(No Model.) 2 Sheets—Sheet 1.

P. J. SÉVÉRAC.

METALLIC CROSS TIE AND MEANS FOR ATTACHING THE RAILS THERETO.

No. 361,330. Patented Apr. 19, 1887.

Fig. 1.

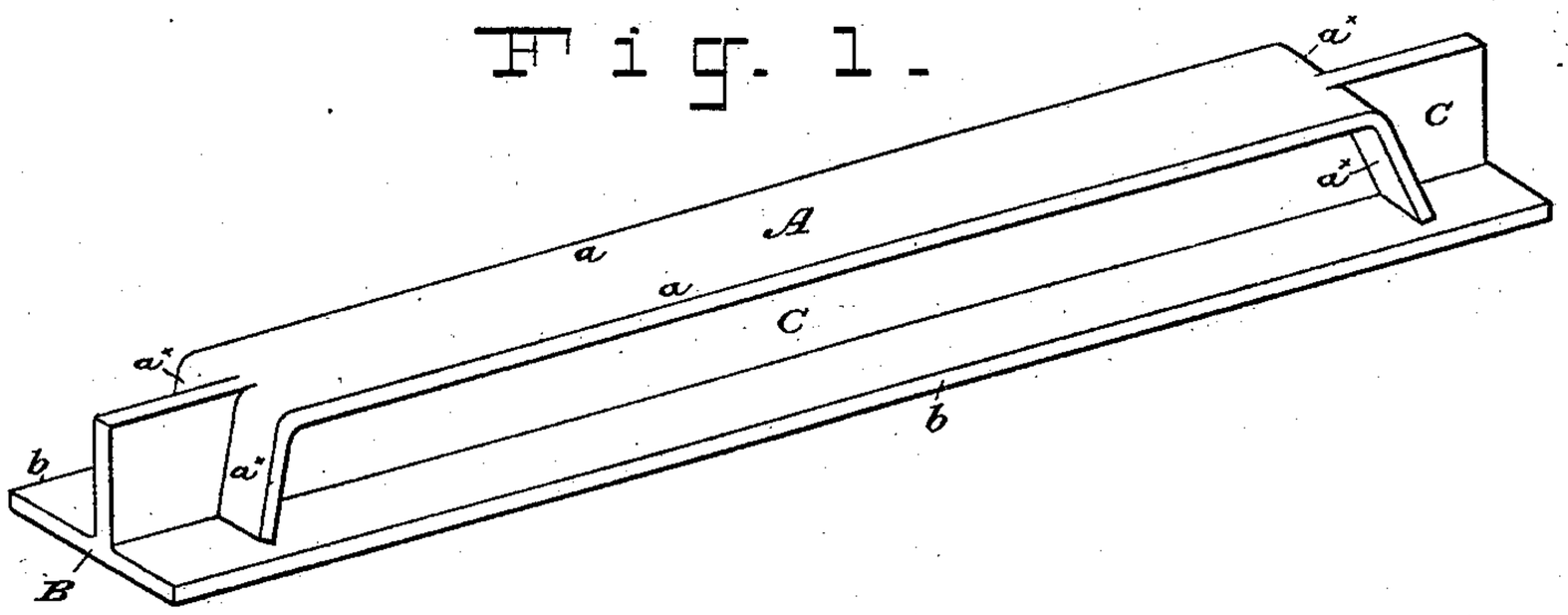
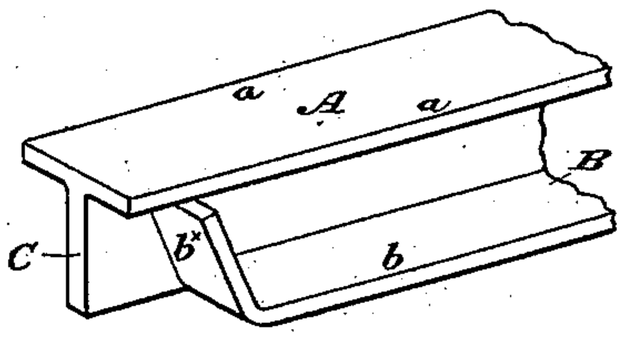


Fig. 3.

Fig. 2.



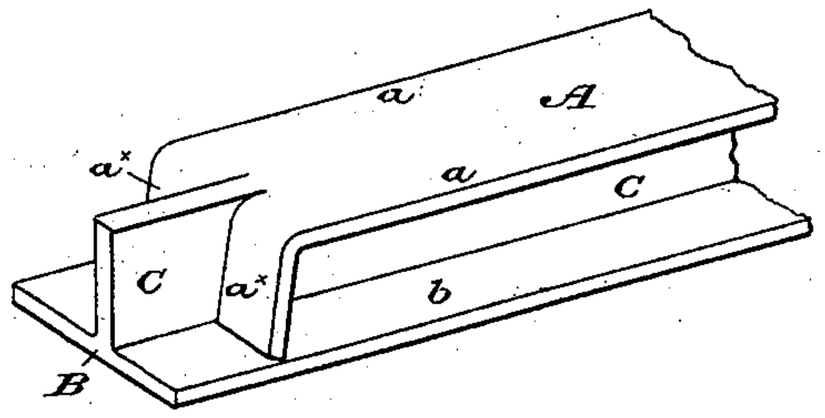


Fig. 4.

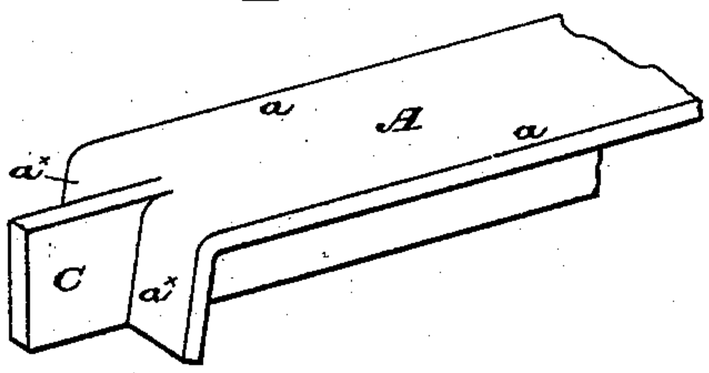


Fig. 5.

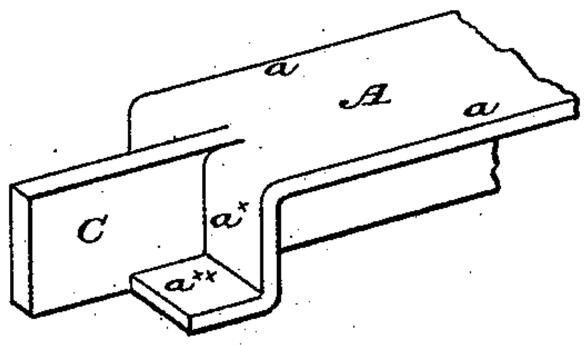
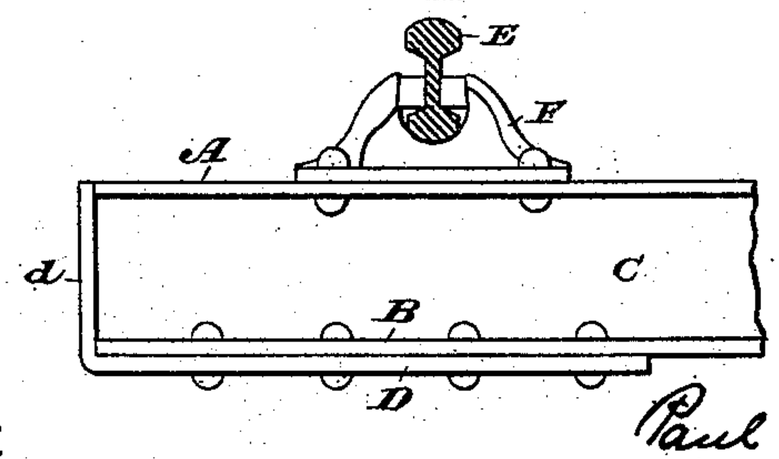


Fig. 7.



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(No Model.) 2 Sheets—Sheet 2.

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METALLIC CROSS TIE AND MEANS FOR ATTACHING THE RAILS THERETO.

No. 361,330. Patented Apr. 19, 1887.

Fig. 6.

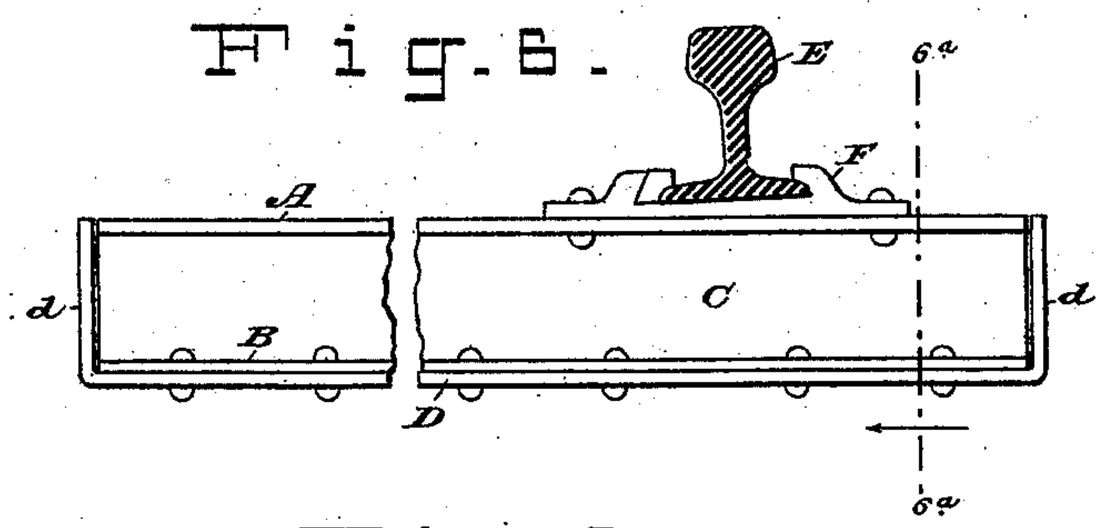


Fig. 6a.

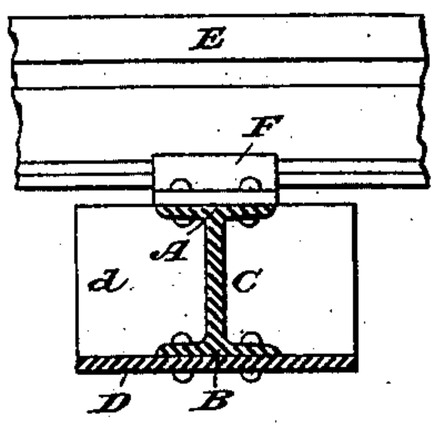


Fig. 8.

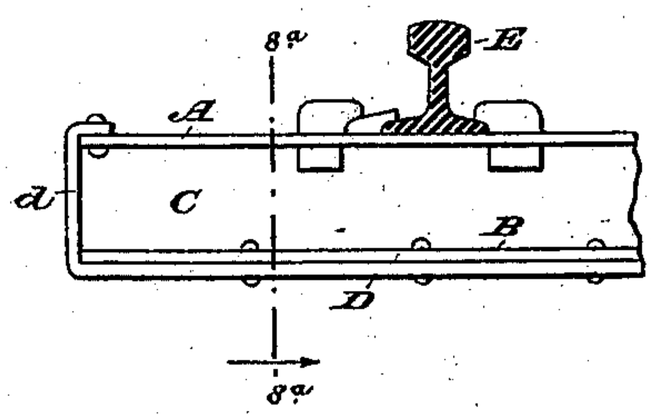


Fig. 8a.

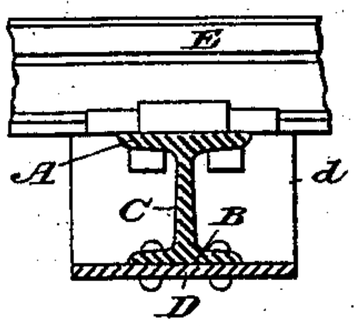


Fig. 9.

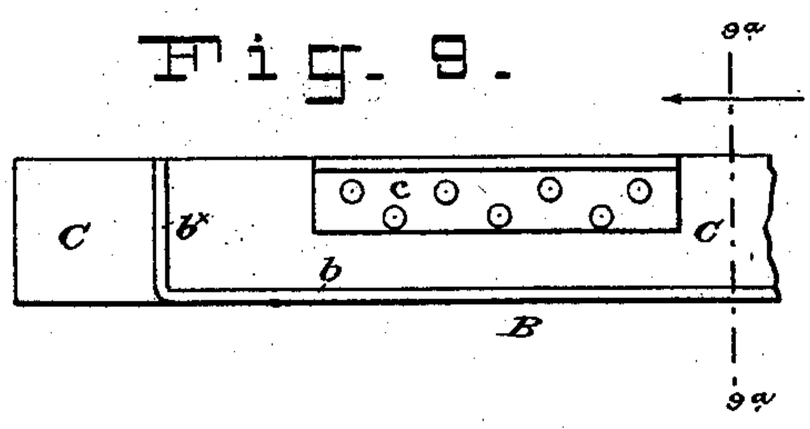
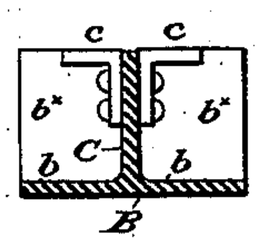


Fig. 9a.



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UNITED STATES PATENT OFFICE.

PAUL JACQUES SÉVÉRAC, OF PARIS, FRANCE.

METALLIC CROSS-TIE AND MEANS FOR ATTACHING THE RAILS THERETO.

SPECIFICATION forming part of Letters Patent No. 361,330, dated April 19, 1887.

Application filed November 29, 1886. Serial No. 220,205. (No model.) Patented in France March 4, 1884, No. 160,702; in Belgium March 4, 1884, No. 64,378; in England March 7, 1884, No. 4,540; in Italy January 2, 1885, No. 17,834, and in Spain January 19, 1885, No. 6,935.

To all whom it may concern:

Be it known that I, PAUL JACQUES SÉVÉRAC, a citizen of the Republic of France, and a resident of Paris, France, have invented certain new and useful Improvements in Metallic Railway-Ties, (for which invention patents have been granted in France, No. 160,702, dated March 4, 1884; in Belgium, No. 64,378, dated March 4, 1884; in England, No. 4,540, dated March 7, 1884; in Italy, No. 17,834, dated January 2, 1885, and in Spain, No. 6,935, dated January 19, 1885,) of which the following is a specification.

My invention relates to certain improvements in metallic railway-ties; and the object of my invention is, in the main, to provide a metallic tie that shall be comparatively light and inexpensive, and which shall, nevertheless, be capable, when set in ballast on the roadway, of resisting lateral strains, and which shall possess the maximum of practical stability.

In carrying out my invention I am enabled to use iron such as may be already found in the market, and am not limited to specially-rolled iron, although in some cases specially-rolled iron may be employed to advantage, as will be hereinafter set forth.

The leading feature of my invention is the production of a tie that shall so bed itself in the ballast of the roadway as to resist endwise movement, and this I effect by so bending up or down portions of the plates or flanges of the tie as to produce anchoring-plates with their planes parallel to the road-axis. These plates, being embedded in the ballast, effectually resist any ordinary strain tending to move the tie endwise or in a direction at right angles to the axis of the roadway. My construction also provides an extended base to resist weight or direct downward pressures.

I construct my improved tie either wholly or in part from the class of rolled iron known as "simple" or "plain" T-iron or "double" T-iron. When this class of iron is used without an addition of plates riveted thereto, I usually employ a specially-rolled iron with wide flanges; but when the tie is compound the ordinary iron will serve.

In the drawings which serve to illustrate my invention, Figure 1 is a perspective view of my tie when made from double T-iron, with flanges of unequal width, the bottom flange being in this case wider than the top flange. Fig. 2 is a perspective view of one end of a tie constructed of the same form of iron as Fig. 1, but having the ends of the lower flange-wings bent instead of the upper one, as in Fig. 1. Fig. 3 is a similar view of one end of my tie when constructed of double T-iron with equal flanges. Figs. 4 and 5 illustrate modes of carrying out the invention when simple T-iron is employed. Figs. 6 and 6^a are respectively a side elevation and cross-section (on line 6^a 6^a in Fig. 6) of a compound tie constructed according to my invention. Fig. 7 illustrates a slight departure in construction from the form of tie seen in Fig. 6. Figs. 8 and 8^a are respectively a side elevation and a cross section (on line 8^a 8^a in Fig. 8) illustrating a slight addition to the mode of construction seen in Figs. 6 and 7. Figs. 9 and 9^a are respectively a side elevation and a cross-section (on line 9^a 9^a in Fig. 9) of a tie constructed of simple T-iron, similar to the tie seen in Fig. 4, inverted.

The ties illustrated in Figs. 1, 2, 3, 4, and 5 are simple, and that illustrated in Figs. 9 and 9^a is substantially so, as far as the novel features of this invention are concerned.

The ties illustrated in Figs. 6 and 6^a, 7, 8, and 8^a are compound—that is, the T-iron bar is combined with a plate of iron, the two elements being riveted rigidly together.

Referring to the ties constructed from a single bar of iron, A represents the top plate as a whole, and *a a* its halves or wings. B represents the bottom plate as a whole, and *b b* its halves or wings. C represents the vertical web of the bar or tie.

In Fig. 1 the ends $a^\times$ $a^\times$ of the wings *a a* of the top plate are bent down until their ends are in contact, or nearly so, with the bottom plate. This is effected by slitting the top plate along the line of the web C a sufficient distance to leave portions of the wings free to be bent down. When the tie is bedded in the ballast of the roadway, the ballast is filled into the box-like recesses thus formed in the sides or lateral faces of the tie, and thus, by resting on the

bottom plate, weights the tie down, and the bent ends $a^{\times}$ of the wing serve as anchor-plates to prevent or resist endwise movement of the tie. The top plate serves as a broad support for the track-rail or its chair. This construction enables me to make from a single bar of rolled double T-iron, with only the extra labor of slitting and bending down the ends of the wings, a light, inexpensive, and exceedingly stable tie.

Fig. 2 shows a tie of the same construction as Fig. 1, except that the ends $b^{\times}$ of the wings b of the lower plate, B, are bent upward to form the anchors or end plates of the box-like recesses of the tie.

Fig. 3 represents precisely the same construction as Fig. 1, except that in Fig. 1 the plates A B are of unequal width, while in Fig. 3 they are of equal width.

Figs. 4 and 5 illustrate the application of my invention to a tie of T-iron without a bottom plate. In Fig. 5 the ends $a^{\times}$ of the plate-wings a have imparted to them an elbow-like bend, which provides a flat foot, $a^{\times\times}$.

The tie illustrated in Figs. 9 and 9ª is composed of a single T-iron bar having a bottom plate only, the ends $b^{\times}$ of the wings b of said plate being bent up. Short pieces of angle-iron c c are bolted to the web C, flush with its top, to form a base or broad support for the rail.

As it is difficult to roll single or double T-iron with very wide top and bottom plates, I provide for using the said iron as ordinarily rolled with comparatively narrow top and bottom plates, by combining with the bar a metal plate or plates riveted to the said bar to reenforce and laterally extend the top or bottom plates of the bar.

In the construction shown in Figs. 6 and 6ª, D is a broad plate of iron, somewhat longer than the tie, riveted securely to the bottom plate, B, of the double T-bar, and having its ends d d bent or folded up against the ends of said bar. The T-bar need not in this case have very wide top and bottom plates. The plate D may have any desired width.

In Fig. 7 I have shown precisely the same construction as that seen in Fig. 6, except that the plate D, instead of extending the entire length of the T-bar, extends only back to the point where the rail rests thereon, or a little beyond. There are of course two plates D—one at each end of the tie. This construction is best suited to tracks where the traffic is light.

Figs. 8 and 8ª are respectively an elevation and cross-section (on line 8ª 8ª in Fig. 8) of a tie of the same construction as that seen in Fig. 6, except that the end d of plate D is in Fig. 8 bent over on the top of the T-bar, as seen at $d^{\times}$, and riveted down to the top plate of same. This imparts rigidity to the structure of the tie, and may be employed where the traffic is heavy.

I utilize the top plate of the tie to receive the fastenings for the track-rail E, as seen in Figs. 8 and 8ª, or for the rail-chair F, as seen in Figs. 6, 6ª, 7, and 10. The rail or its chair may be secured to the tie in any manner desired.

Having thus described my invention, I claim—

1. A metallic railway-tie comprising a vertical web and a horizontal plate, and having its ends closed or boxed in, as described, by bent portions of its horizontal plate, whereby anchor-plates are provided, for the purpose set forth.

2. A metallic railway-tie having a bottom plate, a top plate, a longitudinal vertical web, and anchor-plates at its ends, which close in the ends of the tie, said plates being formed from bent portions of one of the said plates of the tie, as set forth.

3. A metallic railway-tie having a vertical longitudinal web and a broad bottom plate, and having the ends of said bottom plate bent up, substantially as set forth, to form anchor-plates.

4. A metallic railway-tie constructed of T-iron, having the ends $a^{\times}$ of its plate-wings slitted and bent, substantially as set forth, to form anchor-plates.

5. A metallic railway-tie constructed of T-iron, having the ends $a^{\times}$ of the wings of its bottom plate slitted and bent up to form anchor-plates, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PAUL JACQUES SÉVÉRAC.

Witnesses:
JULES FAYOLLE,
AUG. VINCK.