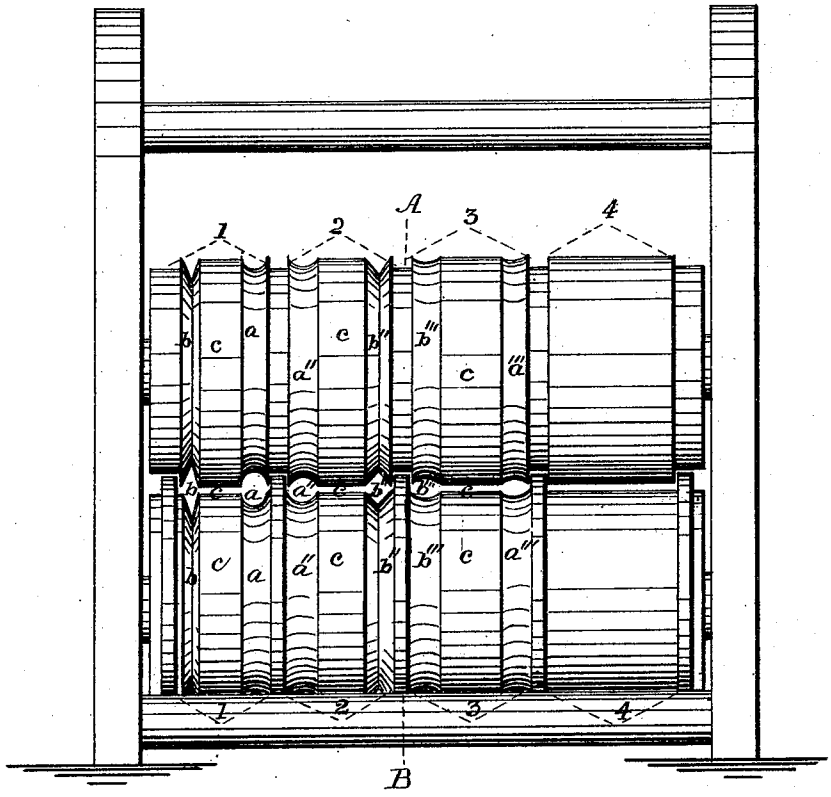
J. McCAFFREY.

ROLLS FOR RE-WORKING RAILROAD RAILS.

No. 180,049. Patented July 18, 1876.



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UNITED STATES PATENT OFFICE.

JAMES McCAFFREY, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN ROLLS FOR REWORKING RAILROAD-RAILS.

Specification forming part of Letters Patent No. **180,049**, dated July 18, 1876; application filed June 10, 1876.

To all whom it may concern:

Be it known that I, JAMES McCAFFREY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rolls for Reworking Railroad-Rails; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of the invention is to economize worn-out steel or iron railroad-rails by reducing them to flat bars, in which form they may be conveniently utilized for various purposes.

To this end the invention relates to rolls provided with a series of graduated grooves, through which the rails are passed in succession, being thus gradually reduced to uniform thickness.

The accompanying drawing, forming part of this specification, represents a side elevation of my improved rolls.

A and B are respectively the upper and lower rolls, each of which is divided into sections 1 2 3 4, the grooves of one roll in each of the sections 1 2 3 being located opposite similar or corresponding grooves of the other roll.

The section 1 is adapted to slightly flatten or reduce the head and flanges of an ordinary T railroad-rail. Section 2 is adapted to still further flatten or reduce them, and section 3 to continue the process, which is perfected by section 4, the latter reducing the rail to a flat bar with straight parallel edges. Thus, by the successive operations to which the rail is subjected by passing through the graduated grooves of the several sections, 1 to 3 inclusive, and finally by passing between the plain surfaces of section 4, a worn-out or worthless rail may be converted into a flat bar or plate, adapted for being conveniently reworked into various forms—as, for instance, if an iron bar, into nail-plates, hoops, fish-plates, ties or braces for bridges and buildings, &c.; or, if a steel plate, into hoes, shovels, cultivator-teeth, and other articles required to be made of that metal.

I will now describe more particularly the configuration of the rolls, and the several operations to which the railroad-rail is subjected.

Referring to section 1 each roll A B has a nearly half-round groove, *a*, and a V-shaped or acute-angled groove, *b*, the corresponding grooves *a a* and *b b* being opposite and separated by the plain or flat surface *c*.

The head of the T-rail is received and compressed in the grooves *a*, and the base or flanged portion in grooves *b*. It is, however, apparent that the rail will be but slightly flattened in passing through this section.

In section 2 the round groove becomes an oval, *a''*, and the double V-groove is nearly right-angular, (*b'*,) so that the rail is considerably flattened in passing through.

In section 3 the grooves *a'''* and *b'''* are quite shallow, having no acute or abrupt angle, so that the rail which has passed sections 1 and 2, and been reduced to a bar, having prominent ribs on each side or edge, will be adapted to be reduced by section 3 to a bar having only slightly-raised ribs.

In section 4 the surfaces of the rolls are plain or flat, so that the ribs are obliterated and the rail rolled perfectly flat between them. Thus, at each pass, a portion of the head and flange is reduced to the thickness of the web, and added thereto in such manner as to increase the width of the bar at each pass. It is hence requisite that, as the grooves change in shape, the plain surface between them shall increase in width, so that the T-rail may be gradually reduced to a flat bar of uniform thickness, and considerably exceeding the rail in width.

The most convenient gage for the thickness of the bar is the thickness of the web of the rail, namely, that part between the head and base flanges. The plain or flat portions *c* of the rolls A B are therefore gaged the same distance apart in the several sections, and little or no pressure is applied to the web of the rail in the several rolling operations.

What I claim is—

The pair of rolls A B, having the series of graduated grooves in sections 1 2 3, and the plain surfaces in section 4, as shown and described, for the purpose of reducing a T-rail to a flat bar, as specified.

The above specification of my invention signed by me this 8th day of June, 1876.

JAMES McCAFFREY,

Witnesses:

A. W. HART,

S. C. KEMON.