(No Model.)

W. H. GRAHAM & A. C. MILLIKEN.

ROLL FOR REROLLING OLD RAILS.

No. 321,102. Patented June 30, 1885.

Fig 1.

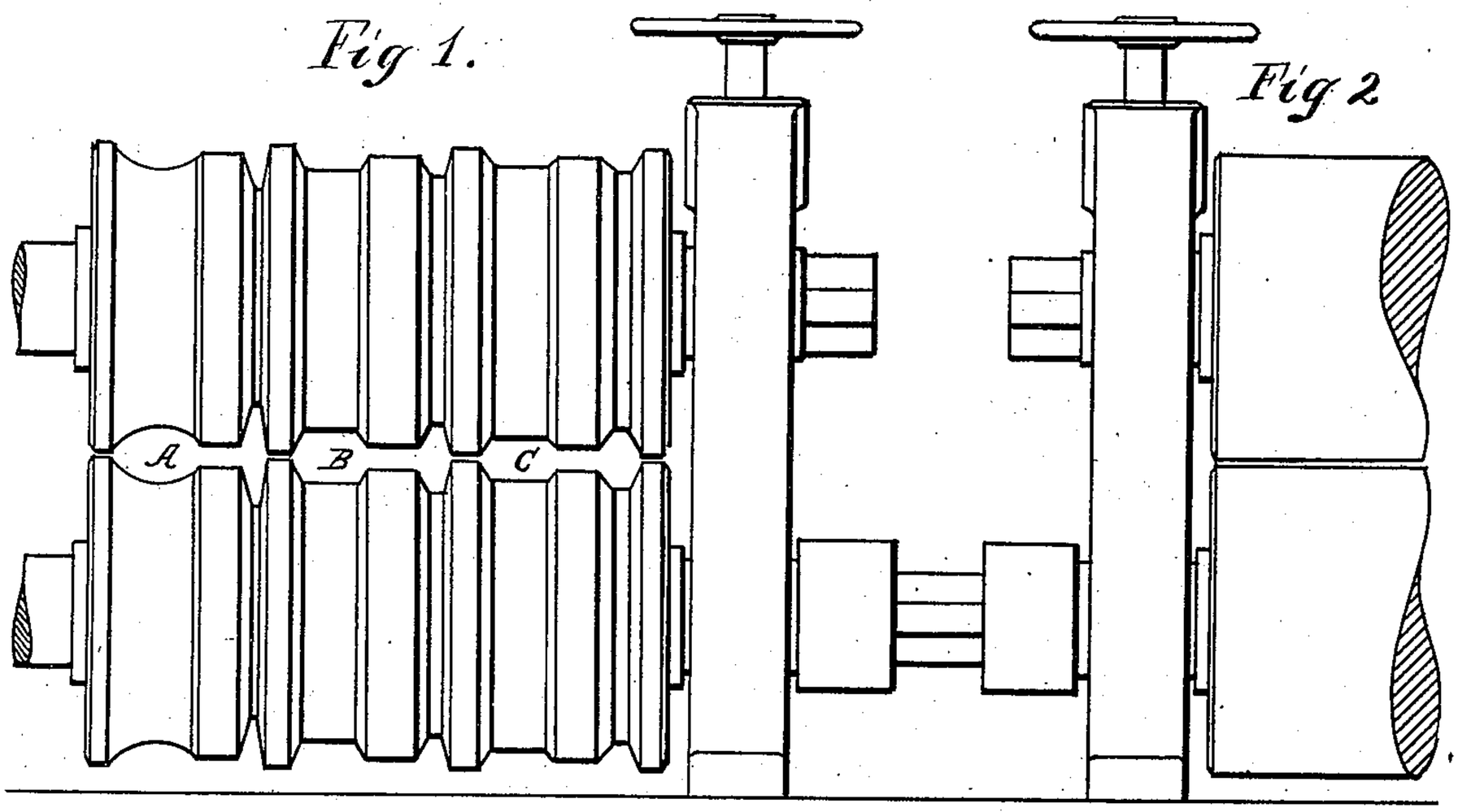

Fig 2

Fig 3.

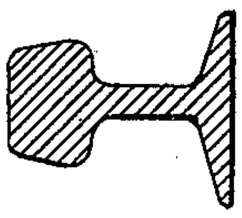

Fig 4.

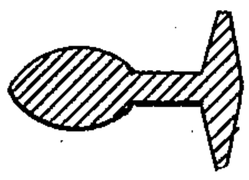

Fig 5.

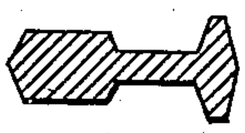

Fig 6.

Fig 7.

Witnesses:
James I Johnston
C. S. Johnston

Inventor.
Wm H. Graham
Allan C Milliken
By A. C Johnston
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM H. GRAHAM, OF PITTSBURG, AND ALLAN C. MILLIKEN, OF MILLVALE, PENNSYLVANIA.

ROLL FOR REROLLING OLD RAILS.

SPECIFICATION forming part of Letters Patent No. 321,102, dated June 30, 1885.

Application filed August 20, 1884. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. GRAHAM, of Pittsburg, in the county of Allegheny and State of Pennsylvania, and ALLAN C. MILLIKEN, of Millvale, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rolling-Mills and Methods of Breaking Down Old Rails; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Our invention has for its object the heating and "breaking down" of worn-out rails, or the croppings of new rails singly or in parts, in contradistinction to the forming of said rails in piles, well-known to the art.

The advantage of heating and breaking down a single rail, or a part of a rail, consists in the fact that the product coming from the roll will have greater solidity and the particles be more thoroughly and uniformly knitted or welded together, so as to form a solid bar, which can be subsequently manufactured into merchantable iron or steel by the processes well known to the art.

Our invention relates to an improvement in rolling-mills and methods of breaking down worn-out rails to a flat bar, as will hereinafter more fully and at large appear.

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

In the accompanying drawings, which form part of our specification, Figure 1 represents the rolling-mill having grooved rolls. Fig. 2 represents the rolling-mill with plain rolls. Fig. 3 is an end view of the rail prior to passing through the groove A of the rolls. Fig. 4 is an end view of the rail after having passed through said groove A of the rolls. Fig. 5 is an end view of the rail after having passed through the groove B of the rolls. Fig. 6 is an end view of the rail after having passed through the groove C of the rolls. Fig. 7 is a transverse section of the rail after having passed through a plain pair of rolls.

The worn-out rails or croppings of rails prior to the breaking-down process are placed in a suitable furnace and heated to a welding heat; or the rails may be cut into any desired lengths and heated to the welding heat, and then by means of suitable appliances well known to the art are conveyed to the rolls and passed through the several grooves A B C consecutively, and finally passed edgewise through the plain rolls, (shown in Fig. 2,) for the purpose of preventing the bar from being wire-drawn or being reduced in thickness in the web; also, for the purpose of spreading the bar to the width desired, after which the product coming from plain rolls may be worked into any desired form of merchantable iron or steel of that grade.

By passing the bar between the plain rolls edgewise, as hereinbefore mentioned, that portion of the bar formed from the head and base of the rails will eventually be brought to the same thickness as that portion of the bar formed from the web. By this operation it will readily be observed that that portion of the bar formed from said web will be of uniform thickness with that portion of the bar formed from the head and base of the rail, and that portion of the bar formed from the web will not be wire-drawn, the advantage of which will be apparent to those skilled in the art of rolling iron or steel, all of which may be accomplished at one heat and one operation.

We are aware that rolls having grooves of various contours have been used for breaking-down rails. Therefore, we do not claim, broadly, such rolls; but

What we do claim is—

In a rolling-mill for worn-out rails, the combination, with a pair of rollers having even or flat surfaces, of a pair of rollers constructed of three corresponding counterpart sections which are formed with grooves of the successive configuration shown, whereby the rail is consecutively brought to the shapes represented, substantially in the manner and for the purposes described.

W. H. GRAHAM.
A. C. MILLIKEN.

Witnesses:
A. C. JOHNSTON,
C. S. JOHNSTON.