

E. Tilghman,
Railroad Rail,

No. 1,423,

Patented Dec. 5, 1839.

Fig. 1.

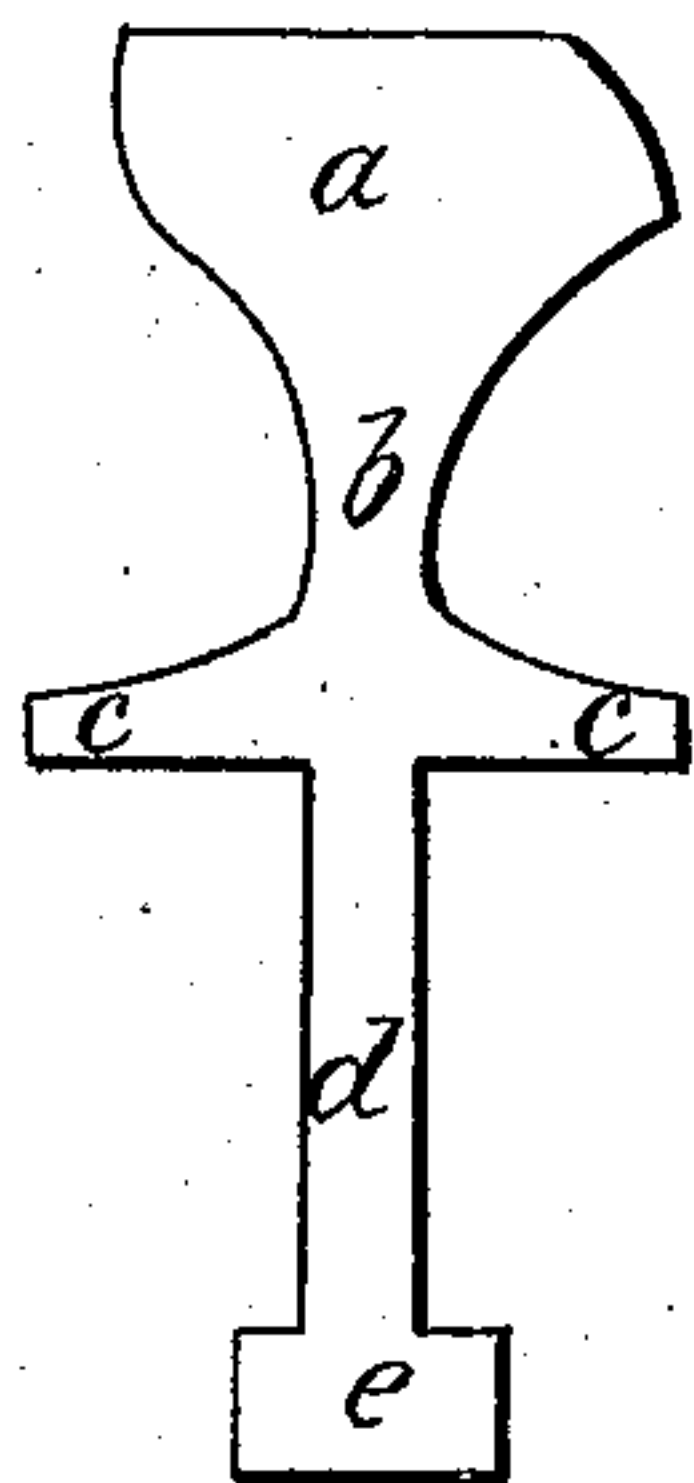


Fig. 3.

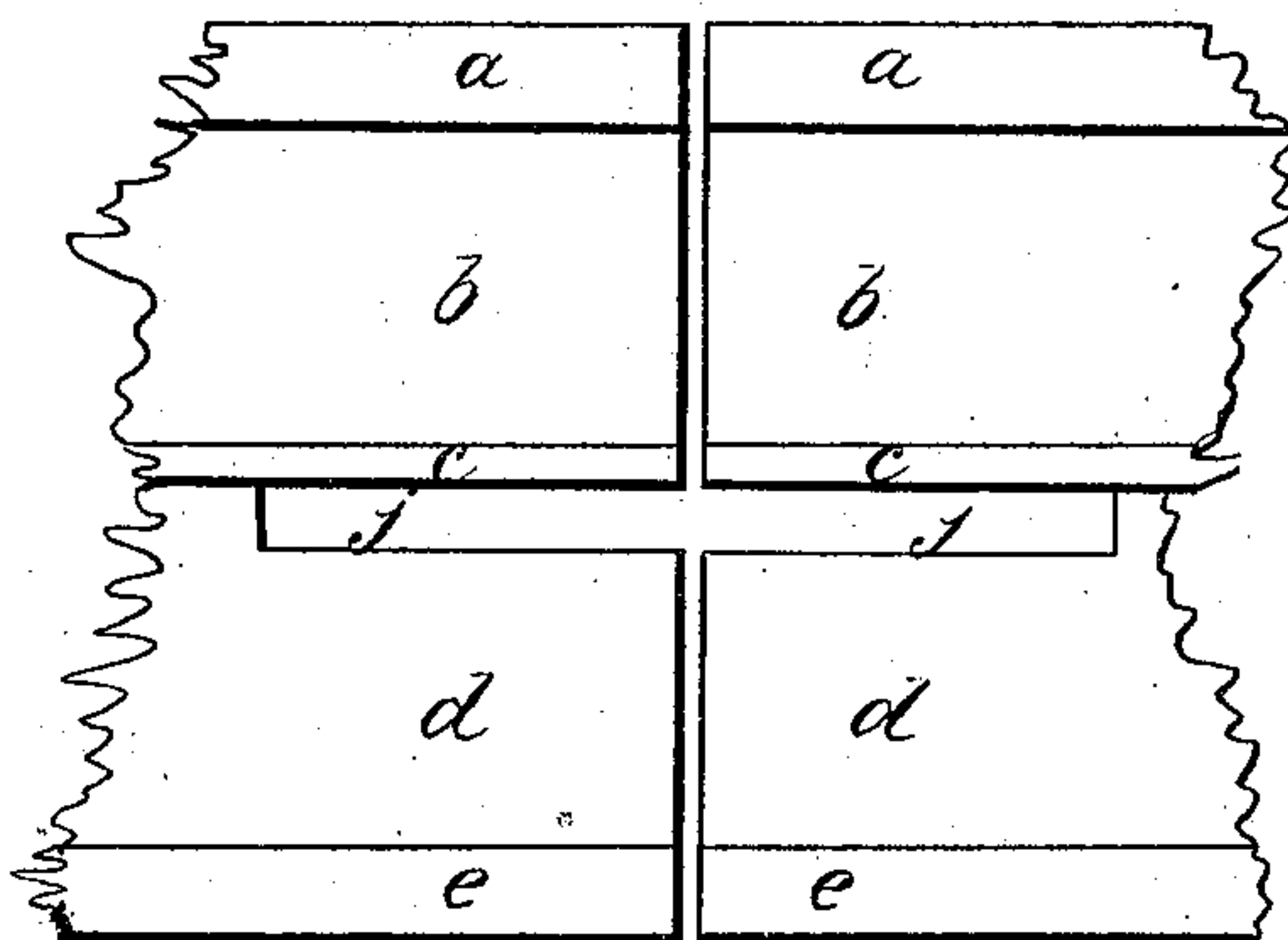
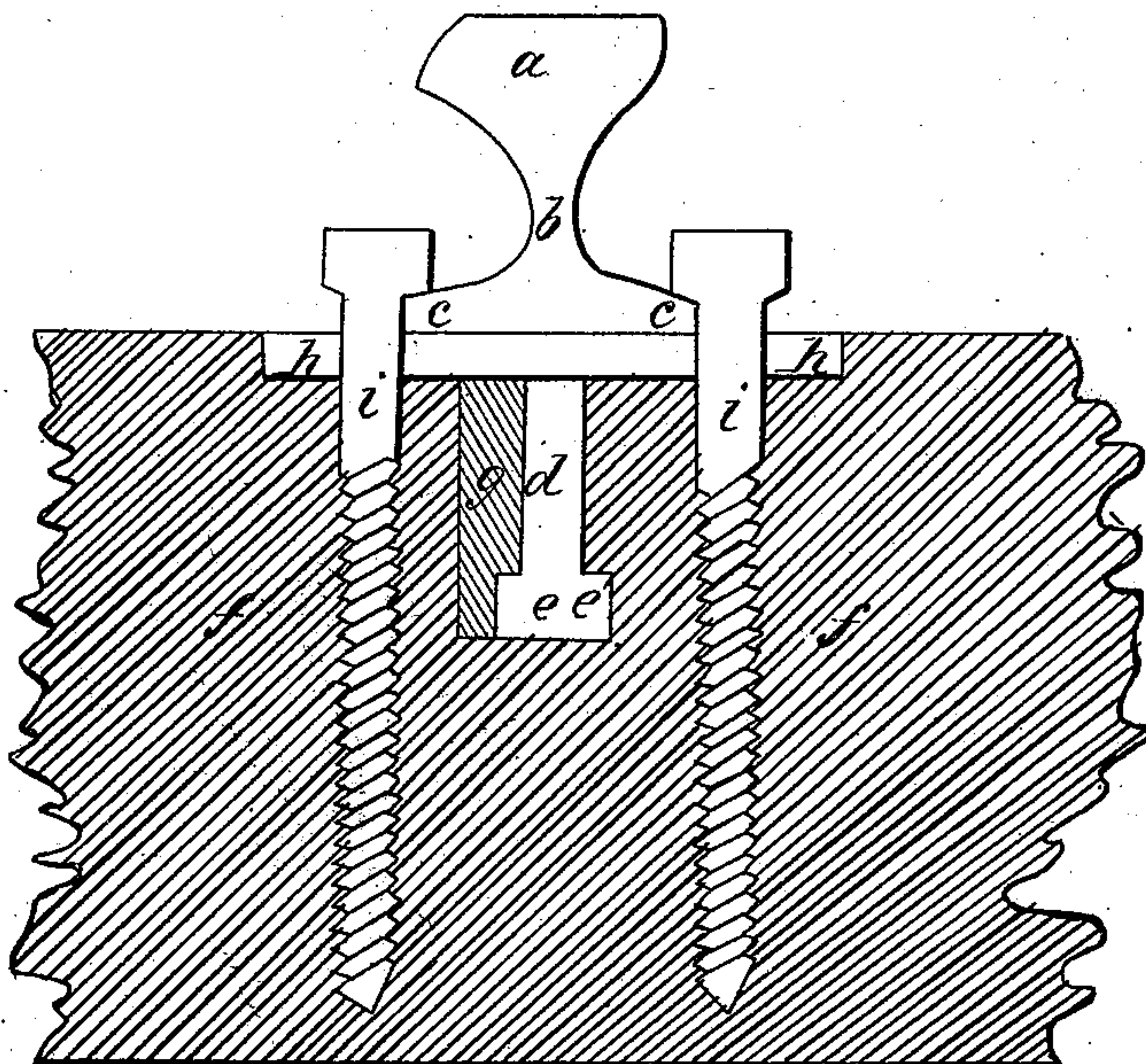


Fig. 2.



UNITED STATES PATENT OFFICE.

EDWARD TILGHMAN, OF PHILADELPHIA, PENNSYLVANIA.

MODE OF CONSTRUCTING RAILWAY-BARS AND MANNER OF FASTENING SAME.

Specification of Letters Patent No. 1,423, dated December 5, 1839.

To all whom it may concern:

Be it known that I, EDWARD TILGHMAN, of the city of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in the Form of Railway-Bars and also in the Mode of Fastening the Same; and I do hereby declare that the following is a full and exact description thereof.

It is a well-known law in mechanics that beams increase in strength directly as their breadths, and as the square of their depths, and it has ever, therefore, been an object with engineers in projecting railway bars, to make them as deep as was compatible with other indispensable properties, one of which is the practicability of a firm attachment to their supports. This is extremely difficult in deep edge, or T, rails of the usual construction, in consequence of the leverage afforded to the blows of the car wheel flanches, by the depth of the rail. It has been held by competent engineers that the depth of a bar should not exceed $3\frac{3}{4}$, or 4, inches, in consequence of the impossibility of making a secure connection between the rail, chair, and block, by any of the known modes of fastening. In the T rail used in the United States, the depth has rarely exceeded $3\frac{1}{2}$ inches, and even this has been attained at a great sacrifice of iron, owing to the necessity of increasing the base and the upright stem in proportion to the height.

The nature of my improvement consists in the so forming the bar that there shall be a reduction of the height usually given to the ordinary T rail, between its head *a*, and the base *c*, on which it rests, as represented in the accompanying drawing, and thereby diminishing the leverage of the rail, while its strength, and its capability of being firmly secured to the cross-tie are provided for by the addition of a rib directly under the center of the base, which may be made plain, trapezoidal, or with a lower web, as practised in many English edge rails.

To fasten this rail firmly, I insert the lower rib thereof in gains cut in the cross-ties; at the lower part of which gains there is a suitable recess for one side of the lower web. The rail is to be inserted in this gain, and wedged securely in its place, where it will be supported conjointly upon the ordi-

nary base and the under part of the lower web. By this method, the bar may be firmly secured to its support without the intervention of the brad-headed spike commonly in use. In addition to this mode of fastening, I intend, sometimes, to insert a chair immediately under the base, to receive which, notches are made in the ends of the bars, so as that when two of them are put together, these notches form a mortise through which the chair, which consists of a flat plate, is to be inserted. This chair is to be affixed to the cross-ties by brad-headed spikes, or by wood screws.

In the accompanying drawing, Figure 1, shows a cross section of the rail; *a*, being the head, *b* the stem, *c* the base which rests upon the chair, or cross-tie; *d*, the additional rib, and *e* the lower web.

Fig. 2, is a similar section with the chair, screws, and cross-tie. The lower web *e*, and the additional rib *d*, are shown as occupying the gain in the cross-tie *f*, *f*, the part *e'* of the lower web being fitted into a suitable recess, and the wedge *g*, being driven in on the opposite side, occupying the space cut for it, and bearing against the lower web *e*, and the chair *h*, *h*. The screws *i*, *i*, are shown as inserted through holes in the chair, their heads bearing upon the base *c*, *c*, and their shanks being received in the cross-tie.

Fig 3 is a side view of the rail at the joint, showing the opening *j*, *j*, to admit the chair.

Having thus, fully described the manner in which I form my railroad bar, and also the method of affixing it to the sleepers, I hereby claim, as of my invention,—

The addition of an under rib to the T rail, below its base, or seat, *c*, *c*, in the manner, and for the purpose, above set forth.

I do not claim the inserting the lower part of the rail within the thickness of the cross-tie, this having been before done; but I do claim the employment of a chair inserted and used in the manner set forth, for the purpose of joining and firmly securing the ends of the railway bars.

EDWARD TILGHMAN.

Witnesses:

BENJ. TILGHMAN,

BENJN. C. TILGHMAN.