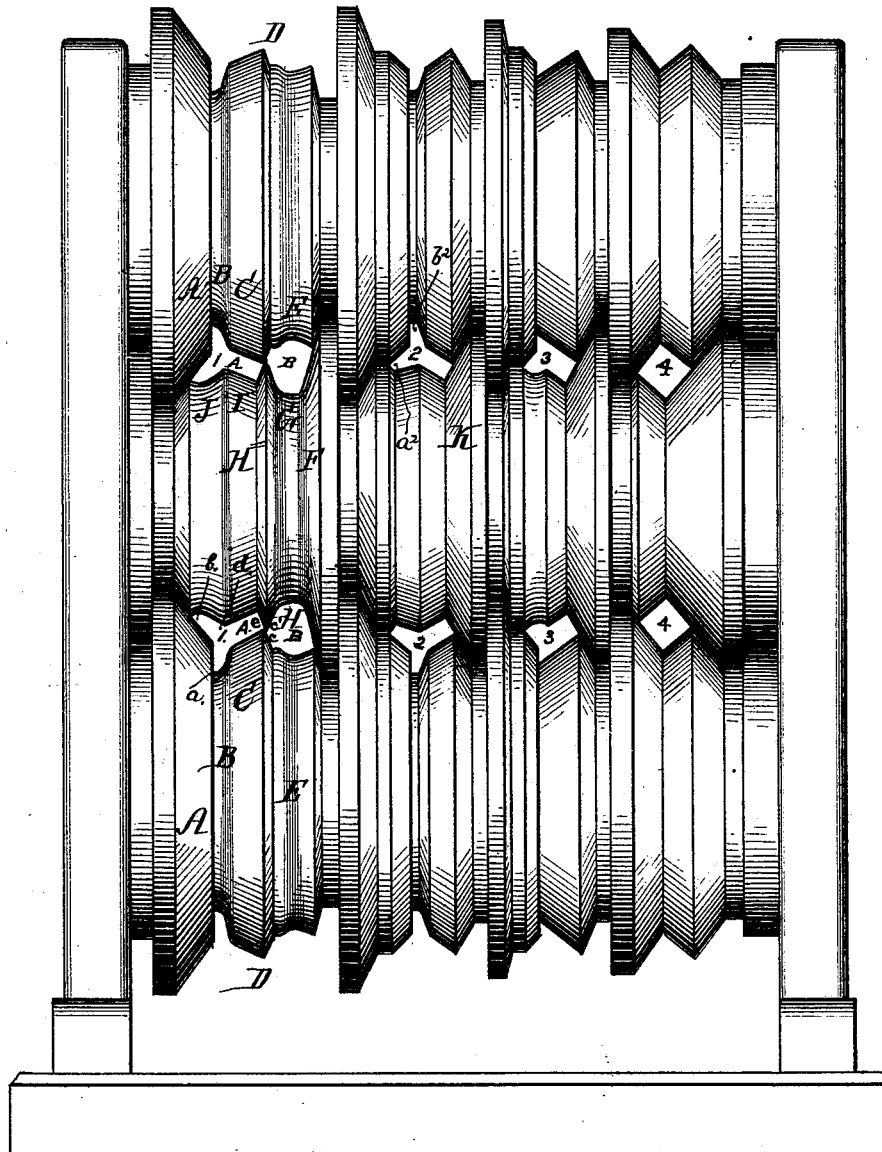


C. HEWITT.
 Roll for Reducing Railway-Rails.
 No. 220,240. Patented Oct. 7, 1879.



Attests
John Doley Jr

Inventor
 Charles Hewitt
 By his Attorney,
W. C. Browning,
Bornall Taylor

UNITED STATES PATENT OFFICE.

CHARLES HEWITT, OF TRENTON, NEW JERSEY.

IMPROVEMENT IN ROLLS FOR REDUCING RAILWAY-RAILS.

Specification forming part of Letters Patent No. **220,240**, dated October 7, 1879; application filed March 31, 1879.

CASE B.

To all whom it may concern:

Be it known that I, CHARLES HEWITT, of Trenton, State of New Jersey, have invented a new and useful Improvement in Rolls for Reducing Railroad-Rails or other Flanged Bars of like character, of which the following is a specification.

My invention relates to the art of reducing old railroad-rails, fag-ends, &c., to bars or billets of a different and preferably of rectangular shape, and is designed for reducing old railroad-rails or other flanged bars having double flanges connected by an intermediate rib, web, or stem.

My invention consists, first, in the mode of preparing a railroad-rail or other flanged bar for subsequent rolling into a bar or billet, which consists, first, in severing the head from the rail; and, second, in bending the flange so that its bent portions shall be at an angle to each other, the head being thereby prepared to be rolled down separately in any ordinary manner, and the web and bent flange being adapted to be consolidated into each other, without crimping or lapping their external surfaces, in a manner and by means of rolls invented by me and described and claimed in an application, Case A, filed contemporaneously with the present.

It consists, second, in the rolls hereinafter described and claimed.

The rolls hereinafter described are provided with grooves of such form as to first simultaneously sever the head from the extremity of the web and bend the flange to form an angle each portion with the other, and are also provided with grooves adapted to reduce the web and bent flange to a bar, said grooves being in form adapted for the consolidation of a triangular flanged bar, as the headless rail, in fact, is, but in principle embodying the construction and operation of the passes described in my other application referred to.

In the drawings I have represented a set of three-high rolls, which conveniently carry out my invention, and I have numbered their grooves 1, 2, 3, and 4, there being two series of the same, similar in construction, but at different angles.

Considering first the two upper rolls, A in the uppermost is a two-faced angular flange

adapted to bend the base of the flange of the rail. B is a corrugation which embraces the top surface of the left-hand (upper) portion of the flange. C is a projection bearing against the upper side of the web. D is a cutting-bead, and E a corrugation embracing the left-hand upper side of the head.

Considering the central roll, F is a flat flange adapted to bear against the tread-surface of the head. G is a corrugation embracing the left-hand under portion of the head. H is a cutting-bead in line with and registering against the upper bead, D, the two constituting the device which severs the head. I is a flat projection bearing against the right-hand (under) portion of the web, and J is a corrugation embracing the top surface of the left-hand portion of the flange.

The lower pass 1 is similar to the upper, save that the relation and position of its parts are opposite to those of the upper pass 1 and the angles of the two passes opposite. Either pass may be employed.

The grooves 2 are in all respects similar to those described in my first application, (to which reference is to be made,) save that a flange, K, terminates the portion in which the web lies and incloses the pass at such point. Grooves 3 and 4 are reducing-grooves of any desired configuration, that represented being a convenient form.

Such being the construction of my improved rolls, their mode of operation is as follows: The railroad or like rail to be reduced is entered and passed through either groove 1, by which, as stated, the head is severed from the rail in such manner that the rail is longitudinally divided into two parts—the one the head B, the other the web and the flange A.

The head B of itself forms a billet or bar, and may be rolled down in the usual manner by a series of oval and square grooves. The flange and web A are reduced to a bar or billet by passing said flange and web successively through the grooves 2 3 4.

In the passage of the headless rail through passes 2, 3, and 4 the action of compression of first one portion and then of the other portion of the bent flange, while in a vertical position, into the web is entirely similar to the same action as described in my other ap-

plication referred to, the only difference being that the headless web may here be considered as a bent portion of flange, and may, in turn, be subjected to the vertical pressure of the vertical portions of the passes; in other words, the tri-flanged bar, which the headless rail becomes, is adapted to be rotated so that each of its flanges in turn receives the vertical pressure.

The portions *a* and *b* of the supposed flange are bent as shown. The portion *a*, whose axis is vertical to the axes of the rolls, is reduced in the direction of its width, as from *a* to *c*, and the metal of said flange is displaced toward and into the portion of the web of the rail which is joined to said flange, and the web is thereby thickened out, as from *c* to *d*. The portion *a* of the flange being vertical to the rolls is to the greatest extent reduced, and the portion *b* of the flange having been bent out of line with the portion *a* removes out of line the material otherwise resisting the displacement of the material of the portion *a*, so that the material of the vertical portion *a* is, in its passage through the roll, not only reduced but displaced toward and into the web of the rail. The height of the web, as from *c* to *e*, is reduced, all substantially as set forth in my other application.

In the passage of the rail through groove 2 the operation is as follows: The vertical portion *a* of the supposed flange (shown in groove 1) becomes the oblique portion, as at *a*², in groove 2, the oblique portion of the flange *b* of groove 1 becomes the vertical portion in groove 2, as shown at *b*², at the same time the height of the web is reduced, and there finally results a bar or billet of a compact form and of a section similar to groove 4, or of other desired section.

As before observed, from the construction and arrangement of grooves which I have described, and the mode of reducing flanged bars thereby, as set forth, it is seen that by sever-

ing the head from the rail and bending the flange so that its bent portions form an angle with each other a flanged bar is produced having three flanges, consisting of the two bent portions of the flange proper and the web of the rail. Either of these three flanges may be alternately and similarly operated upon in the reducing-grooves 1 2, &c., with the effect that the flange and web will be, by reduction and displacement, consolidated with each other without lapping or crimping the metal, and a bar, rod, or billet produced of any desired cross-section.

The bar or billet produced by the last pass or groove of the roll above described is of such form as to be capable of being rolled down directly into a wire rod by a series of oval and square grooves without reheating.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The mode of preparing a railroad-rail or other flanged bar for subsequent rolling into a bar or billet, which consists in severing the head from the rail and in bending the flange of the rail so that its bent portions and web shall be at angles to each other, substantially as shown and described.

2. Rolls for preparing old railroad-rails for subsequent rolling into two separate bars or billets of different shape, provided with the grooves 1 2 3, &c., constructed and arranged substantially as hereinbefore set forth, and adapted to simultaneously sever the head from the stem of the rail and to bend the flange until its two portions assume an angle with each other.

In testimony whereof I have hereunto signed my name this 18th day of March, 1879.

CHAS. HEWITT.

In presence of—

J. BONSALE TAYLOR,
THEO. C. MAPLE.