

J. A. HYLE.  
RAILWAY TIE AND RAIL FASTENING.  
APPLICATION FILED MAR. 11, 1913.

1,065,686.

Patented June 24, 1913.  
2 SHEETS—SHEET 1.

Fig. 1.

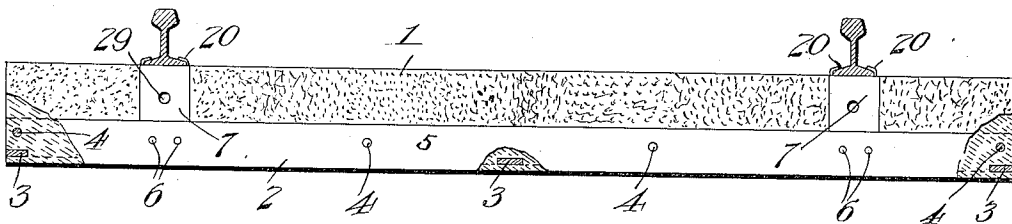


Fig. 2.

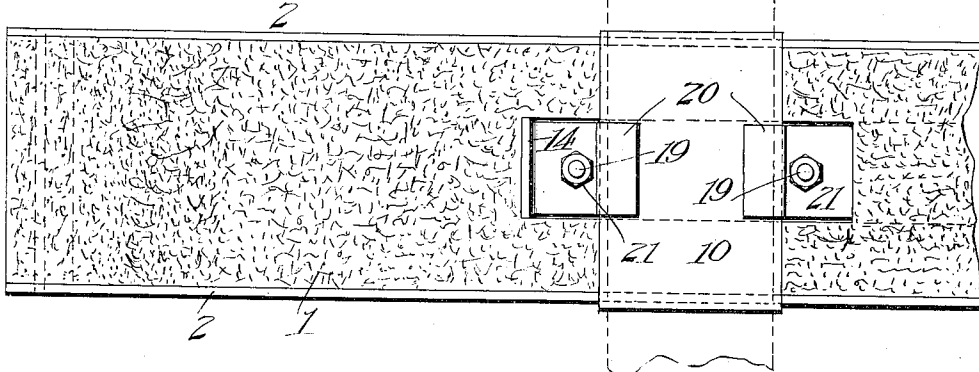
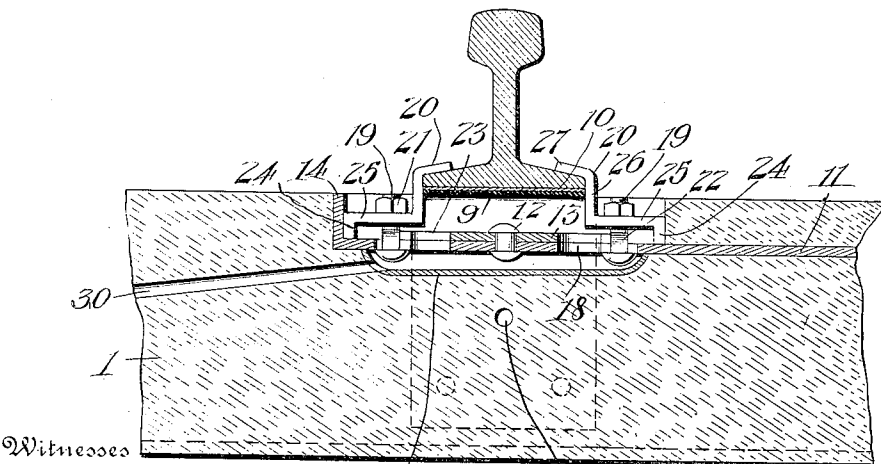


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

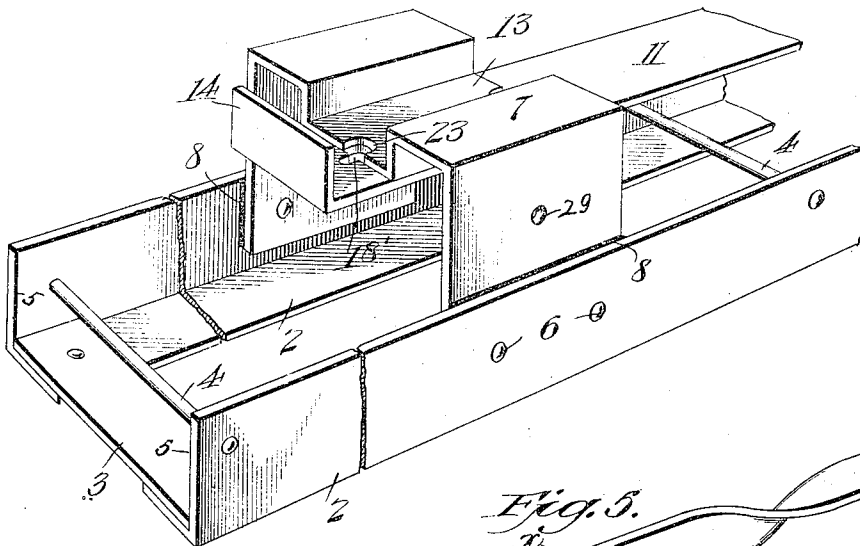


Fig. 5.

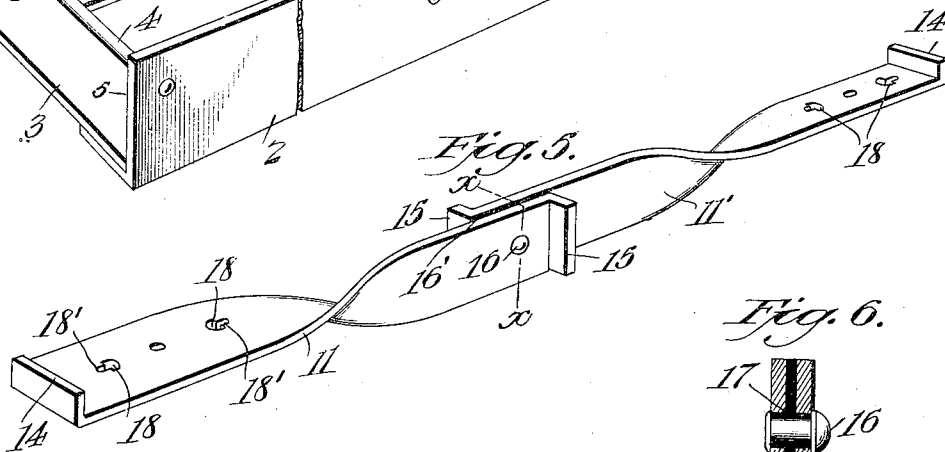


Fig. 6.

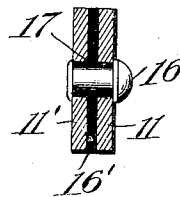


Fig. 7.

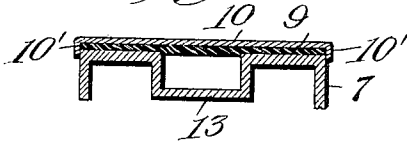


Fig. 9.

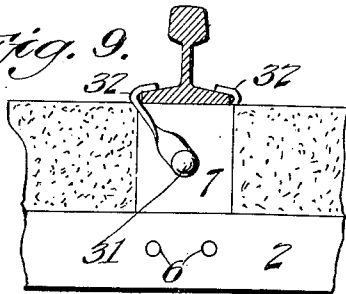
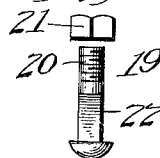


Fig. 8.



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# UNITED STATES PATENT OFFICE.

JACOB A. HYLE, OF CHICAGO, ILLINOIS, ASSIGNOR TO NEW YORK STEEL RAILWAY TIE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

## RAILWAY-TIE AND RAIL-FASTENING.

1,065,686.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed March 11, 1913. Serial No. 753,595.

*To all whom it may concern:*

Be it known that I, JACOB A. HYLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Ties and Rail-Fastenings, of which the following is a specification.

My invention relates to the construction of railway ties and means for rigidly and securely fastening the track rails in place on the ties of steam and electric railways.

The prime object of the invention is to provide an improved railway tie constructed of metal and concrete or other suitable plastic material in connection with simple, strong, economical, durable and efficient means for firmly securing the track rails to the said improved railway tie.

Another object of the invention is to furnish novel securing means located within the body of my improved tie and below the upper surface thereof for firmly fastening the track rails to the tie, and means for the insulation of the track rails from said tie.

Another object of my invention is to provide my improved tie with a recess or depression near each end thereof and beneath the base of each track rail adapted to receive the track rail securing means, and means formed within the tie and leading from each recess or depression to the outer end of the tie for the drainage of water or moisture therefrom and thus prevent corrosion of the metallic fastening means.

A further object is to furnish an additional or auxiliary means for fastening the track rails to my improved railway tie, and said means may be employed on curves where additional strength is required, and also in the event of accident to the initial or main fastening means.

The foregoing and such other objects as may occur from the ensuing description, are accomplished by the means hereinafter more fully described, and by the combination, construction, arrangement and location of the parts such as illustrated in the accompanying drawings and particularly pointed out in the claims appended hereto.

Reference now being had to the accompanying drawings which form a part of this specification and in which similar numerals of reference indicate like parts, it will be

seen that: Figure 1, is a side elevation of a tie embodying my invention, showing the tie slightly broken away in parts. Fig. 2, is an enlarged plan view of one end portion of my improved railway tie showing a portion of the track rails in dotted lines. Fig. 3, is an enlarged longitudinal sectional view through one end portion of the tie showing the fastening device and the drainage opening leading therefrom. Fig. 4, is a perspective view showing the metallic construction of one end portion of my improved railway tie before the concrete is added thereto. Fig. 5, is a perspective view showing a tie bar made of two pieces riveted together near the inner end of each piece. Fig. 6, is a transverse sectional view taken on the line  $x-x$ , Fig. 5. Fig. 7, is a transverse sectional view of the upper portion of the tie directly beneath the track rail, showing the wear plate and the insulating resilient cushion or pad located beneath the base of the rail. Fig. 8, is a side elevation of one of the securing bolts and nuts, and Fig. 9, is a side elevation of one end of my improved railway tie showing the additional or auxiliary means for fastening the track rail to the tie.

In carrying out my invention I provide an improved railway tie 1 of suitable dimensions throughout its length, and the metallic portion of said tie with which my invention is embodied in the form illustrated in the drawings, comprises a pair of angle irons or plates 2 extending throughout the length of the tie and forming a portion of the base at each side thereof, and to the inside of each angle bar at each end and at the middle thereof is securely riveted a tie plate 3, and said angle irons are also secured together near the top portion of each by a series of tie rods or long rivets 4 to prevent their spreading apart under strain. To the inside of the vertically extended portion 5 of each angle iron and near each end thereof is firmly secured by rivets 6, a steel plate 7 the width of the base of the rail and preferably bent in the shape shown in Fig. 4, which plate constitutes a rail chair or support. Between each plate 7 and the inside of each angle iron is placed a sheet or plate of insulating material 8, and each rivet 6 is surrounded with a tube or sleeve of fibrous insulating material whereby the angle irons are securely insulated from the

5 rail chair or supporting plate 7. The upper surface of said supporting plate 7 is covered with a resilient pad or cushion 9 of insulating material made up of a number of thin thicknesses of any suitable material, thereby forming an insulating cushion for the rail, thus tending to prevent a rail from breaking when under the strain and pounding of the rolling stock. This pad or cushion is covered with a wear plate 10 located beneath the base of the rail to receive the motion of the rail, and to prevent wear on the pad or cushion 9, said plate 10 being provided with downwardly extended flanges 10' at each end thereof adapted to clamp over the outer side of the supporting plate or chair 7 and prevent endwise movement of said wear plate 10, as clearly shown in Fig. 7.

20 A tie plate consisting of two pieces 11, 11', as clearly shown in Fig. 5, is securely riveted at 12, near each end thereof to the underside of the depressed portion 13 of the plate 7, (as shown in Fig. 3), and at the outer end of each piece of the tie plate is formed an upward extending portion 14, terminating at the upper surface of the tie, while the inner end of each piece is formed with an outward or laterally projecting portion 15, said projecting portion 15 being embedded in the concrete of the tie at different places instead of at even space, thus avoiding the breaking off of the concrete at a central point, the concrete serving to prevent the spreading strain of the bar from acting on the rivet 16, said rivet being adapted to secure the two pieces of the tie plate together, the two pieces being insulated from each other by a plate or sheet of insulating fiber 16', and a tube or sleeve of fiber 17 surrounding the rivet. The said tie plate is provided near each end thereof with openings 18 adapted to receive the securing bolts 19, for fastening the rail securing clips 20 to the tie plate and to the base of the track rail.

45 As shown in Fig. 8 of the drawings the stem of each securing bolt 19 is provided with an upper rounded threaded portion 20 adapted to receive a securing nut 21 and a lower flattened portion 22. By the proper manipulation of the bolt the headed portion is caused to pass through the notch 23 formed in the depressed portion 13 of the plate 7, and through the openings 18 in the tie plate and rest in contact with the underside of said tie plate the flattened portion of the bolt being adjusted to rest within the slotted portion 18' of the tie plate to prevent the bolt from turning, as shown in Fig. 3. Each rail securing clip 20 is formed with a downwardly projecting rear portion 24, resting on the upper surface of the tie plate, a horizontal central portion 25, and an upward and forwardly extending portion 26 terminating in the inclined overlapping portion 27 adapted to contact with and se-

70 curesly clamp the upper surface of the base of the track rail. This form of clip will furnish resiliency for the securing nut, and the depressed portion in the plate 7 permits the clip to be adjusted to the position shown in Fig. 3, the nut and bolt, and all of the securing clip, except that portion overlapping the base of the rail, being below the surface of the tie thus eliminating all obstructions above the upper surface of the tie.

75 After the formation of the metallic portion of the tie, such as shown in Fig. 4 of the drawings, a wooden block is placed in the depressed portion of the tie chair or supporting plate 7, said block extending a suitable distance beyond each side of the plate, in order to form a recess in the central portion of the finished tie near each end thereof to receive the securing means herein described. The tie is then turned upside down and an elongated cup-shaped piece 28 of suitable metal is placed on the underside and in contact with the tie plate (as shown in Fig. 3), the outer end being provided with an opening for the inner end of a rod which is placed in an inclined position and leading to the outer end of the tie, and another rod is placed transversely through the openings 29 in the plate 7, the metallic construction is then surrounded by a suitable casing and the concrete or other suitable plastic material is added. When the concrete material has become properly or sufficiently set and dried, the casing, the wooden block, the rod arranged in each end of the tie, and the transverse bolt extending through each plate 7, are all removed thus leaving a product of the form shown in Fig. 1 of the drawings. The removal of the wooden blocks leaves a recess in the upper surface of the tie near each end thereof of the shape such as shown in Figs. 2 and 3, the removal of the inclined rods leaves a drainage opening 30, leading from each recessed portion to each outer end of the tie, while the removal of the transverse rods leaves a transverse opening through the tie near each end thereof adapted to receive a bolt 31 provided at each end with a clamp 32 overlapping the upper portion of the base of the track rail in contact therewith and constituting an additional or auxiliary means (as shown in Fig. 9) for securing the track rails to the tie when such additional securing means is desired or required.

120 It will be seen that either end of the tie plate terminates in a vertical extended portion on the outside of the track rail, said extended portion serving as a brace for the rail securing clip to prevent the clip from spreading and thus allowing the rails to spread, and receive the outward thrust of the strain on the rail when heavy rolling stock is passing over the track rails and especially on curves in the road bed. The

securing clip located on the inner side of each track rail, not being subjected to excessive strain, is securely held in position within the recess within the upper portion of the tie by the securing bolt, the rear portion of the clip resting against the concrete wall formed at the inner end of said recess.

It will be readily understood that the tie plate secured to the angle irons at each end of the tie serves as a protection to the tie when workmen using bars are employed to pry up the tie for ballasting purposes, the bars coming in contact with the metal plate instead of the concrete portion of the tie.

It will be obvious that slight alterations may be resorted to in the details of the construction herein set forth without departing from the spirit of my invention.

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

1. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base thereof, a tie plate rigidly secured to the angle irons at each end and at the central portion, a rail supporting chair or plate firmly secured to the angle irons near each end thereof, a concrete filling, and a tie plate embedded within the concrete extending lengthwise of the tie, said tie plate being rigidly secured to the underside of the rail supporting plate near each end of the tie plate.

2. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base thereof, a tie plate rigidly secured to the angle irons at each end and at the central portion, a series of rods or rivets connected to the upper portion of each angle iron, a rail supporting chair or plate firmly secured to the angle irons near each end thereof, a concrete filling, and a tie plate embedded within the concrete extending lengthwise of the tie, said tie plate being rigidly secured to the underside of the rail supporting plate near each end of the tie plate.

3. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base portion thereof, a tie plate rigidly secured to the angle irons at each end and at the central portion of said angle irons, a rail supporting chair or plate having a depressed central portion and firmly secured to the angle irons near each end thereof, a concrete filling, and a tie plate embedded within the concrete extending lengthwise of the tie, said tie plate being rigidly secured to the underside of the depressed portion of said rail supporting plate, and having an upright extended portion at each end thereof.

4. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base portion thereof, tie plates and tie rods or rivets for firmly securing the angle irons together, a rail supporting chair or plate rigidly secured to the angle irons near each end thereof, a concrete filling, and a tie plate embedded within the concrete extending lengthwise of the tie, said tie plate consisting of two pieces riveted together and insulated apart at the inner end portion of each piece, and each piece having an upright extended portion at its outer end and a laterally projecting portion at its inner end, and firmly secured to the said rail supporting plate near its outer end.

5. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base portion thereof, tie plates and tie rods or rivets for rigidly securing the angle irons together, a rail supporting chair or plate having a depressed central portion and firmly secured to the angle iron near each end thereof, a concrete filling, and a tie plate embedded within the concrete extending lengthwise of the tie and secured to the underside of the depressed portion of said rail supporting plate near each end of the tie plate, said tie plate consisting of two pieces, the outer end of each piece terminating with an upwardly extended portion, and the inner end of each piece terminating with a lateral projection, both pieces being riveted together and insulated apart at their inner ends, and having openings formed near the outer end of each piece.

6. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base portion thereof, tie plates and tie rods for securing the angle irons together, a rail supporting chair or plate rigidly secured to the angle irons near each end of said angle irons, a concrete filling, a tie plate embedded within the concrete extending lengthwise of the tie, said tie plate being firmly secured near each end to the central portion of the underside of said rail supporting plate, an elongated cup-shaped metallic member resting below and in contact with said tie plate, said cup-shaped member having an opening in one end communicating with a drainage opening formed within and leading to the outer end of the tie.

7. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base portion thereof, tie plates and tie rods for securing the angle irons together, a rail supporting chair or plate rigidly secured to the angle irons near each end of said angle irons, a concrete filling, a tie

plate embedded in the concrete extending lengthwise of the tie and rigidly connected to the underside of the rail supporting plate near each end of said tie plate, and a recess formed in the upper central portion of the tie near each end of the tie, said recess being adapted to receive the rail fastening means located below the upper surface of said tie.

8. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base portion thereof, tie plates and tie rods for securing the angle irons together, a rail supporting chair or plate rigidly secured to the angle irons near each end of said angle irons, a concrete filling, a tie plate embedded in the concrete extending lengthwise of the tie and rigidly connected to the underside of the rail supporting plate near each end of said tie plate, a recess formed in the upper central portion of the tie near each end thereof, and rail fastening means secured to said tie plate within said recess.

9. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base portion thereof, tie plates and tie rods arranged crosswise of the tie for securing the angle irons together, a rail supporting chair or plate firmly secured to the angle irons near each end of said angle irons, an insulating plate between said supporting plate and angle irons, a concrete filling, a tie plate embedded in the concrete extending lengthwise of the tie and rigidly connected to the underside of the central portion of said supporting plate near each end of said tie plate, a recess formed in the upper central portion of the tie near each end thereof, and rail securing means located within said recess, said securing means consisting of rail securing clips, the upper portion of each clip overlapping the base of the rail, and nuts and bolts, each bolt having an upper threaded rounded portion adapted to pass through the clip to receive the securing nut, and a lower flattened headed portion adapted to pass through said

tie plate, the headed portion of the bolt resting in contact with the underside of the tie plate and the flattened portion resting within the slotted portion of said tie plate.

10. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base portion thereof, tie plates and tie rods for securing the angle irons together, a rail supporting chair or plate secured to the angle irons near each end of said angle irons, a concrete filling, a tie plate embedded in the concrete extending lengthwise of the tie and rigidly connected to the underside of said supporting plate near each end of said tie plate, a recess formed in the upper central portion of the tie near each end thereof, rail securing means located within said recess, and auxiliary rail securing means at each side of the tie near each end thereof.

11. A combined metallic and concrete railway tie comprising, a pair of angle irons extending lengthwise of the tie, one at each side of the base portion thereof, tie plates and rods for securing the angle irons together, a rail supporting chair or plate secured to the angle irons near each end of said angle irons, a concrete filling, a tie plate embedded in the concrete, extending lengthwise of the tie and firmly secured to the underside of said supporting plate near each end of said tie plate, a recess formed in the upper central portion of the tie near each end thereof, rail securing means located within said recess, and auxiliary rail securing means near each end of the tie consisting of a bolt passed transversely through an opening formed in the tie and provided with a rail clamp at each end of the bolt, each of said clamps being adapted to overlap and clamp the upper surface of the base of the rail.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB A. HYLE.

Witnesses:

ALBERT POPKINS,  
MAY M. PLYER.