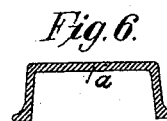
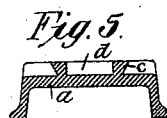
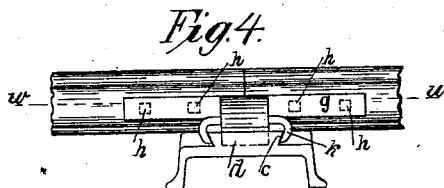
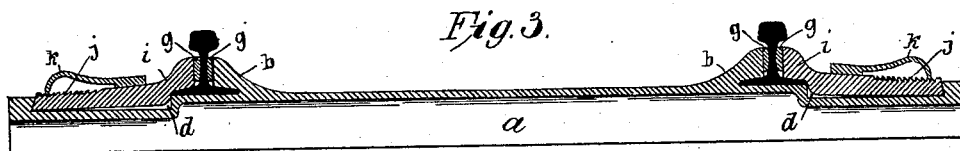
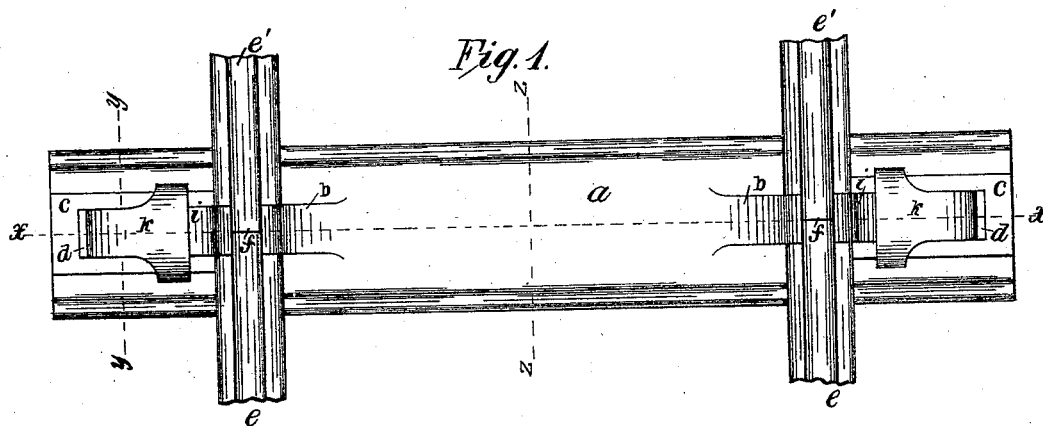


J. B. MORRIS.

METALLIC RAILWAY TIE AND RAIL FASTENING.

No. 455,537.

Patented July 7, 1891.



Witnesses
J. E. Shaw.
B. W. Ward

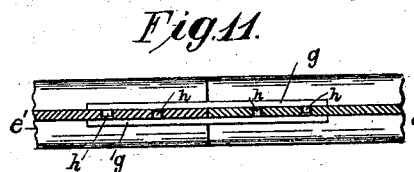
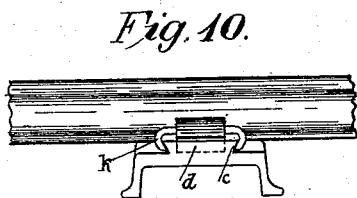
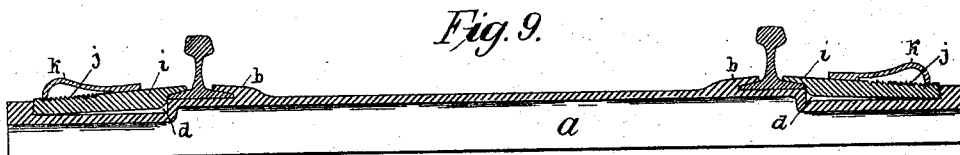
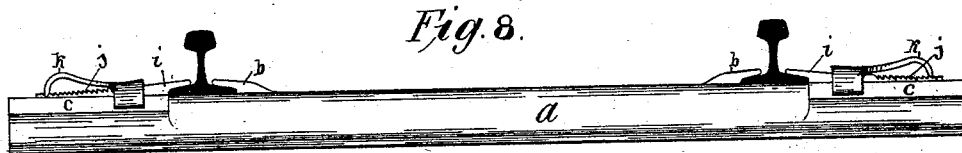
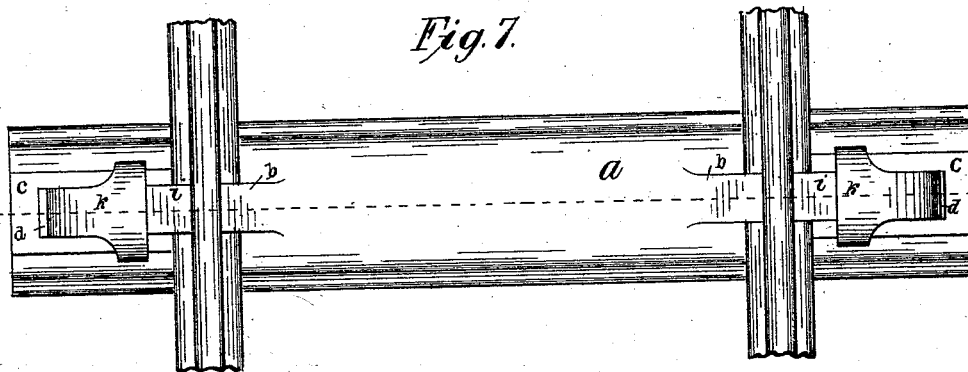
Inventor.
Joseph B. Morris

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UNITED STATES PATENT OFFICE.

JOSEPH B. MORRIS, OF CHESTER, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO THEODORE S. WILLIAMSON, OF SAME PLACE.

METALLIC RAILWAY-TIE AND RAIL-FASTENING.

SPECIFICATION forming part of Letters Patent No. 455,537, dated July 7, 1891.

Application filed December 5, 1890. Serial No. 373,698. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH B. MORRIS, a citizen of the United States, residing in the city of Chester, State of Pennsylvania, have
5 invented a new and useful Improvement in Metallic Railway-Ties and Rail-Fastenings, of which invention the following is a specification.

My invention relates to metallic railway-ties, whether cast or rolled or otherwise wrought.

It consists of devices whereby the rails are securely fastened down onto the ties, this result being in part effected by lugs and mortised dovetail projections forming integral
15 portions of the tie, said lugs and dovetails working conjunctively with detachable fastenings, as below fully described.

In the annexed drawings, Figure 1 is a top view of said tie and fastening devices as used at rail-joints—*i. e.*, where the ends of two adjacent rails meet or abut. Fig. 2 is a side view of the same, the rails being shown in end elevation; Fig. 3, a vertical section of the same on the line *x x* of Fig. 1. Fig. 4 is a side view of two abutting or adjacent rails and of a fish-plate, including an end view of a tie with its mortised dovetail, ratcheted lock-bar, and spring-clamp. Figs. 5 and 6
25 are vertical cross-sections of the tie, respectively on lines *y y* and *z z* of Fig. 1. Figs. 7, 8, 9, and 10 are intended to show the lugs and ratcheted lock-bars a little varied in form to suit the case of ties laid intermediately between rail-joints. The last-mentioned views are in all other respects similar to Figs. 1, 2, 3, and 4. Fig. 11 is a horizontal section through the web of two adjacent rails, taken on the line *w w* of Fig. 4, and showing
40 the fish-plates with dowels, the latter occupying mortises or holes in the webs of the rails.

Similar letters refer to similar parts throughout the several views.

45 *a* represents the tie, *b* lugs, and *c* dovetails, all formed on or in the top of the tie integral therewith, the dovetails *c* being respectively provided with a mortise *d*, Figs. 3, 4, and 5.

e and *e'* represent adjacent rails coming together, as usual, at *f* and forming a continuous line.

g, Figs. 2, 3, 4, and 11, represents fish-plates provided with dowels *h*.

i represents detachable lock-bars, the body of each of which occupies one of the mortises
55 *d*. The heads of the lock-bars *i* bear on the bases of the rails, respectively, and abut against the exterior fish-plates *g* at the rail-joints *f*. The lock-bars *i* are provided with
60 the ratchet-teeth *j*.

k represents spring-clamps, the turned-down sides of which (see Figs. 1, 2, and 4) embrace the sides of the dovetails *c*, the outer ends of the clamps forming detents or
65 pawls, which engage the ratchet-teeth *j*. It will be seen that the heads of said lugs *b* and the heads of said lock-bars *i* are enlarged and caused to extend almost up to the heads of the rails, abutting, respectively, against the
70 inside and outside fish-plates *g*. The heads of lugs *b* and the heads of lock-bars *i* have this enlarged form when they are intended to be used with fish-plates at rail-joints.

As respects those ties which are intended
75 for use intermediately between rail-joints, the heads of lugs *b*, as well as the heads of lock-bars *i* to be used with such intermediate ties, are made without enlargement, as shown in Figs. 7, 8, and 9, said heads bearing on the
80 bases without extending up the webs of the rails. These ties having been laid across the road-bed in the usual way, using the ties represented in Fig. 1 at the rail-joints and those represented in Fig. 7 intermediately, the
85 rails are laid upon them. The inside fish-plates *g* are then inserted and the flange or inside of the base of each of the adjacent rails is driven under lugs *b*. The outside fish-plates *g* are next applied. The lock-bars
90 *i* are then placed in the mortises *d*, bringing the heads of these bars against the rail-base or outside fish-plates *g*. The spring-clamps *k* are then applied to the outer ends of dovetails *c* and driven up toward the rails until
95 the heads of lock-bars *i* are caused to abut firmly against the fish-plates *g*, or in the case of intermediate ties against the rail-base, the

clamps being secured by the engagement of their detents with the ratchet-teeth of the lock-bars.

I claim—

- 5 The metallic tie *a*, provided with lugs *b* and mortised dovetails *c*, the fish-plates *g*, the ratcheted lock-bars *i*, and spring-clamps

k, in combination with rails laid in continuous lines for fastening the rails to the ties, substantially as set forth.

JOSEPH B. MORRIS.

Witnesses:

J. E. SHAW,

S. U. WARD.