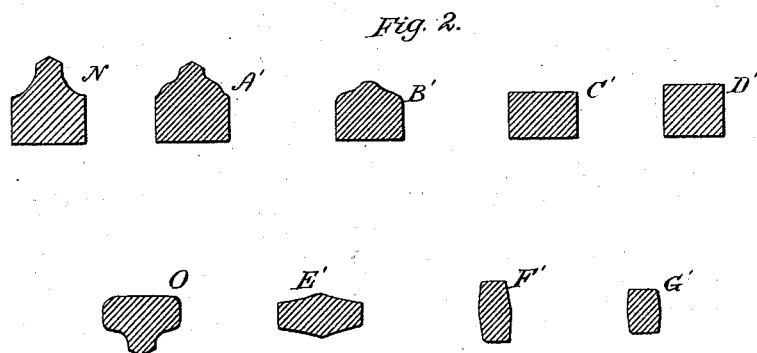
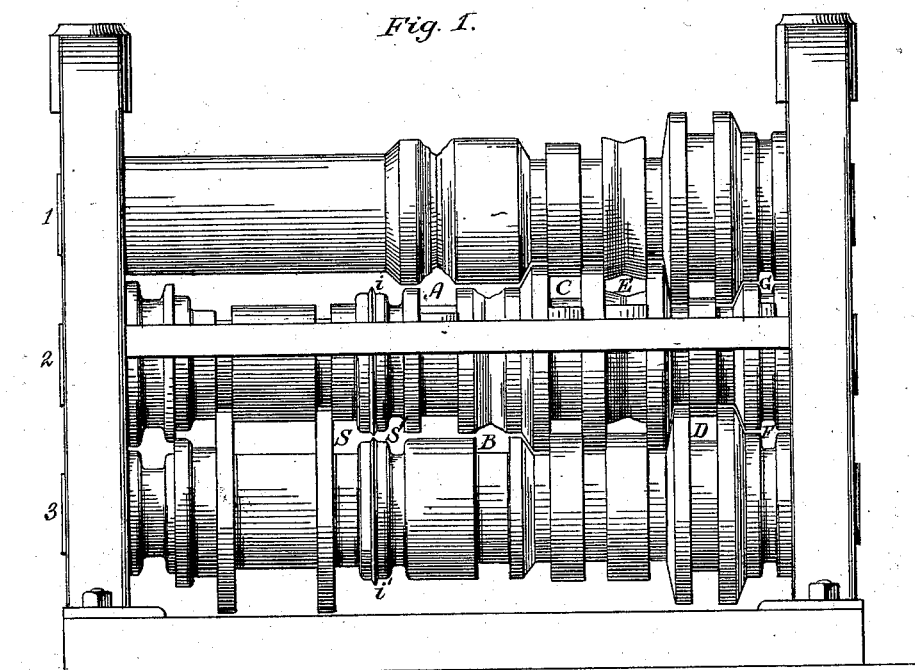


B. P. BRUNNER.
Machinery for Reducing Old Steel Railroad-Rails
to Merchantable Bars.

No. 219,616.

Patented Sept. 16, 1879.



Attest:

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per attys
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UNITED STATES PATENT OFFICE.

BURROUGHS P. BRUNNER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN MACHINERY FOR REDUCING OLD STEEL RAILROAD-RAILS TO MERCHANTABLE BARS.

Specification forming part of Letters Patent No. **219,616**, dated September 16, 1879; application filed August 13, 1877.

To all whom it may concern:

Be it known that I, BURROUGHS P. BRUNNER, of San Francisco, California, have invented certain Improvements in Machinery for Rerolling Old Steel Railway-Rails; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a mill having my improvements. Fig. 2 shows cross-sectional views of the rail-sections after the various passes to bring the rail-sections to a proper condition for subsequent manufacture in an ordinary mill.

In the working of steel it is of the highest importance that any disturbance of the fibers of the metal shall take place equally throughout the mass. If an unequal disturbance of the fibers occurs, it leaves the metal in a condition of unequal tension highly detrimental to its subsequent manufacture.

Heretofore, in rerolling and reducing steel railway-rails, it has been customary to split the web of the rail at one pass through a cutter, in order to prepare the pieces for the subsequent action of reducing-rollers.

The web being comparatively thin, there is a necessary amount of drawing of the web of the rail incident to the impact of the knives on the web, and this drawing, without any corresponding drawing of the flange and head, leaves the fibers of the metal in the web elongated in relation to the fibers in the head and flange. This unequal tension or condition of the fiber, when once produced, is impossible to eradicate by any subsequent rolling or working, and is a great drawback to the utilization of the steel.

The object of my invention is to overcome this difficulty, and to provide a means whereby wornout steel rails may be rerolled into merchantable bar or other steel in a cheap and convenient manner; and it consists in rollers having grooves or passes, one of which is provided with a cutter or cutters, this groove or pass provided with a cutter or cutters being designed and operating simultaneously to split the rail along the line of the web and compress and draw out the head and flange portions of the rail, the other grooves or passes operating subsequently to reduce the head and flange sections to merchantable bars of the form desired.

In order that those skilled in the art may make and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, let 1 2 3 represent a three-high mill. On rolls 2 and 3 are cutters *i i'*, located between two reducing-passes, S S', to receive the head and flange of the rail, the head passing through S. These reducing-passes are proportioned so that the head and flanges shall be drawn, as the rail passes, in proper proportion with and at the same rate that the web is drawn in the cutting by the cutters *i i'*.

After the rail is split it is ready for the reducing-passes, and the pieces are passed between the rolls as follows: The head portion N, Fig. 2, is passed through pass A, which reduces it to the shape shown at A'; then through pass B, which reduces it to the form shown at B'; then through pass C, and is reduced to the form shown at C'; and finally through pass D, coming out as seen at D', Fig. 2. The flange portion O is reduced first at E to the form shown at E', and then by pass F to the form shown at F', and finally by pass G to the shape shown at G'.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a series of rolls provided with grooves for reducing the sections of old steel railway-rails, the pass S, formed to approximately square the head portion of the rail, and the pass S', to upset the flange portion thereof, and the interposed cutters *i i'*, adapted to sever the rail at or near the center of the web, substantially as set forth.

2. Rolls provided with pass S, formed to approximately square the head portion of the rail, a pass, S' to reduce the flange portion thereof, and the interposed cutters, jointly with rolls, provided with passes A, B, D, E, F, and G, the said passes of the said rolls, together with the cutter, being for the purpose of reducing old steel rails to merchantable bars, as set forth.

In witness whereof I have hereunto set my hand and seal.

BURROUGHS P. BRUNNER. [L. S.]

Witnesses:

FRANK A. BROOKS,
O. T. STACY.