W. Hoffman.

Railroad Rail.

No. 89,831. Patented May 4, 1869.

Fig. 1.

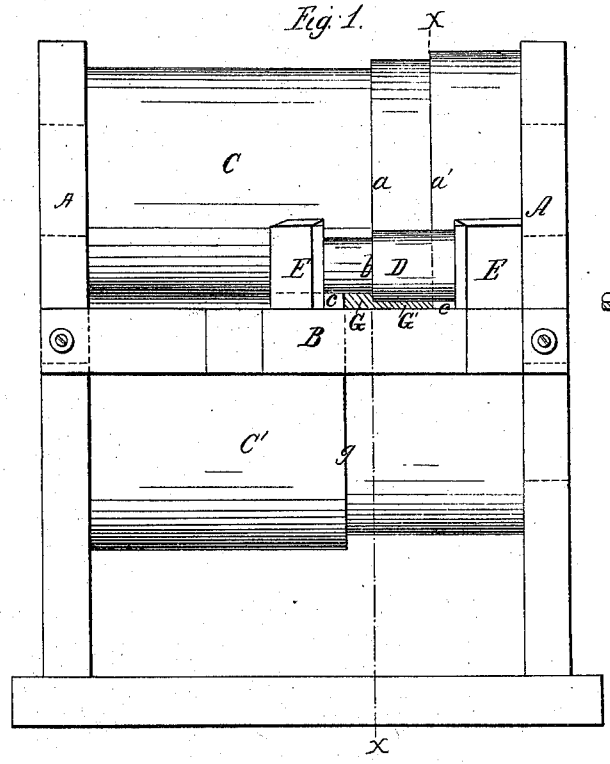


Fig. 3.

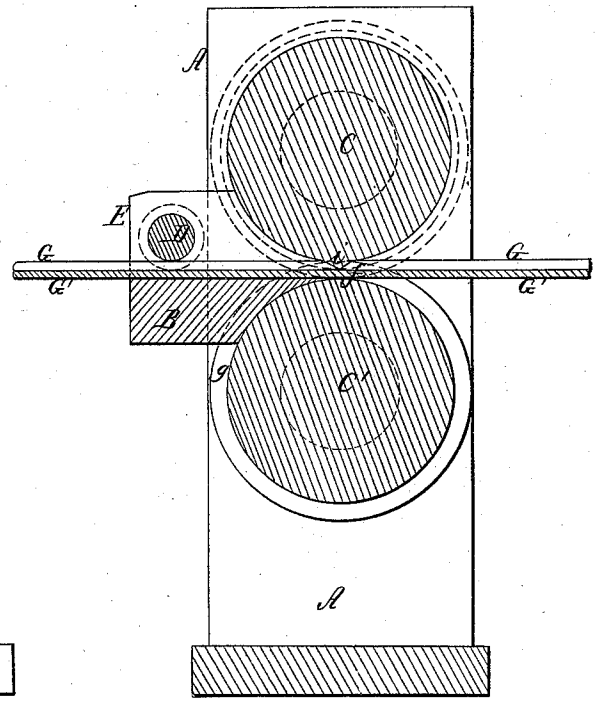


Fig. 4.

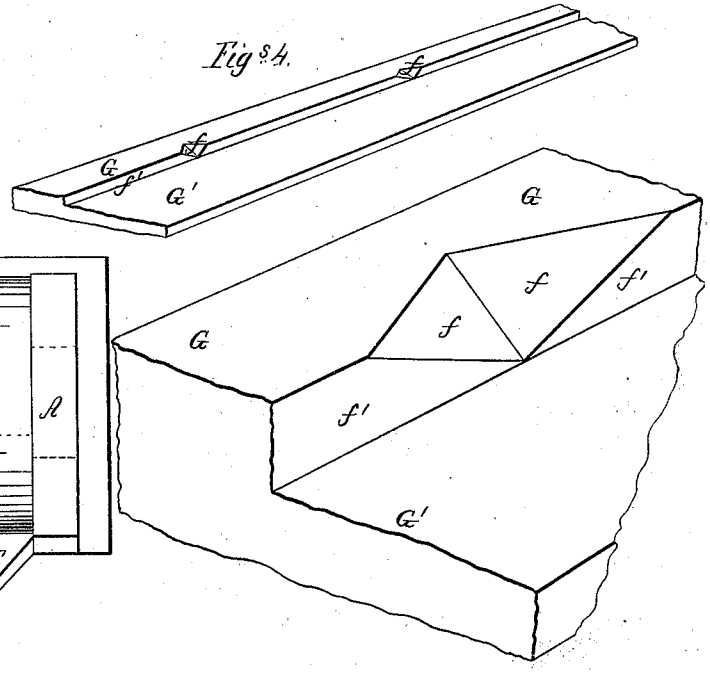
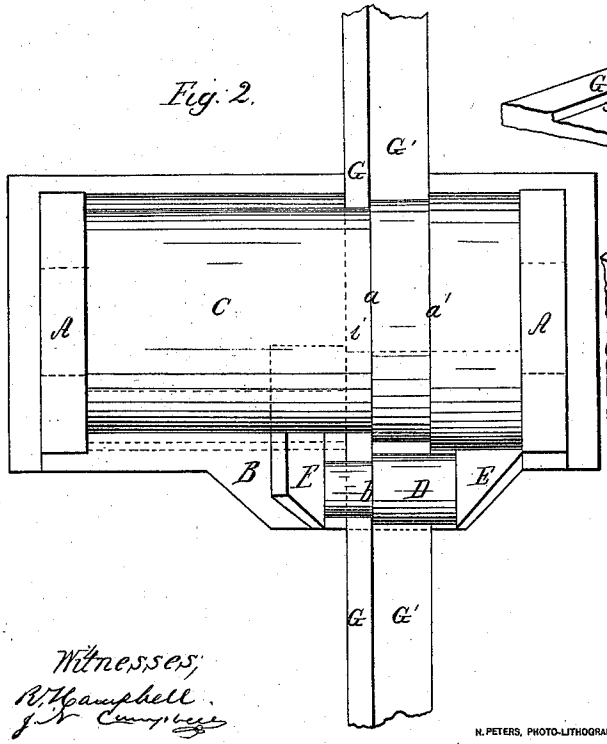


Fig. 2.



Witnesses;
R. Campbell.
J. N. Campbell

Inventor;
W. Hoffman
Munn Lewis & Munn

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

United States Patent Office.

WILLIAM HOFFMAN, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 89,831, *dated May* 4, 1869.

IMPROVED APPARATUS FOR ROLLING AND NOTCHING RAILS FOR RAILROADS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM HOFFMAN, of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in the Construction of Rails for Street or City Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Similar letters of reference indicate corresponding parts in the several figures.

Figures 4 are perspective views of indented rails, the indentations being shown therein at *f*, the object of the invention being to improve the L-shaped rails which are used on street-car tracks, by forming indentations on the inner and outer (if found necessary) edges of the elevated or bearing part of the rail, of such shape as will allow the wheels of vehicles to roll freely over the rails in oblique directions, particularly when turning off the track.

It will be seen that the faces of the indentations are inclined surfaces, making equal angles with the edges of the rail, and intersecting each other in a line, which, springing from the lower edge of the bearing part of the rail, cuts the upper surface of the rail at about three-quarters of an inch from its inner edge, thus forming an inclined surface up which wheels will readily roll, in whichever direction they approach the indentation.

It is manifestly better to have but one indentation to serve for both directions, rather than have separate and independent right and left indentations, thus doubling the number required; and as vehicles in crossing the rails from the outside have more room to make a turn in approaching the rails, an indentation on the outside is not so essential, and may in many instances be dispensed with.

This rail is specially designed for street-car tracks, and it will allow vehicles to pass freely on and off the track, without the liability of straining or breaking their wheels or spreading the rails.

The indentations are expected to be about four and one-half inches long and two to three feet apart.

The machinery for rolling these rails is as follows:

Figure 1 is a front elevation of that part of a rolling-machine which is adapted for producing notches in the edges of rails.

Figure 2 is a top view of this machine.

Figure 3 is a section through the machine, taken in the vertical plane indicated by red line *x x*, in fig. 1, showing a rail in the act of being notched or indented.

C C′ represent two cylindrical rollers, having their end-bearings in journal-boxes. which are supported in upright standards A A.

B is a bed, upon which a small guide and feed-roller is supported, by means of journal-boxes E E.

This bed B is arranged in a horizontal plane, in proper position and relation to the space between the horizontal rollers for guiding the rail from its work.

The upper roller C′ is constructed with two cylindrical enlargements upon one end of it, which leave shoulders *a a′*, and the lower roller C′ is constructed with one cylindrical contracted or reduced portion, which leaves a shoulder, *g*.

This shoulder *g* on roller C′ receives the outer edge of the rail; the shoulder *c* on C receives the inner edge *f* of the elevated or bearing portion of the rail; and the shoulder *a′* receives the inner edge of the rail-base, as shown in fig. 1.

It will be seen, by reference to fig. 1, that the two rollers C C′ are shaped so as to receive between them and between their shoulders an L-shaped rail, and prevent the metal of a rail from spreading laterally during the passage of a rail between these rollers.

The roller D, beneath which a rail passes, in its passage from the rollers C C′, is constructed with a reduced cylindrical portion, which leaves a shoulder, *b*, that receives the perpendicular inner edge *f′* of a rail, while the two parallel guides *c c* on the bed B, receive between them the inner and outer edges of a rail, while it is being fed between the rollers C C′.

By thus constructing the rollers and guides, it will be seen that the sections of rail will be firmly held and properly guided during the operation of finishing them and giving to them their final shape.

It should be understood that previous to the use of the rollers C C′, the rail-bars must be passed successively between the rollers of well-known rolling-machinery, and thus prepared for receiving the final shape given to them by the rollers C C′.

At a suitable point or points upon the shoulder *a* of roller C, a bolster, *i*, is formed, of such shape and size as will produce the notches, or indentations *f* upon the inner edge *f′* of the rail-bars, during the passage of these bars between the finishing-rollers.

This tooth is the counterpart of the notches *f*, and forms these notches upon a rail while it is confined laterally between the shoulders *a a′ g*, and confined vertically between the two rollers C C′; consequently the metal of the rail cannot be distorted by the upsetting action of the tooth *i*, and all that metal which is displaced to leave the notches will be forced into the body of the rail, thereby condensing the metal and solidifying the rail.

It will be seen that the inclinations of the tooth *i* are toward the rail-bearing G, and that the metal will be crowded and condensed into said bearing, and thus harden this portion, which is subjected to the wear of the car-wheels.

I am aware that Letters Patent of the United States were granted to T. M. Schleier, on the 20th of December, 1864, for a notched T-shaped railroad-rail, but he proposes no mode of rolling such rails, and it

is doubtful whether his notch can be made in the lip of a rail of such form as he describes, by any known process of rolling; and, besides, he proposes to cut a notch for each direction, which, if practicable at all, would very greatly injure the rail, by cutting in so many places through that part of the rail which it has been found most difficult to give sufficient strength to by making it of steel or specially hardened iron.

The crushed rails which are so frequently seen on railroads sufficiently attest the truth of this.

What I claim as new, and desire to secure by Letters Patent, is—

Rolls constructed and applied substantially as described for making railroad-rails with notches in them, substantially as described.

W. HOFFMAN.

Witnesses:
JULIUS HIRSCH,
R. T. CAMPBELL.