

J. L. BOOTH.

Improvement in Method of Manufacturing Steel Capped Rails.

No. 123,973.

Patented Feb. 27, 1872.

Fig. 1.

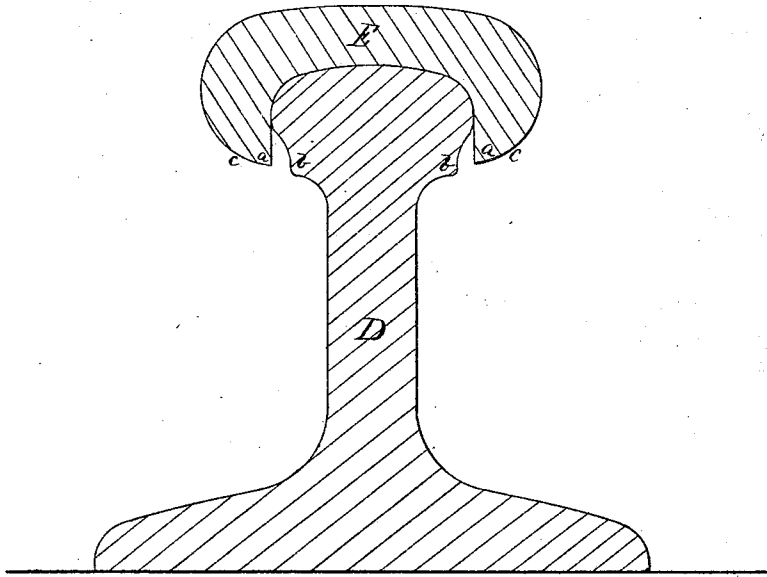
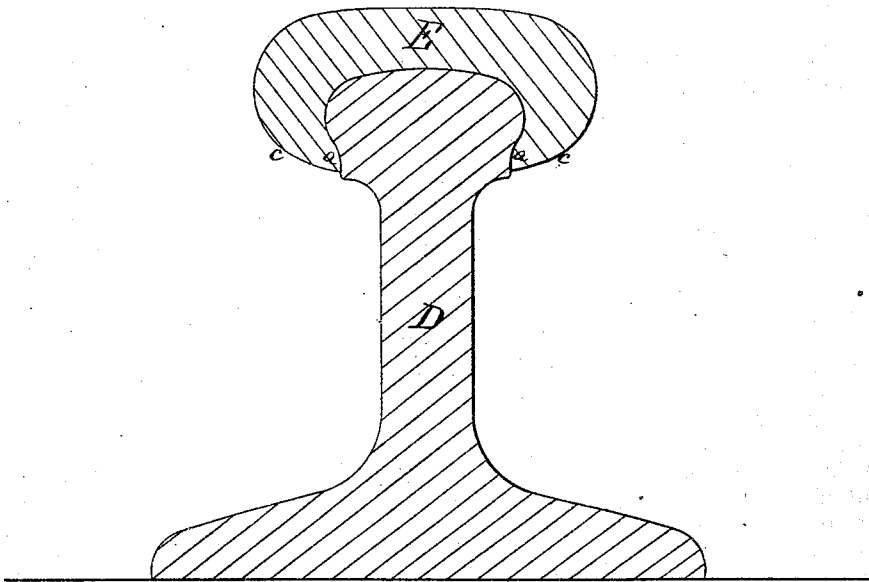


Fig. 2.



Witnesses:

R. F. Osgood
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Inventor:

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UNITED STATES PATENT OFFICE.

JONATHAN L. BOOTH, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN METHODS OF MANUFACTURING STEEL-CAPPED RAILS.

Specification forming part of Letters Patent No. 123,973, dated February 27, 1872.

To all whom it may concern:

Be it known that I, JONATHAN L. BOOTH, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in the Method of Manufacturing Rails for Railroads; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figures 1 and 2 represent elevations of the rail, respectively, in a complete and incomplete state.

Like letters of reference indicate corresponding parts in both figures.

My invention consists in a new method of manufacturing steel-capped railroad rails, as will be hereinafter described.

In the drawing, *a* represents the points of the two lips of the cap; and it will be seen that, on the inner sides, the surface is straight or flat, and hangs vertical when dropped over the base *D*, as shown in Fig. 1, while on the outside of these lips, from *a* to *c*, the form enlarges in thickness. The importance of a perfect contact condition at the points *aa* is highly important, and on which condition depends the success of the invention, to a great extent; for, mark, it is not due to shrinkage or to first putting on the cap tight that prevents the final loosening of the cap under the action of the wheels running over it, but to the inherent condition of all metals suitable for rails, or that are not too hard to be indented with a hard-faced hammer. The use of such a metal, whether iron or steel, in proper condition, rolled into proper form, and placed on the head of a base-piece rolled in proper form to receive the cap, and to receive the benefit of the peaning effect going on on the top of the cap, this force—a force known to all mechanics to be nearly irresistible—becomes, under this arrangement of all the parts, as described, the very power to keep in contact the two parts; and I will further show that it is, under this theory, necessary to have a perfect contact of the parts at *aa*, for at this point the effect of peaning is making wider the upper surface of the cap, and not disturbing the under surface is to throw around the effect to *aa*, and is more sensibly felt at these extremities

than at the point indicated by *c c*, for at this point there is but slight effect; still, the effect is manifested in proportion to the length of these lips, and therefore felt at the extremities first. Hence, in making a rail of this character it is quite necessary to secure the cap to the base firmly at first, so that the cap may not move endwise, from the effect of passing wheels, before sufficient time has elapsed to have the lips thrown around by this peaning action. I have made a half dozen rails with this cap so loose that they would move on the base, passing backward and forward by the trains until their ends would strike the adjoining rails; and with this defect in first construction, the cap became perfectly tight in a few weeks, and are still in use, good and perfect rails. It is the concentration of great weight—sufficient to displace or make more compact the particles of the metal—that gives the very upper thin surface of this cap the tendency to move out from under this great pressure transversely. The cap is not affected below one-sixteenth of an inch of its surface under the wheels. This being the case, soft poor iron laminates and flakes off in quite large and thick pieces, and a rail soon wastes away; still, these laminations may be even a quarter of an inch in thickness, and tear asunder by the transverse action going on at the surface. Steel, or a first-class quality of iron that will not laminate, becomes a key to self-preservation when applied in a combination such as I have set forth, as under this arrangement the cap is self-tightening under the action of the wheels.

I do not confine myself to the use of steel in either of the parts. They may be both of steel or iron, or one part of one material and the other part of a different kind, but in all cases suitable for the purpose of making rails under this mode.

The operation of securing the two parts together is described as follows: (And I here add that I do not confine myself to two parts only, so far as the principle of my invention is concerned; double-headed rails may be made in this manner, as well as other devices not described, so far as relates to other portions of the rail other than the head:) Fig. 1 represents the cap *E*, resting on the base *D*, both of which are previously rolled to proper form,

as shown, and to any desired length of a finished rail, or thereabout. (The cap may be overreaching, and cut off after it is secured.) The two parts are then passed through rollers or a compressing-machine, which brings all the inner surface of the cap, or such as is desirable, to a contact with the head of the base D. The effect of passing the rail and cap superimposed one upon the other is to first curl the edges of the cap under and against the rail, and afterward compress the thick portion of the cap upon and around the head of the rail.

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

The method herein described of manufacturing steel-capped railroad rails—that is to say, making the cap with thinned edges, and

otherwise of the shape substantially as shown, and bending the same around the head of the rail by passing said rail and cap, superimposed one upon the other, through properly-grooved rolls, the effects of which shall be to first curl the thinned edges of the caps under and against the rail, and afterward to compress the thick portion of the cap upon and around the head of the rail, as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

J. L. BOOTH.

Witnesses:

R. F. OSGOOD,
GEO. W. MIATT.