

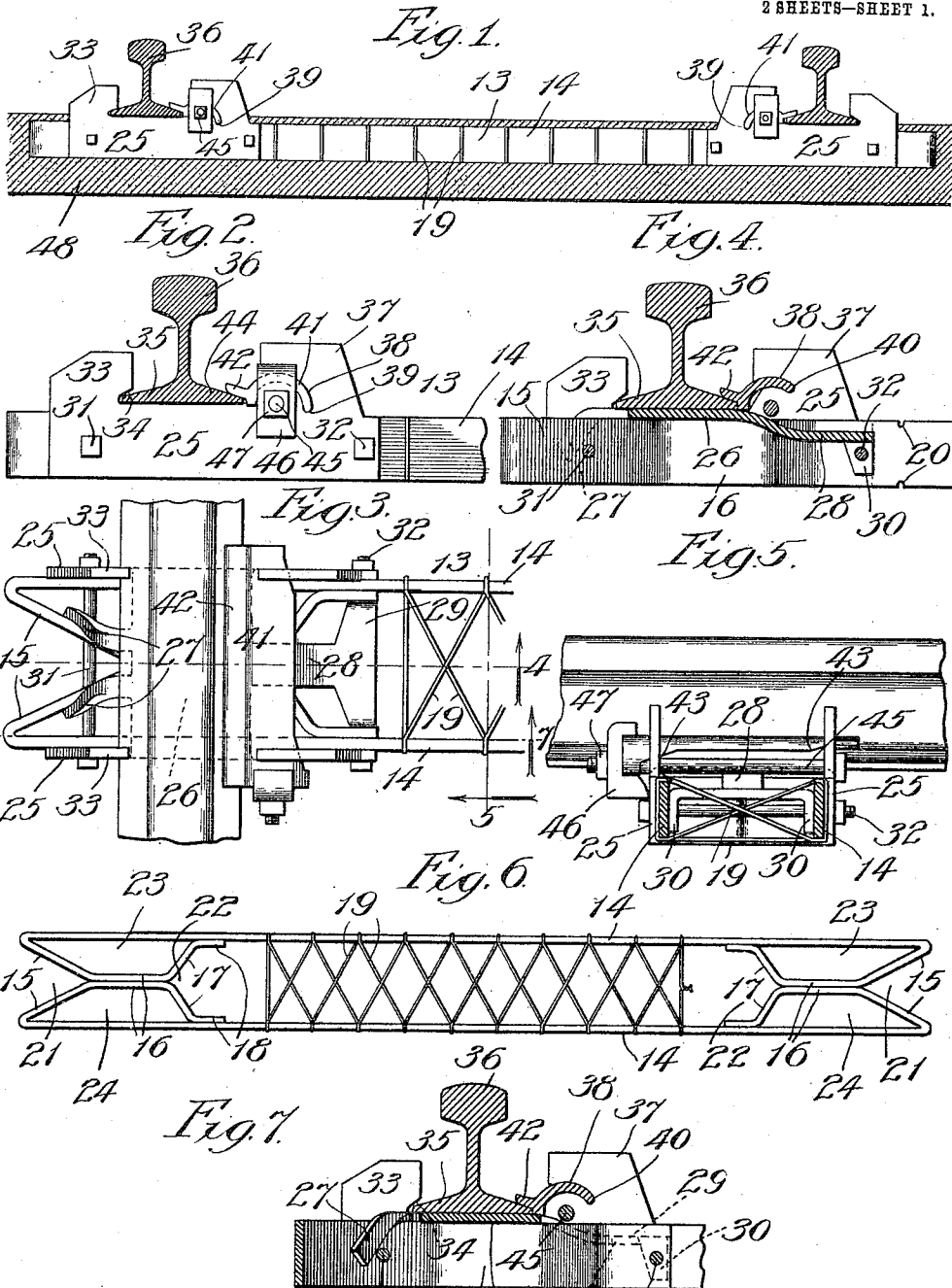
C. R. HOLDEN.
RAILWAY TIE.

APPLICATION FILED OCT. 12, 1908. RENEWED DEC. 13, 1909.

964,515.

Patented July 19, 1910.

2 SHEETS—SHEET 1.



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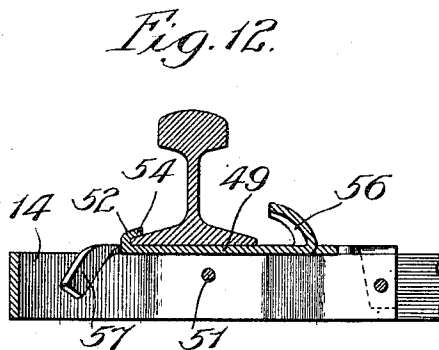
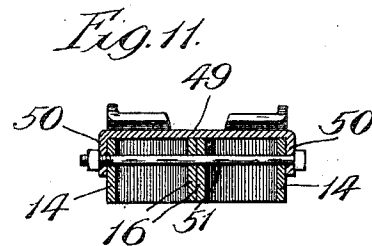
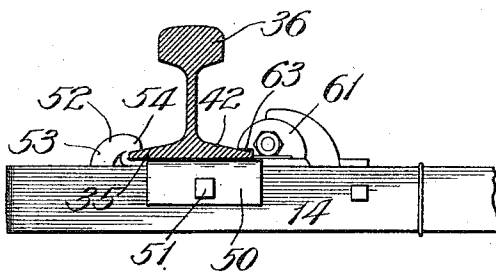
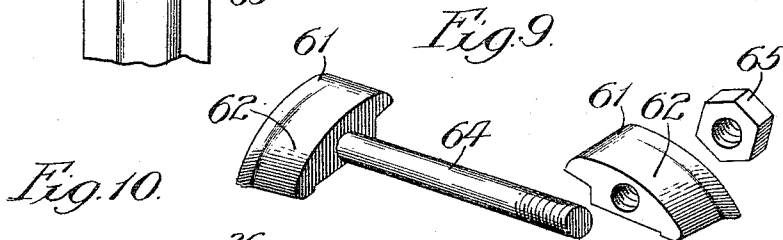
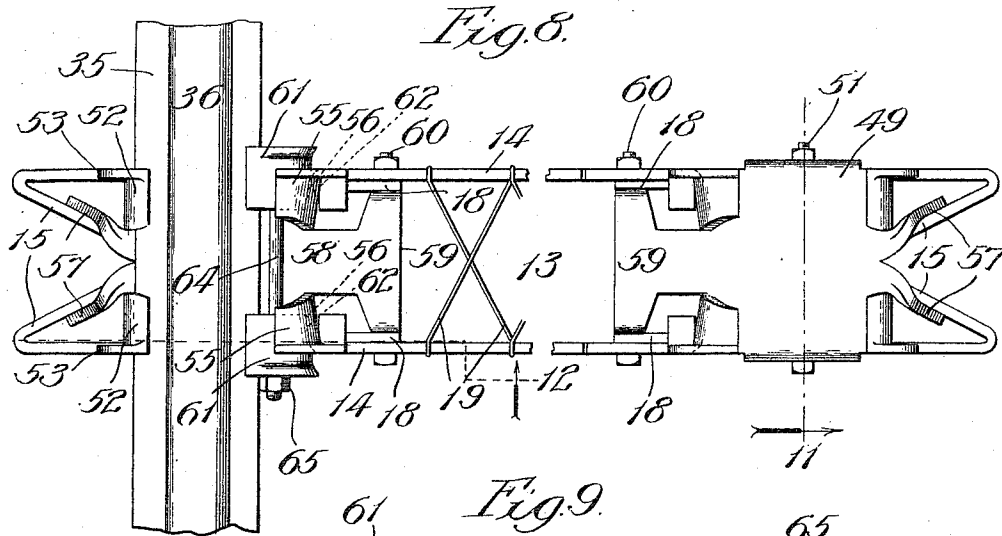
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2 SHEETS—SHEET 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES R. HOLDEN, OF CHICAGO, ILLINOIS.

RAILWAY-TIE.

964,515.

Specification of Letters Patent. Patented July 19, 1910.

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To all whom it may concern:

Be it known that I, CHARLES R. HOLDEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Railway-Ties, of which the following is a specification.

My invention relates, more particularly, to reinforced concrete, or the like, railway-ties; and my object is to provide a tie of this variety which will withstand the strains to which railway-ties are subjected in use, and serve to securely hold in place the rails fastened thereon.

Referring to the accompanying drawings—Figure 1 is a view in longitudinal sectional elevation of a tie constructed in accordance with my invention, this view showing one form of rail-securing means which may be employed. Fig. 2 is an enlarged view in side elevation of one end-portion of the reinforcing member illustrated in Fig. 1 with rail-securing means shown thereon securing the rails in place. Fig. 3 is a plan view of the construction illustrated in Fig. 2. Fig. 4 is a section taken at the line 4 on Fig. 3 and viewed in the direction of the arrow. Fig. 5 is a section taken at the line 5 on Fig. 3 and viewed in the direction of the arrow. Fig. 6 is a plan view of the reinforcing member employed stripped of its rail-securing means. Fig. 7 is a section taken at the line 7 on Fig. 3 and viewed in the direction of the arrow. Fig. 8 is a broken plan view of the reinforcing member illustrated in Fig. 6 showing a rail secured thereon at one end by another form of means which may be employed, the rail and its securing device being omitted from the opposite end of the reinforcing member. Fig. 9 is a prospective view of the wedge-keys illustrated in the construction shown in Fig. 8. Fig. 10 is a view in side elevation of the left-hand end of the tie illustrated in Fig. 8, showing a rail, in cross-section, secured thereto. Fig. 11 is a section taken at the line 11 on Fig. 8 and viewed in the direction of the arrow; and Fig. 12, a section taken at the irregular line 12 on Fig. 8, and viewed in the direction of the arrow.

The reinforcing member which it is intended should be embedded in the material of the tie-proper, which latter is preferably of concrete, is represented at 13 and comprises two strips, or bars, 14, preferably of

sheet-steel, the opposite ends of each of which are bent upon themselves to afford an oblique section 15, a section 16 parallel with the main portion of the strip 14 and spaced from it as represented, a sharply inclined section 17, and another section 18 extending parallel with the main portion of the strip 14 and resting flatwise against it. It is intended that this pair of bars be united together to form a unitary structure in which the opposed sections 16 abut against each other and thereby cause the bars 14 to be spaced apart. Any suitable means for this purpose may be employed, as for instance the wires 19 which may be wound back and forth over the bars from one to the other in the manner indicated to extend into the notches 20 in the opposed edges of the bars. By thus forming the reinforcing member each end-portion thereof contains an outwardly opening V-shaped recess 21, an inwardly opening V-shaped recess 22, and two spaces 23 and 24 of irregular shape located between the recesses 21 and 22, for a purpose hereinafter explained.

Referring to Figs. 1 to 7, inclusive, I have illustrated one form of means for securing the rails to the tie. This form of construction involves the use of two plates 25 secured to the opposite outer sides of the bars 14 in a manner hereinafter described, these plates being joined together, preferably integrally, by a horizontally extending plate or clip 26 which rests upon the upper edges of the bars 14. The plate 26 has extending from it at one side a pair of converging arms 27 which are curved as illustrated to extend downward and embrace between them the adjacent oblique sections 15 against which latter they fit flatwise. At its opposite end, the plate 25 is provided with an arm 28 terminating in a yoke-shaped member 29, the arms 30 of which depend and fit flatwise against the inner surfaces of the adjacent bar-sections 18, the plates 25 and 26 being secured to the reinforcing member 13, as by bolts 31 and 32, the bolt 31 passing through the plates 25, bars 14 and sections 15, and the bolt 32 extending through the plates 25, bar 14, sections 18 and arms 30 of the yoke. Each of the plates 25, at one end of the plate-section 26, is provided with an upright extension 33 having an undercut portion 34 into which it is designed that a flange, as for instance the flange 35 of a rail 36, extends, this ex-

tension thereby affording an abutment for one flange of the rail. Each of the plates 25 at the opposite end of the plate-section 26, has an upright extension 37 formed with a curved recess 38, the bottoms of the recesses 38 in the opposed plates being disposed in stepped relation to each other as illustrated at 39 and 40, respectively. In this construction it is intended that a key 41 of curved shape in cross-section, conforming in its curvature to the cross sectional shape of the recesses 38, be employed, this key having a rail-flange-engaging shoulder 42 at one side and a series of wedge-surfaces 43 on its bottom edge which are arranged in stepped relation as indicated in Fig. 5, and which serve, when the key is introduced into the recesses 38 transversely of the plates 25, to engage with the bottoms 39 and 40 of the recesses and thus, by the contact of the key with the curved walls of the recesses, turn the key therein into close engagement at its shoulder 42 with the other flange 44 of the rail 36. A bolt 45 extends through the plates 25 adjacent to the recesses 38 and its threaded end has a block 46 slidably mounted on it, which abuts against the large end of the key 41 and is held in tight engagement therewith by a nut 47 screwing upon the bolt 45 against the block. The key 41 may be driven into the rail-flange-engaging position described, as by means of a sledge, or the like, in which position it may be held by tightening the nut 47 against the block 46; or it may be moved to rail-flange-engaging position by manipulating this nut.

In forming the tie, the concrete, or other suitable material, 48 is molded into the desired shape with the member 13 embedded therein as illustrated, the concrete extending into the spaces 23 and 24 and recesses 21 and 22 and into the space provided between the bars 14. The rail 36 may then be applied to the tie to cause it to be positioned thereon as described, whereupon the key is inserted into the recesses 38 and moved into rail-flange-engaging position.

The rail-securing means illustrated in Figs. 8 to 12, inclusive, is of another type which may be employed in connection with the reinforcing member described and comprises a horizontally displaced plate 49 resting upon the upper edges of the bars 14 and embracing the outer sides of the latter at depending flanges 50, a bolt 51, passing through these flanges and the bars, securing the plate 49 to the reinforcing member 13. The plate 49 carries on its upper side near one lateral edge thereof a pair of alining spaced lugs 52, each having an extension 53 which rests against the upper edge of the adjacent bar 14, and a shouldered portion 54 for a purpose hereinafter disclosed. On the opposite lateral side of the plate 49 are two spaced lugs 55, each having an inner wall 56

which inclines as illustrated, these walls inclining in opposite directions. The plate 49 also carries two arms 57 and an arm 58 provided with a yoke-member 59, like the pairs of arms 27 and the arm 28, respectively, of the preceding figures, and performing the same respective functions, a bolt 60 extending through the bars 14, bar-sections 18 and the depending arms of the yoke 59. The rail 36 is positioned on the tie to cause its outer flange 35 to fit against the lugs 52 and under the shoulders 54, in which position it may be clamped in place as by wedge-keys 61, each of which has a tapering surface 62, which, when the wedges are introduced under the walls 56 from opposite sides of the tie and against the flange 42 of the rail 36 at shoulders 63 on the wedges, engage at their surfaces 62 with the walls 56, forcing the keys at their shoulders 63 against the flange 42 of the rail. The keys 61 are held in clamping position by a bolt 64 which is shown as formed integral with one of the keys and slidably connected at its threaded end with the other of the keys, a nut 65 screwing upon the bolt 64 into engagement with the adjacent block. It will be understood that when the nut 65 is screwed upon the bolt 64, the keys 61 are drawn toward each other, with the effect of crowding them at their shouldered portions 63 down and against the rail-flange 42, thereby rigidly clamping the rail in place on the tie.

While I have illustrated two forms of means for securing the rail to the reinforcing member, I do not wish to be understood that my invention is limited to the use of such rail-securing means, as any other suitable means may be provided for this purpose.

The reinforcing member is caused to be firmly held in the concrete by reason of its intimate interlocking with the latter, and thus any tendency to displacement of this member under the stress to which it is subjected in use will be effectually overcome.

In the constructions represented, the arms 27 and 57, by reason of their engagement with the sections 15, serve to afford rigidity to the member and prevent it from becoming impaired in use, as well as preventing the plates 25, 26 and 49 from becoming displaced.

The description of the constructions illustrated has been limited to the rail-securing means at one end only of the tie, and this for the reason that the rail-securing means are the same at both ends of the tie. It is, therefore, to be understood that no undue limitation is intended by the description of the rail-securing means at one end only of the tie.

The disposition of the metal as afforded by my reinforcing members affords the maximum rigidity and support for the rail-seats

imposed thereon and the desired resiliency and tensile strength at the central portion of the tie.

While it is preferable to embed the reinforcing member in the concrete or other material of the tie-proper, it is manifest that where conditions render it desirable the concrete need not completely surround the said member, but may be filled in between its bars and extend below it.

What I claim as new, and desire to secure by Letters Patent, is—

1. A tie formed of concrete, with a reinforcing member secured therein formed of bars spaced apart and bound together by wires, with the end-portions of the reinforcing member containing recesses into which portions of the concrete extend.

2. A tie formed of concrete, with a reinforcing member secured therein formed of bars and having end-portions thereof bent upon themselves to afford spacing members for the bars.

3. A tie formed of concrete, having a reinforcing member secured therein formed of bars, each of which carries at its opposite ends inwardly-bent sections forming spacing members and fitting at portions thereof flatwise against the body-portion of the bars.

4. A tie formed of concrete, having a reinforcing member secured therein formed of bars, each of which carries at its opposite ends inwardly-bent sections forming spacing members fitting flatwise at their ends against the body-portion of the bars and having sections intermediate their ends abutting against each other.

5. A tie formed of concrete, having a reinforcing member secured therein formed of bars, each of which carries at opposite ends inwardly-bent sections forming spacing members fitting at their ends against the body-portion of the bars and having their outer ends formed to provide outwardly opening recesses.

6. A tie formed of concrete, having a rein-

forcing member composed of a plurality of bars secured therein, the ends of said bars being bent upon themselves and affording spacing means for the bars and seats for the rails, and means for securing the rails to said reinforcing member.

7. A tie formed of concrete, having a reinforcing member secured therein formed of spaced members, a clip secured to said members, and means for securing a rail to the clip.

8. A tie formed of concrete, having a reinforcing member secured therein formed of spaced members, a clip resting on and connecting the members together and spanning the space between them, and means for securing a rail to the clip.

9. A tie formed of concrete, having a reinforcing member secured therein, clips having horizontal plate-portions and depending flanges secured to said member near its opposite ends to embrace the latter by said flanges and extend across said member at their plate-portions, and means for securing a pair of rails to said clips.

10. A tie formed of concrete, having a reinforcing member formed at its ends with spacing means therefor, clips secured to said member near its opposite ends and carrying means for engaging the said spacing means to interlock the clips with said reinforcing member, and means for securing a pair of rails to the clips.

11. A tie formed of concrete, having a reinforcing member secured therein, clips provided with depending portions resting upon said reinforcing member near its opposite ends with its flanges embracing the sides thereof, bolts passing through said reinforcing member and said flanges, and means for securing a pair of rails to said clips.

CHARLES R. HOLDEN.

In presence of—

W. B. DAVIES,

R. A. SCHAEFER.