

(No Model.)

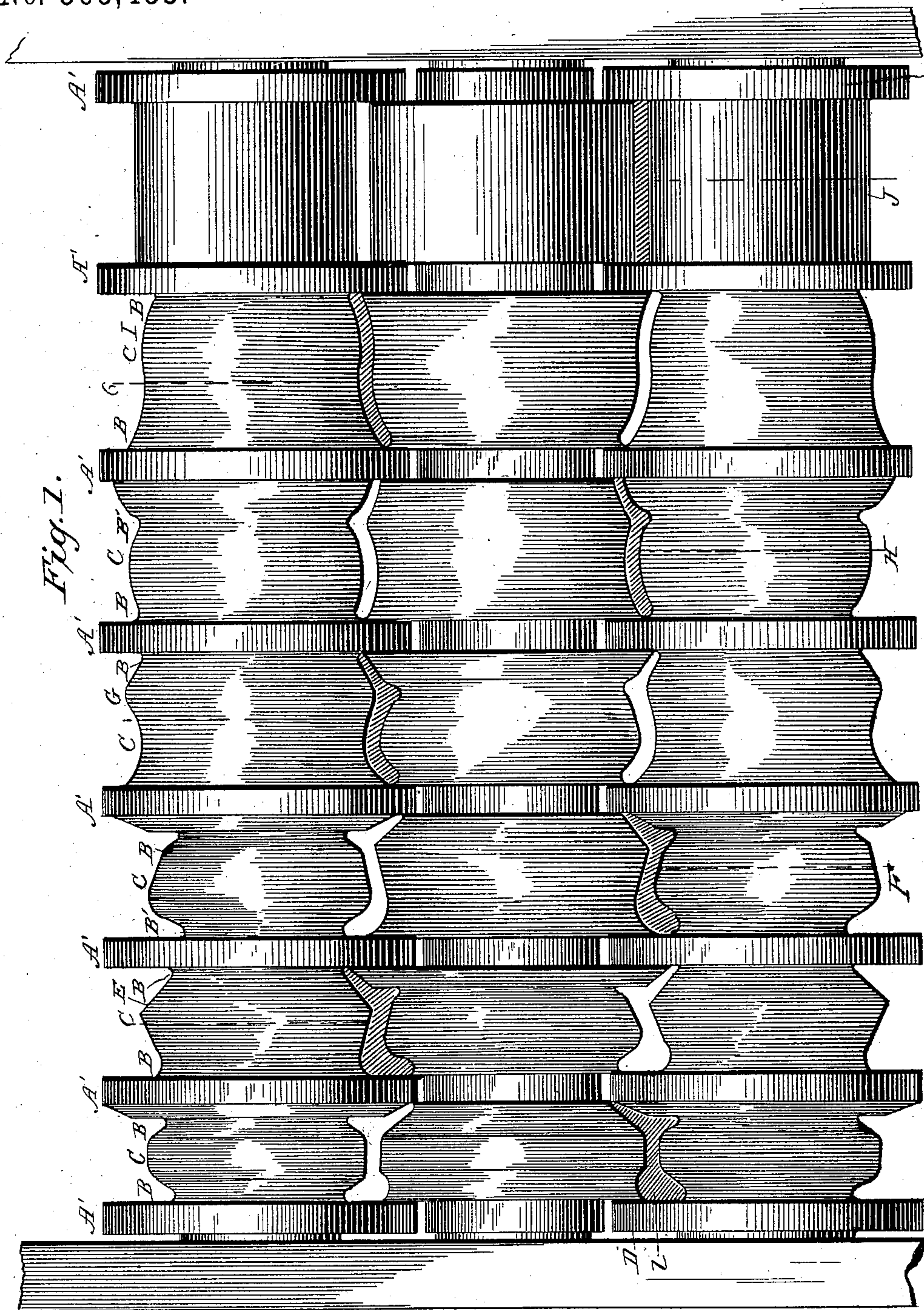
2 Sheets—Sheet 1.

E. D. WASSSELL.

ROLLS FOR REDUCING OLD RAILS TO FLAT BARS.

No. 365,453.

Patented June 28, 1887.



Witnesses
Fred G. Dieterich
Mrs E. Dyre.

Inventor
E. D. Wassell
By his Attorneys
Johnston, Reinohl & Dyre

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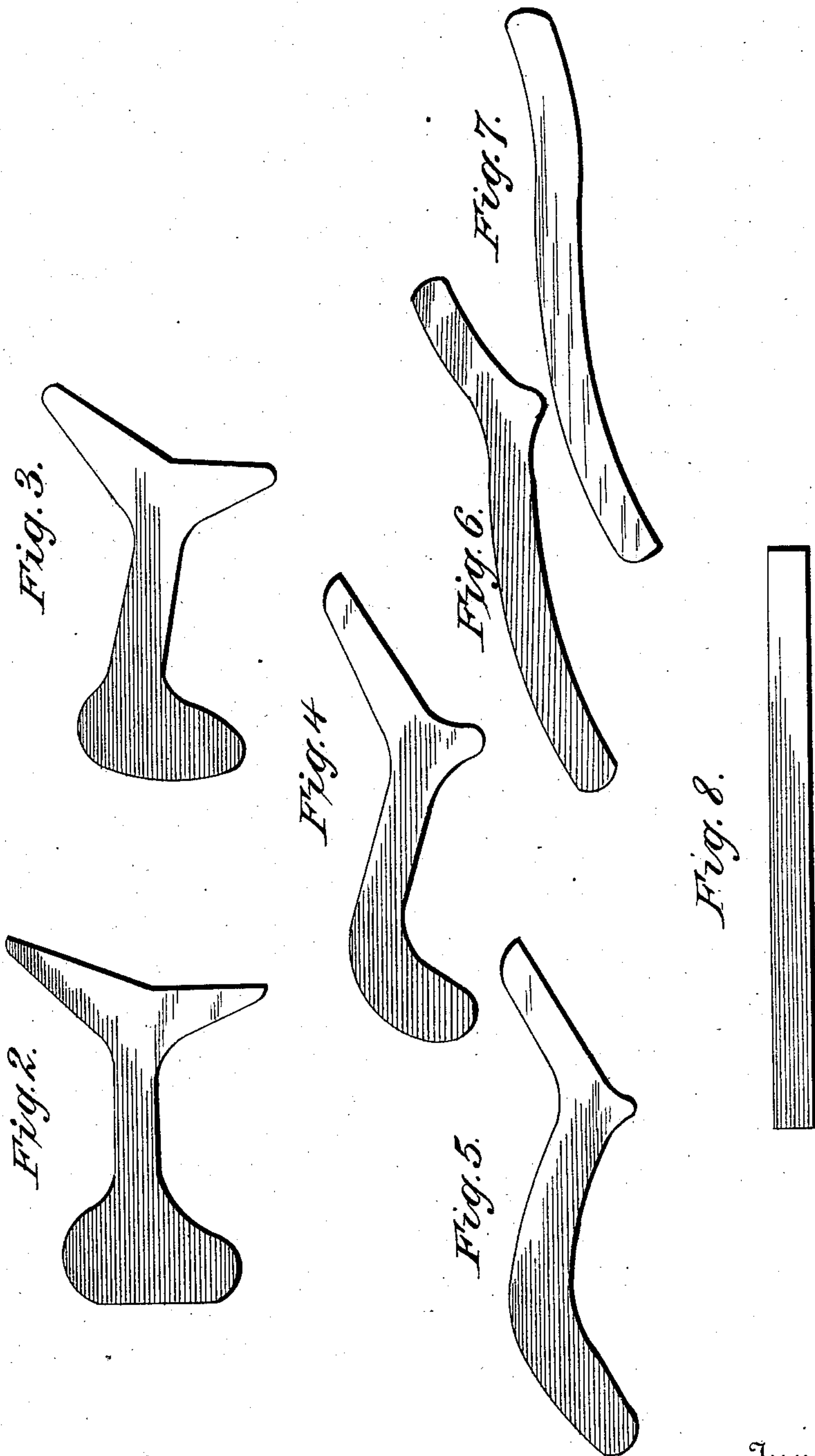
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UNITED STATES PATENT OFFICE.

EDWIN D. WASSELL, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO ANN ISABELLA WASSELL, OF SAME PLACE.

ROLL FOR REDUCING OLD RAILS TO FLAT BARS.

SPECIFICATION forming part of Letters Patent No. 365,453, dated June 28, 1887.

Application filed June 9, 1886. Serial No. 204,675. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. WASSELL, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rolls for Reducing Rails to Flat Bars; and I do hereby declare the following to be a full, clear, and exact description thereof.

It is a fact well known to skillful rollers that great care is required in the forming of the grooves in the rolls to prevent what is known in the art as "wire-drawing" of the metal or the overlapping of it in the rolling process. What is meant among rollers by "wire-drawing" is one portion of the metal while being acted upon by the rolls moving forward in advance of another portion of the metal, which is caused by the manner in which the different portions of the grooves in the rolls impinge upon the metal in passing through said grooves—that is to say, one portion of the groove impinges strongly upon the metal in one part and slightly in another part, or impinges upon one part or does not impinge at all on another part—hence the part impinged upon travels forward in advance of the part not impinged upon, and the degree of the wire-drawing will in all cases be in proportion to the degree of impingement of one portion of the groove on the metal over that of another portion, and this difference of impingement will determine the amount of wire-drawing that will occur in the rolling process. What is meant by "overlapping" is where two portions of the outer surface of the rail are caused by the rolls to fold the one against the other, and the two oxidized surfaces coming together without a fluxing material between them they will not become united or welded together. This is termed "overlapping." The result is that the plate or finished bar will have seams of irregular shape and depth, which when worked will flay or strip off.

My invention has for its object the rolling of worn-out rails into the form of bars or plates of increased width upon the principle of operation as set forth in Letters Patent of the United States granted to me February 16, 1886, No. 336,272, my present invention be-

ing an improvement upon the invention described in said cited patent.

My invention consists in the method and means hereinafter described for reducing the rail to a bar or plate in such manner that wire-drawing and lapping of the metal is avoided.

To enable others skilled in the art with which my invention is most nearly connected to make and use it, I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is a front elevation of a set of three-high rolls. Figs. 2, 3, 4, 5, 6, 7, 8 represent templets or transverse sections of the rail after the several passes through the rolls.

In my former Letters Patent hereinbefore cited I state that "the distinctive feature in my improvement consists in the peculiar form given to the rail after passing through the different grooves in the rolls and the means employed for imparting width to the bar through the medium of the projections F and G on one of the rolls, and corresponding grooves, H I, in the other roll, the increased width of the bar being proportioned to the size of said projections and grooves;" and I further state in said patent that "the desired increase of the width of the bar will be dependent upon the width of the grooves** and the size of the projections and corresponding grooves in the rolls."

The peculiarity of the rolls represented in Fig. 1 consists in the peculiar contour of the grooves, projections, and flanges of said rolls. The flanges are marked A, the grooves B, and the projections C throughout the whole series of flanges, grooves, and projections.

The contour or outline of the grooves, projections, and inner face of the flanges is clearly indicated in the templets shown in Figs. 2 to 7, inclusive, and therefore need not be further described, as the skillful roll-turner will readily understand how to construct or turn the rolls by referring to said templets.

By reference to the passes shown in Fig. 1 and the templets in Figs. 2 to 7 it will be readily observed that all of the passes except D are arranged at an angle to the pitch-line or

horizontal plane of the rolls, which is an essential feature in the construction of my rolls, as by it the metal in the head and base of the rail is drawn out or spread laterally in a plane with the web in the act of rolling, thus widening the bar by distending the metal in the head and base in each pass through which it passes from the second to the last angular pass. By this operation of the rolls a bar is produced without lap or seam or wire drawing of the metal.

Another feature of the construction of my rolls to which I attach importance is that the grooves in the rolls which receive the short flange of the base after it leaves the pass D gradually thicken said projection formed by the flange, thus crowding the metal up into the long flange and the web, and preventing the possibility of its turning over to one side and forming a lap.

In the reducing of the worn-out rail it is placed in a suitable furnace and heated to a heat approaching a welding-heat, and then passed between the lower and middle roll, as indicated at 1, by which operation the portion of the head of the rail uppermost is forced down into that portion of the head undermost and into the web, and that part of the foot of the rail undermost is forced up into that part of the foot uppermost, as indicated at 2; and this operation is continued through the several passes marked D, E, F, G, H, and I, and finally passed between the plain portion of the roll, as indicated at J. It will be observed that the first pass at D is between the lower and middle roll and changes the form of the

rail into that indicated in Fig. 2, when viewed in cross section. The second pass is between the upper and middle roll, as at E, and gives the form shown in Fig. 3. The third pass is between the lower and middle roll, as at F, and gives the form shown in Fig. 4. The fourth pass is between the upper and middle roll, as at G, and gives the form shown in Fig. 5. The fifth pass is between the lower and middle roll, as at H, and gives the form shown in Fig. 6. The sixth pass is between the upper and middle roll, as at I, and gives the form shown in Fig. 7, and the final pass is between the lower and middle roll, as at J, and gives the form shown in Fig. 8, which is a plain flat bar of greatly-increased width, which width is due to the several series of grooves and projections in the rolls, as hereinbefore described and represented.

Having thus described my improvement, what I claim is—

This set of rolls having a series of passages provided with flanges, grooves, and projections, constructed substantially as shown, the grooves and projections of the several passages, except the first and the last, being disposed at an angle to the pitch-line or horizontal plane of the rolls, whereby the metal of the head and the base of the rail is distended by each successive operation in said passages.

In testimony whereof I have hereunto set my hand this 13th day of May, A. D. 1886.

E. D. WASSELL.

Witnesses:

A. C. JOHNSTON,
J. J. ARNOLD.