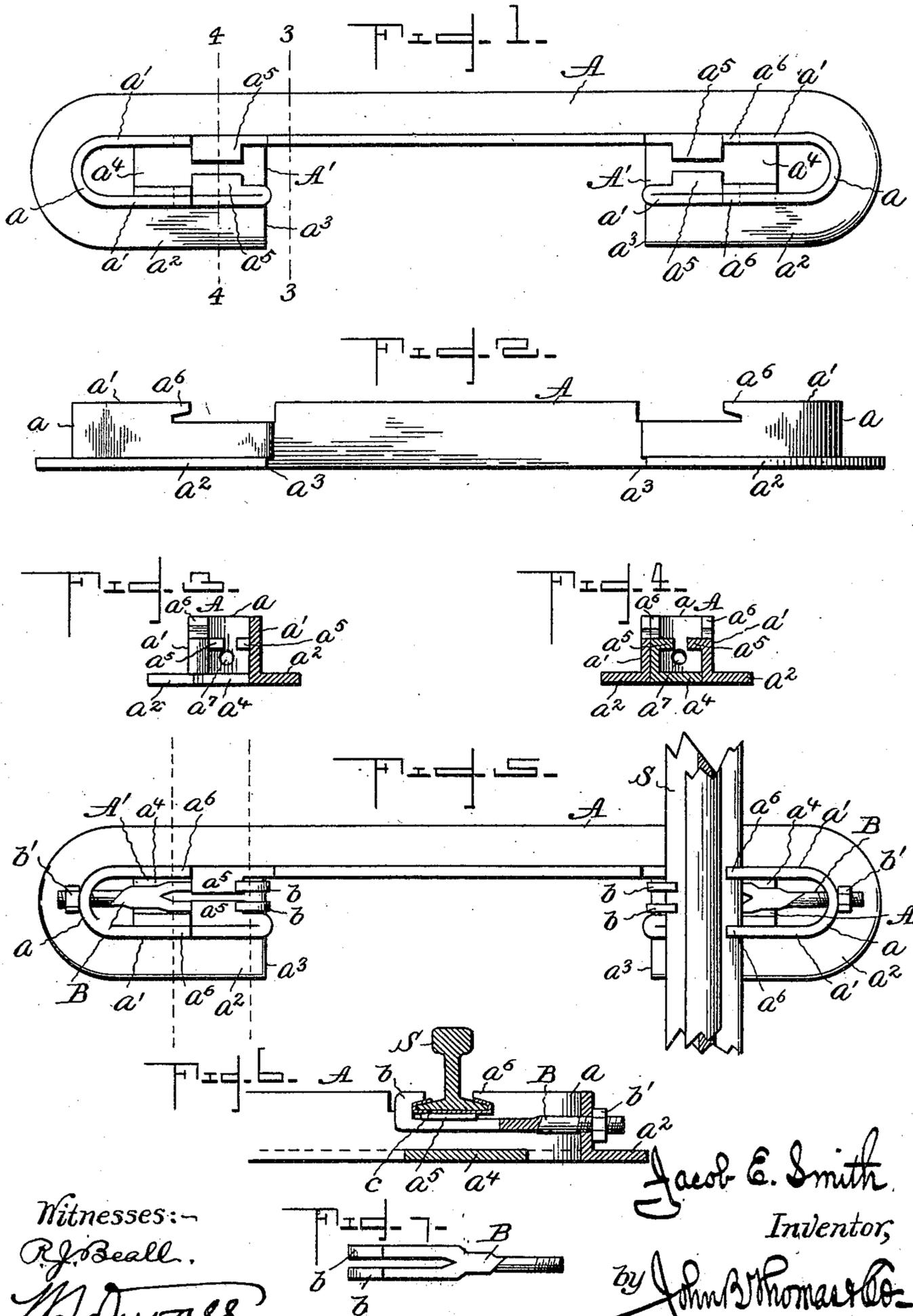


No. 825,358.

PATENTED JULY 10, 1906.

J. E. SMITH.  
METAL RAILROAD TIE.  
APPLICATION FILED DEC. 12, 1905.



Witnesses:-  
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# UNITED STATES PATENT OFFICE.

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## METAL RAILROAD-TIE.

No. 825,358.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed December 12, 1905. Serial No. 291,421.

*To all whom it may concern:*

Be it known that I, JACOB E. SMITH, a citizen of the United States, residing at Homestead, in the county of Allegheny and State of Pennsylvania, have invented a Metal Railroad-Tie, of which the following is a specification.

This invention relates to metal railroad-ties and rail-securing means therefor, and is more especially an improvement upon the construction shown and described in my prior application for patent filed February 14, 1905, Serial No. 245,570.

The principal objects of the present invention are to reinforce or strengthen the tie at the end portions thereof, where the rails are connected, and to provide a simple, strong, and durable device for securing the rails to the tie.

With these objects in view the present invention consists in the particular construction, arrangement, and combination of parts hereinafter fully described, and specifically set forth in the appended claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a plan view of a metal railroad-tie constructed in accordance with my present invention. Fig. 2 is a side elevation thereof. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 1. Fig. 4 is a similar sectional view on the line 4 4 of Fig. 1. Fig. 5 is a plan view of the tie, illustrating the rail-securing means applied thereto. Fig. 6 is a longitudinal sectional view through one end of the tie and rail-securing means. Fig. 7 is a detail view of the clamping bar or bolt, which forms the means for securing the rail in place.

Like letters of reference indicate like parts in all the figures of the drawings.

In carrying out my present invention the tie proper is of the general construction shown and described in the application for patent hereinbefore mentioned—that is to say, the tie, as A, is made of an angle-beam bent upon itself at its ends to provide the loop portions  $a$ , which form the bearings for the rails, and also provide a bearing for the tie upon the road-bed.

In the former construction the loops at the ends of the tie were simple loops, presenting the parallel vertical walls and lateral base-

flanges referred to in the accompanying drawings, as  $a'$  and  $a^2$ , respectively, and though this construction is sufficient in some instances to give the desired bearings for the rail and tie, yet in practice it has been found desirable to strengthen the tie at the loops, especially under those conditions in which the tie is to support heavy rolling-stock. Therefore in order to strengthen the tie and give the increased bearings desired I employ in the present instance a section, as A', which is interposed between the walls of the loop and consists, preferably, of an integral part of the extension of the angle-beam of which the tie is constructed. In forming this interposed section the base-flange  $a^2$  is cut transversely to the vertical wall  $a'$ , as indicated at  $a^3$ , and the beam is bent upon itself at this point, as shown—that is to say, with the vertical walls brought together and the base-flanges projecting therefrom in opposite directions—the base-flange, as  $a^4$ , abutting at its edge against the other wall of the loop. It will be understood, however, that the extension A' is bent before the loop  $a$  is formed, inasmuch as said extension is longer than the width of the loop, and when the loop is formed the base-flange  $a^4$  of the extension is disposed between the walls of the loop and serves not only to brace said walls, but also performs the additional function of providing a firmer hold for the tie in the road-bed.

The construction of loop described also provides a double wall at one side of the loop, and this of course gives a greater bearing for the rails, and to further increase this bearing the upper portions of the opposing walls of the loop are cut and bent down, forming inwardly-projecting horizontal flanges  $a^5$ , said flanges also coacting with the rail-securing means hereinafter described.

The vertical walls of the loop are further cut or recessed to provide the integral jaws  $a^6$  at one side of the flanges or rail-seat  $a^5$  and extensions of the rail-seats at the other side of said flanges, thereby forming a recess of such width as to receive the rail and so that the latter may be slid laterally into engagement with the jaws  $a^6$ , which latter engages the outer edge of the base-flange of the rail, as shown in Figs. 5 and 6. This forms a rigid engaging means for one edge of the rail,

and to provide a rigid engaging means for the other edge of said rail I provide a clamping-bar B, one end of which is formed with the rail-engaging jaws *b b*, while the other end is threaded to receive a securing-nut *b'*, though of course such latter end may be formed to receive any other well-known securing means, such as a key or wedge. When this clamping-bar is in position, the jaws *b b* thereof engage the inner edge of the base-flange of the rail and the opposite end thereof extends through a small opening, as *a'*, in the connecting portion of the loop of the tie, so that the nut *b'*, which is threaded on the projecting end, may be turned against the tie and by drawing the bar thereby securely clamp the rail between the jaws *b b* and *a'*.

It will be noted that the clamping-bar passes under the seat-flanges *a<sup>5</sup>*, so as to effectually prevent any upward tendency of the bar. In other words, the rail is clamped between the jaws *b* and flanges *a<sup>5</sup>*, the latter forming the connection between the clamping-bar and tie at this point. For this purpose it is intended that the body of the clamping-bar engage the flanges *a<sup>5</sup>* close up against the walls of the loop of the tie.

In the present instance the bar is shown as bifurcated where it passes under the flanges *a<sup>5</sup>*, presenting separate members, which terminate in jaws. Of course I may use a flat bar presenting a single jaw or the shape of the bar may be changed in other respects and without changing its function of engaging the inner edge of the base-flange of the rail, so as to clamp the latter between the engaging jaws *b* and *a<sup>6</sup>*. As will be readily seen, this forms a very simple, cheap, and effective means of securing the rails to the tie, and the connection may be clamped so tightly as to prevent the rail from working or wearing away the jaws.

In order to reinforce the rail where it is engaged by the securing means, I provide a plate, as *c*, which is bent around the base-flange of the rail, as shown in Fig. 6.

It will be understood, of course, that the space between the jaws *a<sup>6</sup>* at the opposite ends of the tie regulates or governs the gage of the track, and in case a rail is used which is worn at the inner side of the tread portion the proper gage may be had by simply using filling-pieces within the jaws *a<sup>6</sup>*. In building a new road, however, and using the standard rails the tie herein shown and described will insure a uniform gage without the employment of extraneous devices.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A metal railroad-tie comprising an angle-beam bent at its ends to form loops and provided with extensions reinforcing the loops.

2. A metal railroad-tie, comprising an an-

gle-beam bent at its ends to form loops open at their inner ends, and means interposed between the loops to reinforce the same.

3. A metal railroad-tie, comprising an angle-beam bent at its ends to form loops, and an angle-plate within the loop between the walls thereof.

4. A metal railroad-tie, comprising an angle-beam bent at its ends to form loops with extensions of the beam bent to lie between the walls of the loops.

5. A metal railroad-tie, comprising an angle-beam the ends of which are bent upon themselves and further bent to form loops with a section of the angle-beam between the walls of such loops.

6. A metal railroad-tie, comprising an angle-beam having extensions, as *A'*, bent abruptly against the beam, and said beam further bent to form loops with the extensions *A'* lying between the walls of said loops.

7. A metal railroad-tie, comprising an angle-beam the base-flange of which is cut transversely near the ends of the beam to provide the extensions *A'* and the latter bent upon the beam, said beam being further bent to provide the loops *a* with the extensions *A'* disposed between the walls of said loops.

8. A metal railroad-tie, comprising an angle-beam bent upon itself at its ends to form loops with a section of the beam disposed between the walls of said loops, and flanges projecting inwardly from the walls of the loops to form seats for the rails.

9. A metal railroad-tie, comprising an angle-beam bent upon itself at its ends to form loops with a section of the beam disposed between the walls of said loops, and flanges projecting inwardly from the walls of the loops and formed by bending the upper portions of said walls, substantially as shown and described.

10. A metal railroad-tie, comprising an angle-beam bent upon itself at its ends to form loops, jaws at the upper ends of the walls of the loops, and a clamping-bar having jaws opposed to the aforesaid jaws, and means for securing the clamping-bar to the tie.

11. A metal railroad-tie, comprising an angle-beam bent upon itself at its ends to form loops, the latter being recessed to form rail-engaging jaws, a clamping-bar having jaws opposed to the aforesaid jaws, and means for securing the clamping-bar to the tie.

12. In a metal railroad-tie, the combination with an angle-beam bent upon itself at its ends to form loops, each loop having rail-engaging jaws at its upper edge adapted to engage the outer edge of the rail, of a clamping-bar having jaws at one end adapted to engage the inner edge of the rail with its other end projecting through the tie, and means engaging said projecting end and the tie for drawing the clamping-bar against the rail.

13. A metal railroad-tie, comprising an an-

gle-beam bent upon itself at its ends to form loops, the latter being recessed to form rail-engaging jaws, a clamping-bar having jaws at one end to oppose the aforesaid jaws and  
5 threaded at its other end, the latter extending through the tie, and a nut engaging the threaded end of the clamping-bar.

14. The combination with a metal railroad-tie made of angle-beam bent at its ends to  
10 form loops with flanges projecting into said loops, and having rail-engaging jaws at the upper edges of the walls of the loops, of a clamping-bar extending under the flanges  
15 and having jaws opposed to the aforesaid jaws, and means for securing the clamping-bar to the tie.

15. The combination with a metal railroad-tie comprising an angle-beam bent upon  
20 itself at its ends to form loops with portions of the beam interposed between the walls of

the loops, said loop portions of the tie having inwardly-projecting flanges and rail-engaging jaws located above the latter, of a clamping-bar having jaws at one end and threaded  
25 at the other end, said clamping-bar extending under the aforesaid flanges so that the jaws will oppose the jaws on the loop portions of the tie and the threaded end of the bar project through the tie at the connecting portion  
30 of the loops thereof, and a nut threaded on the bar, substantially as shown and described.

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

JACOB E. SMITH.

Witnesses:

GEORGE W. DELAMATER,  
ERNEST G. TEICHART.