1886.

Application filed February 13, 1886. Serial No. 191,880. (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 a new and useful Improvement in Rolls for Rolling Center-Bearing Girder-Rails, which invention or improvement is fully set forth and illustrated in the following specification and accompanying drawing.

The object of this invention is to roll two finished shapes of rails in the same set of rolls—that is, without changing the rolls for the production of either finished shape.

The invention will first be described as illustrated in the accompanying drawing, and then particularly set forth in the claims.

In said drawing is illustrated a set of rolls “three-high,” containing nine “passes,” numbered in their respective order, as shown, certain parts of each of said passes being designated by letters, as hereinafter described. Pass No. 5 is an edging-pass. All the other passes are flattening-passes.

The hot billet is passed first through pass No. 1, and then in successive rollings through all the remaining passes (turned upon edge when put through pass No. 5) when it is desired to have a rail of a cross-section indicated by the shape of pass No. 9; but if a rail be desired of a cross-section having the shape indicated by pass No. 7, the rolling is stopped after putting the metal through said pass. The billet, before entering pass No. 1, may be reduced to suitable dimensions therefor by rolling it down in any ordinary passes or rolls.

The section-lined space of the several passes shows, like a templet, the shape of the metal when leaving each individual pass.

From pass No. 1 to No. 4, inclusive, the part *a* of the metal is successively reduced in width. It is also increased in depth by the relative actions of the rolls—that is, while the wire-drawing and draft undergone by the mass during its passage through the passes reduces the point *a*, or rather the whole vertical depth or width *a d*, at the same time the reduction at the points *c e* is in still greater ratio, resulting in an increased depth of the part *a*, considered as a whole. The greater draft on the sides *c e* is partly provided for by ample spreading-room sidewise, by which means

the excessive elongation and wire-drawing of this part of the mass is neutralized. The effect of these flattening-passes is to constantly widen the mass, and while the reduction of the sides *c e* tends to relatively lengthen the part *a*, it does so to only a given extent in each pass, and the extent to which it does so bears a fixed proportion to the extent of widening in the direction *b b* effected. The one must accompany the other. In pass No. 5, however, the edging-pass, the excess in width imparted to the metal in the previous rollings is remedied. One only of such passes is shown; but two or more of such passes may be introduced, if preferred. In such pass or passes excessive draft is put on the parts *c e* and *e' e'*, and ample room is also provided for all necessary spread at the points *a* and *d*, and at the points *b b*, so that the now vertical dimensions of the whole mass are excessively reduced, the greatest excess of reduction being at the points *b b*.

In passes Nos. 6 and 7 the metal is reduced in the direction of the web *a* and head *d*, and spread in the direction *b b* by thinning down the side parts, *c e c e'*, such spread being now permissible by the reduced width effected by the edging-pass. In pass No. 7 is thus rolled out a rail of a finished shape, available for many purposes, but which may be further rolled, in passes Nos. 8 and 9, into another form of cross-section, in which the rail is further elongated and lightened in weight per lineal yard by the grooving out of the side parts, *c e c e'*, as illustrated in the drawing at said passes.

If a rail of excessive width be desired, it will be preferable to omit pass No. 5 and use flattening-passes throughout, the course in this case being governed by the dimensions desired in the finished rail of the form given.

The rails shaped by passes Nos. 7 and 9 are both of forms in demand. They can, therefore, be rolled to advantage in the same set of rolls, and the cost and delay of changing rolls for one or other of said forms be thus avoided.

I do not confine myself to the use of only three-high rolls, nor to but one edging-pass like No. 5, as it may be desirable to more gradually shape the metal to enter pass No. 6 by the use of more than one such pass as No.

5, or in the case of rails of great width to omit pass No. 5 altogether.

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

1. A set of rolls for rolling metal rails provided with passes, substantially as hereinbefore described, having the conformations indicated in the accompanying drawing, by the
10 numbers from 1 to 9, inclusive, substantially as and for the purposes set forth.

2. A set of finishing-rolls for rolling metal rails, provided, substantially as hereinbefore described, with one or more edging-passes, as

indicated by the number 5, and with flattening-passes having the conformations, respectively, indicated in the accompanying drawing, whereby an excess of depth imparted in said edging pass or passes to the head and web of the partly-finished rail is caused to neutralize
15 the reducing action of the subsequent flattening-passes, substantially as and for the purposes set forth. 20

ARTHUR J. MOXHAM.

Witnesses:

JOHN TULLY,
FRANCIS P. REILLY.