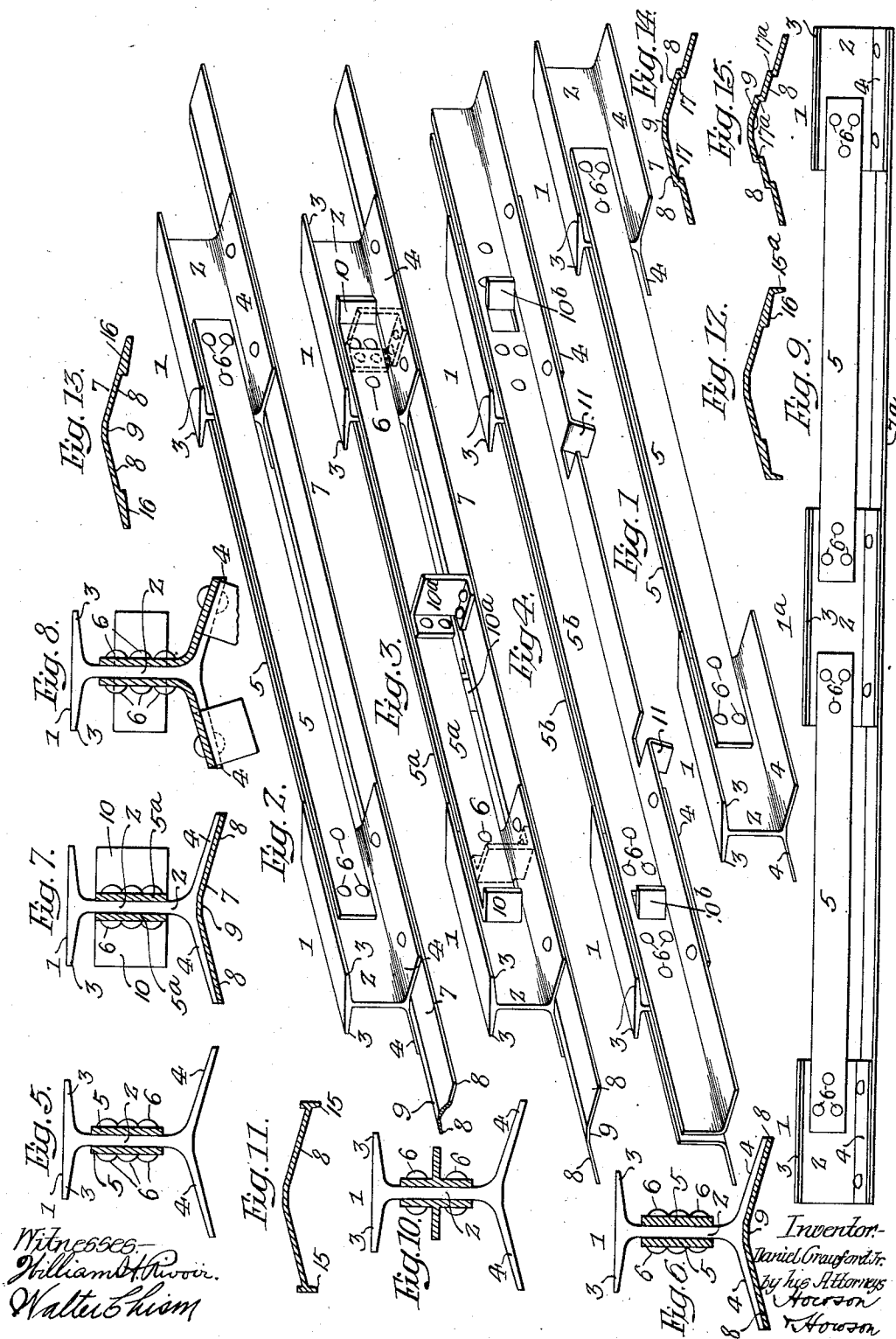


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METALLIC TIE.
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1,063,013.

Patented May 27, 1913.



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UNITED STATES PATENT OFFICE.

DANIEL CRAWFORD, JR., OF PHILADELPHIA, PENNSYLVANIA.

METALLIC TIE.

1,063,013.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DANIEL CRAWFORD, JR., a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Metallic Ties, of which the following is a specification.

My invention, relating to railroad or railway track construction, consists of certain improvements in metallic ties; the object of my invention being to devise an improved form of metallic tie providing an efficient and substantial support for the rails and having a structural design differing essentially from metallic ties heretofore proposed or constructed.

My present invention, which is in the nature of an improvement upon the structures shown and described in my pending application for patent filed February 3, 1912, Serial No. 675,226 comprises a tie made up of chairs or supporting elements for the rails, which chairs or supporting elements may be anchored to and spaced apart by suitable connecting members, one form of which may underlie said chairs and extend across the roadbed; being embedded in the ballast thereof. Any suitable form of fastening devices applicable to metallic ties may be employed to secure rails to the structures forming the subject of my invention.

Broadly considered, my improved tie comprises a plurality of rail-chairs formed of beam sections generally I-shape in cross section and having base flanges, preferably arched, which may be wider than the top flanges; such rail-chair sections being connected together and spaced apart by suitable means. In order that the tie may be positively anchored in the road-bed against longitudinal movement, I may provide the same with wings, abutments or anchorage elements which may be struck up from the means connecting the I-beam sections or attached thereto, as clearly shown in the drawings. These and other features of my invention are more fully described hereinafter, reference being had to the accompanying drawings, in which:

Figures 1, 2, 3 and 4, are perspective views of various forms of metallic ties embodying my invention; Figs. 5, 6, 7 and 8, are end elevations, partly in section, of the form of ties shown in Figs. 1, 2, 3 and 4; Fig. 9, is a side elevation of another form of metallic tie structure within the scope of my inven-

tion; Fig. 10, is a view similar to Fig. 5, illustrating a modified form of one of the details of my invention, and Figs. 11, 12, 13, 14 and 15, are views of various cross sectional contours of one of the elements composing my improved tie.

In the drawings, 1, 1, represent rail chairs, formed preferably of sections of metal substantially I-form in shape, which are disposed in the roadbed to support the rails of the permanent way in proper position, to whatever gage such rails may be set. Each of said rail chairs comprises a web 2, upper flanges 3, and lower flanges 4; said lower flanges being preferably arched. In order that such rail chairs may be maintained in proper position with respect to each other they are spaced apart and connected together by suitable means, which means may vary in character. In the form of structure shown in Figs. 1 and 2, the rail chairs 1 are shown as connected together and spaced apart by means of bars 5, secured to the webs 2 of said chairs by fastening means passing through the parts, such as the rivets 6 shown in the drawing, or equivalent fastening means. An end elevation of one of the rail-chairs shown in Fig. 1, with the connecting bars 5 in cross section is shown in Fig. 5.

As an additional means of spacing the rail-chairs, I may employ a base-plate of substantially the same character as that shown in my pending application filed February 3, 1912. In Figs. 2, 3, 6 and 7, of the drawings, 7 represents a base plate or anchorage member, which may be disposed below and held in place by the ballast of the roadbed. This plate 7, in all of the forms hereinafter described, is substantially arch-shaped in cross section. In the forms shown in Figs. 2, 3, 6 and 7, it comprises outwardly and downwardly inclined webs 8 on both sides of a central portion, which is truncated as indicated at 9. Other forms of base plates or anchorage members may be employed, however, having various cross sectional contours, as illustrated in Figs. 11, 12, *et seq.*

The lower flanges of the rail-chairs are of substantially the same contour as the upper surface of the base plate or anchorage member 7 and preferably of a greater width than the upper flanges of said chairs. They may be riveted or otherwise secured to said base plate or anchorage member; it being es-

sential that their connection thereto be as rigid and strong as it is possible to make the same in order that no displacement or separation may occur in practice. In the form of tie shown in Fig. 2, the rail-chairs are further connected together and spaced apart by the bars 5 of the same character as those shown in Fig. 1. An end elevation of one of the rail chairs shown in Fig. 2, with the connecting bars 5 and base-plate 7 in section, is shown in Fig. 6.

To provide anchorage elements that will prevent longitudinal movement of the tie, I may employ in a structure having the base-plate, bars 5^a of the character shown in Fig. 3, in which the ends of the same are bent out as indicated at 10, substantially at right angles to the web of the chairs and on opposite sides of the same, and in addition other wings 10^a may be secured to said bars. If desired, such wings may be secured to the bars 5 shown in Fig. 2. An end elevation of one of the chairs shown in Fig. 3, with the bars 5 and base member 7 in cross section, is shown in Fig. 7.

In Fig. 4, I have shown a form of tie in which the connecting bars 5^b are substantially L-shape in cross section; being disposed in engagement with the web and lower flanges of the rail-chairs. These connecting members may extend beyond the rail-chairs as shown; affording an additional base support for the same and taking the place of the plate 7, and they may be provided with anchorage elements comprising wings 10^b, which may be disposed substantially at right angles to the longitudinal axis of the tie. They may also be provided with depending portions 11 cut out and pressed down from the lower flanges of said L-shaped sections. An end elevation of this form of tie is shown in Fig. 8, with the bars 5^b in section.

In some instances it may be desirable to provide a tie structure for carrying a plurality of rails; for instance at switches and crossovers. In Fig. 9, I have shown such a structure in which a pair of rail-chairs 1, 1, adapted for the reception of single rails are combined with and connected to a rail-chair 1^a adapted for the reception of a pair of rails, or a frog; the connecting means being a plurality of the bars 5, riveted to the several chairs. If desired said chairs may also be connected to a base-plate or anchorage member 7^a.

In most instances, the connecting members 5, 5^a, 5^b, will be flat bars or plates. In some instances, however, it may be desirable to stiffen the same and in Fig. 10, I have shown connecting bars 5^c for the rail-chairs, T-shape in cross sectional contour. Connecting bars of other sections may be employed, and in some instances it may be desirable to corrugate or otherwise stiffen the

flat bars shown as employed with certain forms of my improved tie.

The contour of the base-plate may vary, and in Figs. 11, 12, *et seq.*, I have shown various cross sections of base plates which may be employed as supporting means for the rail-chairs.

In the structure shown in Fig. 11, the side portions or webs 8, terminate in longitudinal flanges 15 which may extend above and below the said webs.

In Fig. 12, the side portions or webs are thickened at 16 adjacent the edges of the same, and may be provided with longitudinal flanges 15^a depending below the under surface of the plate.

The structure shown in Fig. 13, is substantially the same as that shown in Fig. 12, omitting, however, the depending flanges.

In Fig. 14, a form of plate is shown in which the webs 8 have vertically offset portions connected by a wall 17, and in Fig. 15, a similar structure is shown having a plurality of offset portions connected by walls 17^a.

The rails mounted upon the I-beam rail-chairs may be secured thereto in any suitable manner and by any suitable means capable of performing the desired function. With such fastening means I may combine and employ any form of suitable means for insulating the rails from the rail-chairs and from each other, and the rail-chairs may be similarly insulated from each other and from the base-plate 7, and from the connecting bars 5, 5^a, 5^b, *et seq.*

I claim:

1. In a metallic tie, the combination of a plurality of rail chairs formed of I-beam sections having upper horizontal and lower arched flanges with integral connecting webs in the same longitudinal plane, spacing and connecting members for said rail chairs, and means in line with the webs of said rail chairs for securing said spacing and connecting members thereto.

2. In a metallic tie, the combination of a pair of rail chairs formed of I-beam sections having upper horizontal and lower arched flanges with integral connecting webs, longitudinal members in line with their webs connecting and spacing said rail chairs, and anchorage wings disposed substantially at right angles to the longitudinal axis of said tie carried by said connecting and spacing means.

3. In a metallic tie, the combination of a pair of rail-chairs, a base plate or anchorage member therefor serving as a spacing element and permanently secured thereto, supplemental connecting means for said rail-chairs disposed above the plane of said base plate, and wings carried by said supplemental connections and disposed substantially at right angles thereto.

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4. In a metallic tie, the combination of a pair of rail-chairs, a base plate or anchorage member therefor serving as a spacing element and permanently secured thereto, said base plate or anchorage member being substantially arch-shaped in cross section, and supplemental connecting means for said rail-chairs disposed above the plane of said base plate.

5. In a metallic tie, the combination of a pair of rail-chairs formed of I-beam sections, a base plate or anchorage member therefor serving as a spacing element and permanently secured thereto, said base plate or anchorage member being substantially arch-shaped in cross section, and supplemental connecting means for said rail-chairs disposed above the plane of said plate.

6. In a metallic tie, the combination of a pair of rail-chairs each having upper and lower flanges and a central connecting web, a base plate or anchorage member therefor serving as a spacing element and permanently secured thereto, said base plate or anchorage member being substantially arch-shaped in cross section and the lower flanges of the chairs having the same contour as said member, and a separate bar attached to the webs of said rail-chairs and connecting the same above the plane of the base plate.

7. In a metallic tie, the combination of a pair of rail-chairs having upper and lower flanges, a base plate or anchorage member therefor serving as a spacing element and permanently secured thereto, and supplemental connections for said rail-chairs comprising a plurality of bars riveted to the webs of said rail-chairs and disposed above the base plate.

8. In a metallic tie, the combination of a pair of rail chairs each having a substantially vertical web and upper horizontal and lower arched flanges integral therewith, said webs being disposed in the same longitudinal plane, a bar in line with said webs for connecting and spacing said rail chairs, and means for connecting bar and chairs together.

9. In a metallic tie, the combination of a pair of rail chairs each having a substantially vertical web and upper horizontal and lower arched flanges integral therewith, said webs being in the same longitudinal plane, and a plurality of bars in line with said webs for connecting and spacing said rail chairs, and means for securing said bars and rail chairs together.

10. In a metallic tie, the combination of a pair of rail-chairs each having a substantially vertical web and upper and lower flanges, said webs being in the same longitudinal plane and a plurality of reinforced bars in line with said webs for connecting said rail-chairs and spacing the same apart.

11. In a metallic tie, the combination of a plurality of rail-chairs each having a web and upper and lower flanges, a bar connecting said chairs and spacing the same apart, and an arched base-plate connected to and underlying said rail-chairs, the lower flanges of said chairs being arched to conform to the contour of said base-plate.

12. In a metallic tie, the combination of a pair of rail-chairs each having a web and upper and lower flanges, a plurality of bars connecting said chairs and spacing the same apart an arched base-plate connected to and underlying said rail-chairs, the lower flanges of said chairs being arched to conform to and follow the contour of said base-plate, and means for securing the rail-chairs to said base plate.

13. In a metallic tie, the combination of a pair of rail-chairs each having a web and upper and lower flanges, a plurality of bars connecting said chairs and spacing the same apart a base-plate connected to and underlying said flanges, and wings for preventing longitudinal movement of the tie connected to said bars and base-plate.

14. In a metallic tie, the combination of a plurality of rail-chairs each having a web and upper and lower flanges, bars connecting said chairs and spacing the same apart, said bars extending beyond the ends of the rail-chairs and forming base supports for the same.

15. In a metallic tie, the combination of a plurality of rail-chairs each having a web and upper and lower flanges in the same longitudinal plane, and a plurality of L-shaped bars in line with said webs for connecting said rail-chairs and spacing the same apart.

16. In a metallic tie, the combination of a plurality of rail-chairs each having a web and upper and lower flanges, a plurality of L-shaped bars engaging the web and lower flanges of said rail-chairs, and laterally extending anchoring wings carried by said bars.

17. In a metallic tie, the combination of a plurality of rail-chairs each having a web and upper and lower flanges, a plurality of L-shaped bars engaging the web and lower flanges of said rail-chairs, and laterally extending anchoring wings integral with said bars.

18. In a metallic tie, the combination of a plurality of rail-chairs each having a web and upper and lower flanges, a plurality of L-shaped bars engaging the web and lower flanges of said rail-chairs and connecting and spacing the same apart, and depending anchoring wings integral with the lower flanges of said bars.

19. In a metallic tie, the combination of a plurality of rail-chairs each having a web and upper and lower flanges, a plurality of

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L-shaped bars engaging the web and lower flanges of said rail-chairs and connecting and spacing the same apart, laterally extending anchoring wings integral with said bars, and depending anchoring wings integral with the lower flanges of the same.

In testimony whereof, I have signed my

name to this specification, in the presence of two subscribing witnesses.

DANIEL CRAWFORD, JR.

Witnesses:

MURRAY C. BOYER,
WM. A. BARR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."