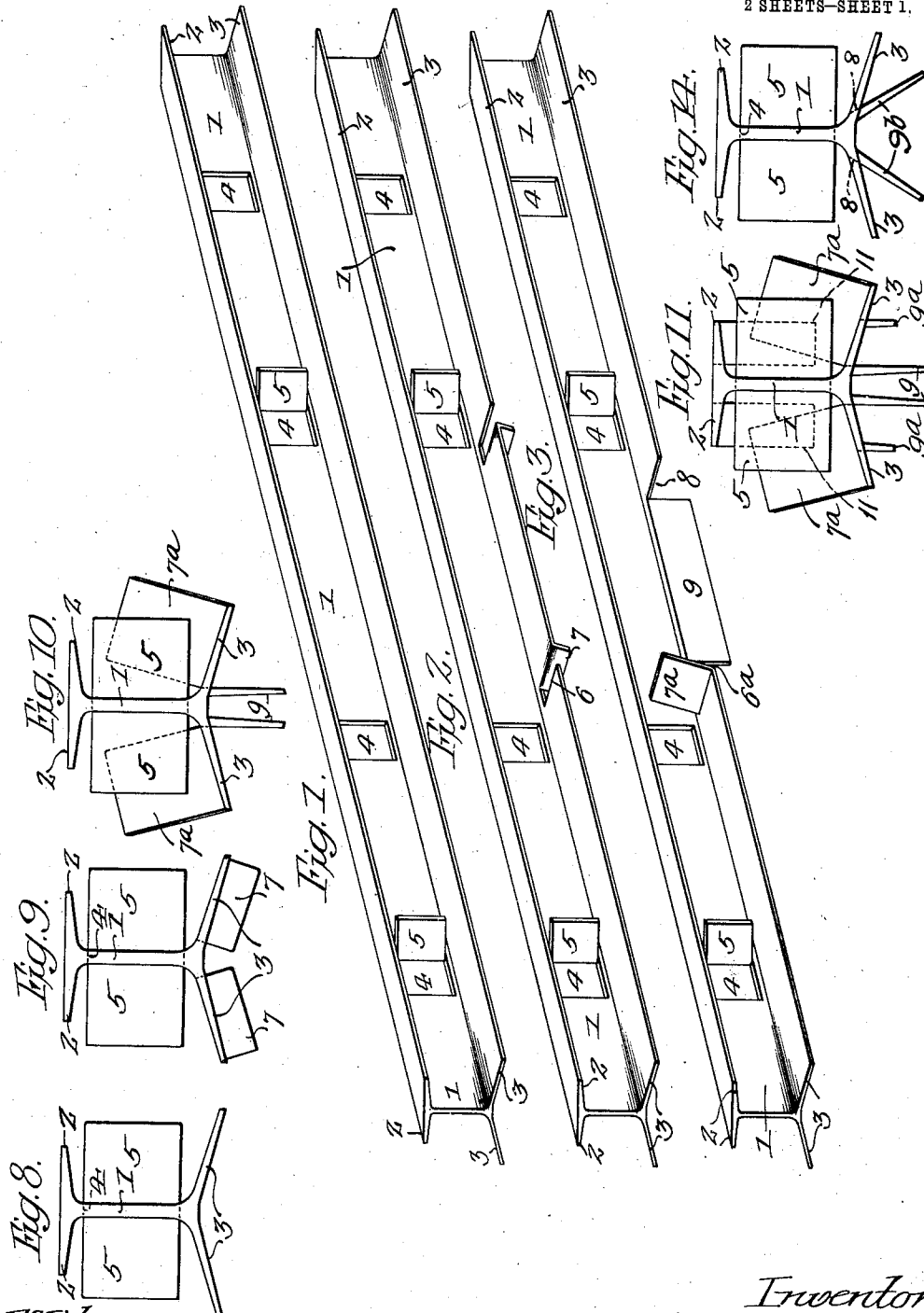


D. CRAWFORD, JR.
METALLIC TIE.
APPLICATION FILED MAR. 9, 1912.

1,063,014.

Patented May 27, 1913.

2 SHEETS—SHEET 1.



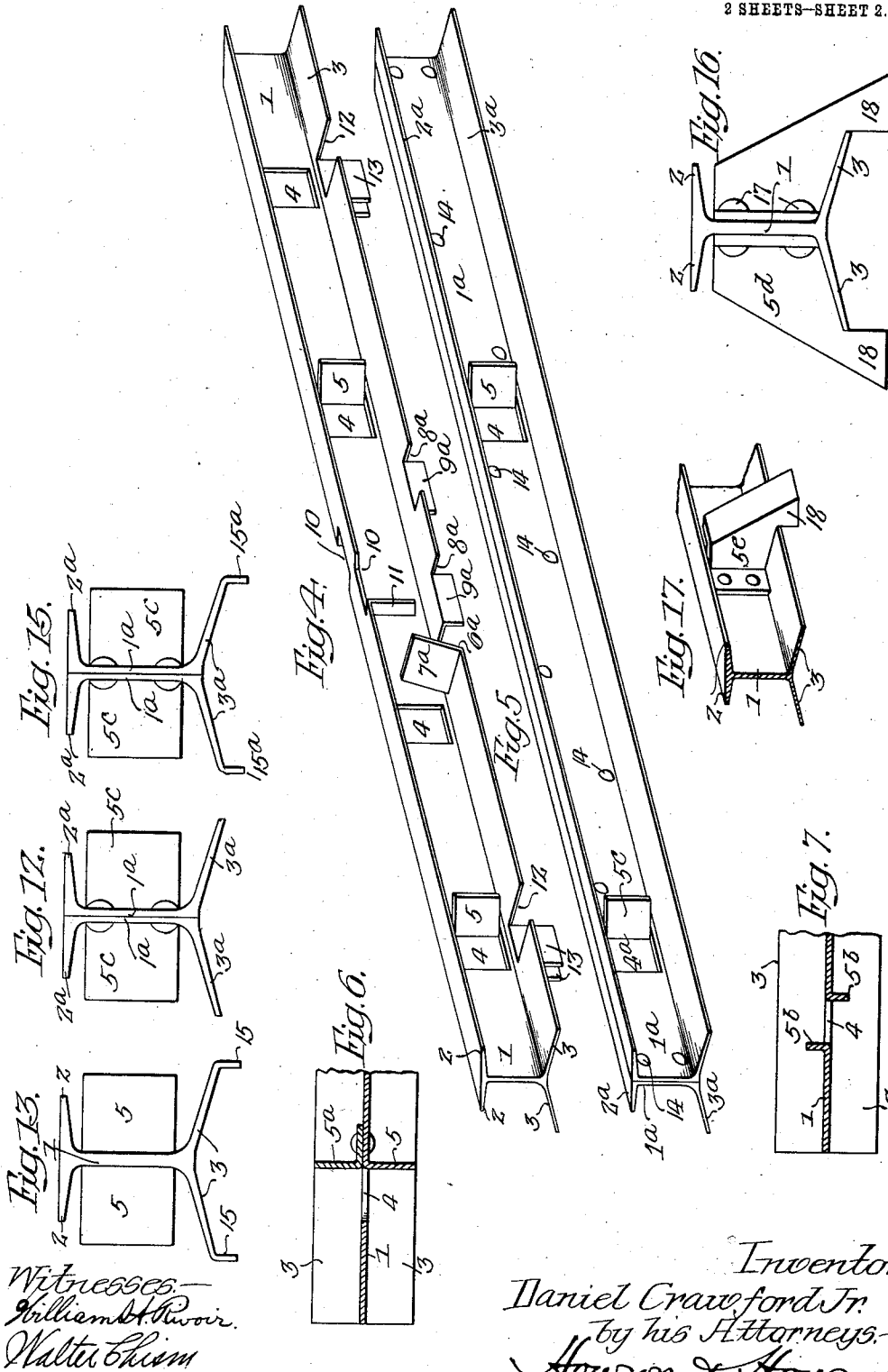
Witnesses
William H. Hoover.
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Inventor:
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

DANIEL CRAWFORD, JR., OF PHILADELPHIA, PENNSYLVANIA.

METALLIC TIE.

1,063,014.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed March 9, 1912. Serial No. 682,629.

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 provide an improved form of metallic tie forming an efficient and substantial support for the rails and having a structural design differing essentially from metallic ties heretofore proposed or constructed.

Broadly considered, my improved tie comprises a beam structure generally I-shape in cross section and having arched base flanges which may be wider than the top flanges. In order that such form of tie may be positively anchored in the roadbed, I provide the same with wings or anchorage elements which may be struck up from the web or the several flanges of the beam structure, as clearly indicated 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, 4 and 5, are perspective views of various ties embodying my invention; Figs. 6 and 7, are sectional views of details of my invention; Figs. 8, 9, 10, 11, 12, 13, 14, 15 and 16, are end elevations of various forms of tie within the scope of my invention, and Fig. 17, is a perspective view of another detail of my invention.

In Fig. 1, I have shown a metallic tie having a web 1, upper flanges 2, and lower flanges 3, said lower flanges being arched and in the present instance of a greater width than the top flanges.

To provide anchorage elements that will prevent longitudinal movement of the tie, the web of the same is cut as indicated at 4 providing wings 5 integral with the web; which wings are bent out substantially at right angles to said web and on opposite sides of the same. The apertures enable the ballast on opposite sides of the web to meet, and the arched base flanges of the tie afford means whereby it may be readily tamped. If desired a plurality of wings

may be provided adjacent each opening, and in Figs. 6 and 7, I have shown two forms of tie embodying this feature. In Fig. 6, an additional wing 5^a may be secured by suitable means, riveting for instance, to the web of the tie. In the form shown in Fig. 7, two wings 5^b are formed up at each opening. Fig. 8 is an end elevation of the form of tie shown in Fig. 1.

In Fig. 2, a similar form of tie is shown, having in addition depending wings formed by cutting the base flanges at 6 and bending down portions 7 of the same. Fig. 9 is an end elevation of the tie shown in Fig. 2.

In Fig. 3, I have shown a metallic tie having the same characteristics as Fig. 1, and in addition thereto upstanding wings carried by the base flanges 3, formed by cutting the same at 6^a and bending up portions 7^a as shown, substantially at right angles to the said flanges. In addition, these lower flanges are cut at 8, and depending portions 9 are pressed down from the same; substantially in line with the longitudinal axis of the tie, and serving as means to prevent lateral movement thereof. Fig. 10, is an end elevation of the tie shown in Fig. 3.

In Fig. 4 I have shown a tie in which the web and all of the flanges are shown as having portions displaced therefrom to afford anchorage points. In addition to the wings 5, struck up from the web, the upper flanges are cut at 10, and depending portions 11 are pressed down from the same. The base flanges also are cut at 8^a and depending portions 9^a are pressed down from the same, and in addition said base flanges are cut at 12 to form depending portions 13, less in width than the portions 9^a, but paralleling the same. Fig. 11, is an end elevation of the tie shown in Fig. 4.

In Fig. 5, I have shown a tie made of a plurality of channel members set web to web and riveted together as indicated at 14. In this form of structure, the webs are indicated at 1^a, the upper flanges at 2^a and the lower flanges at 3^a; the whole constituting a tie of substantially the same cross sectional contour as that illustrated in Fig. 1. The webs are apertured alternately at 4^a and wings 5^c are pressed out from the same as indicated. Fig. 12, is an end elevation of the tie shown in Fig. 5.

Fig. 13, is an end elevation substantially similar to Fig. 1, showing the lower flanges 3 of the tie provided with depending edge flanges or lips 15 extending longitudinally of said tie.

Fig. 14, is an end elevation of a tie having the laterally extending wings 5 as shown in Figs. 1, 2, 3, *et seq.*, and depending portions 9^b pressed down from the lower flanges and paralleling the same, said portions being flared outwardly.

Fig. 15, is an end elevation of a tie of the same general character as that shown in Fig. 5, with its lower flanges provided with depending lips 15^a extending longitudinally of said tie.

In Fig. 16, I have shown an end elevation of a tie having laterally extending wings 5^a riveted or otherwise secured thereto at 17, and having portions 18 carried by said wings and depending below the lower flanges of said tie.

Fig. 17, is a perspective view of a structure substantially the same as that shown in Fig. 16, in which the wings 5^a have portions bent around in line with the tie to form additional anchorage means against longitudinal and lateral movement.

The rails mounted upon the tie may be secured thereto in any suitable manner and by any suitable means capable of performing the desired and required function. With such fastening means I may combine and employ any form of suitable means for insulating the rails from the tie and from each other.

I claim:

1. A tie comprising a rolled metal member of uniform cross section throughout, having upper and lower flanges, and a web connecting the same, in combination with integral anchorage elements carried by said web and flanges and projecting at an angle with respect thereto.

2. A metallic tie comprising a section substantially I-shape in cross section, having portions of its web and portions of one of its flanges struck up to form anchorage elements.

3. A metallic tie comprising a section having flanges and a web substantially I-shape in cross section, having portions of its web and portions of its flanges struck up to form anchorage elements disposed substantially at

right angles to said web to prevent longitudinal movement of said tie in the roadbed.

4. A metallic tie comprising a section having flanges and a web substantially I-shape in cross section, having portions of its web struck-up substantially at right angles thereto to form anchorage elements, and portions of its flanges struck-up in line with the longitudinal axis of said tie and other portions struck-up at right angles thereto to form additional anchorage elements.

5. A metallic tie comprising a section having upper and lower flanges and a web substantially I-shape in cross section, said tie having portions of its web and flanges struck-up to form anchorage elements.

6. A tie comprising a rolled metal member of uniform cross section having upper horizontal and lower arched flanges with a web connecting the same, in combination with anchorage elements carried by said tie member substantially at right angles with respect to the longitudinal axis of the same, said anchorage elements being disposed opposite the web of the tie and having portions extending below the lower flanges of the same.

7. A tie comprising a rolled member of uniform cross section having upper horizontal and lower arched flanges with a web connecting the same, in combination with anchorage elements carried by said tie member substantially at right angles with respect to the longitudinal axis of the same, said anchorage elements being disposed opposite the web of the tie and having portions extending below the lower flanges of the same and parallel with the longitudinal axis of the tie.

8. A metallic tie comprising a metal member substantially I-shape in cross-section, consisting of a plurality of channel beams having upper and lower flanges and a web connecting the same, means connecting said beams together, and anchorage elements carried by said web and flanges and projecting at an angle with respect thereto.

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.