

L. N. BUELL & J. E. WHEELER.
CONCRETE RAILROAD TIE.
APPLICATION FILED MAY 2, 1911.

1,005,150.

Patented Oct. 10, 1911.

3 SHEETS—SHEET 1.

FIG. 1

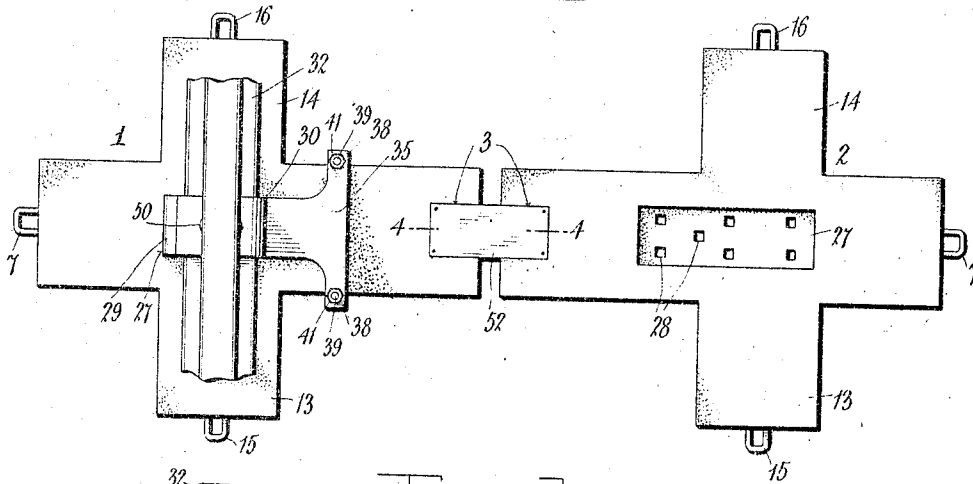


FIG. 2

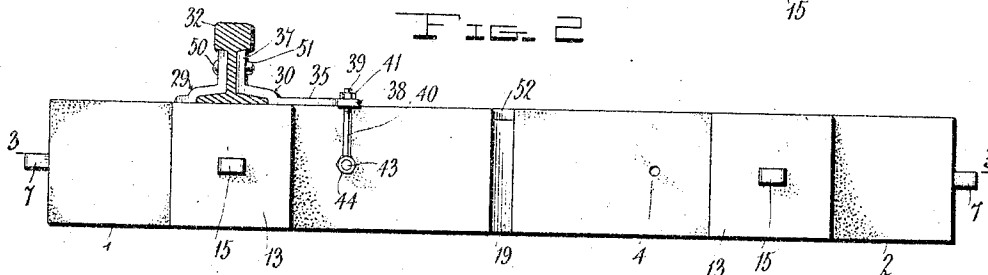
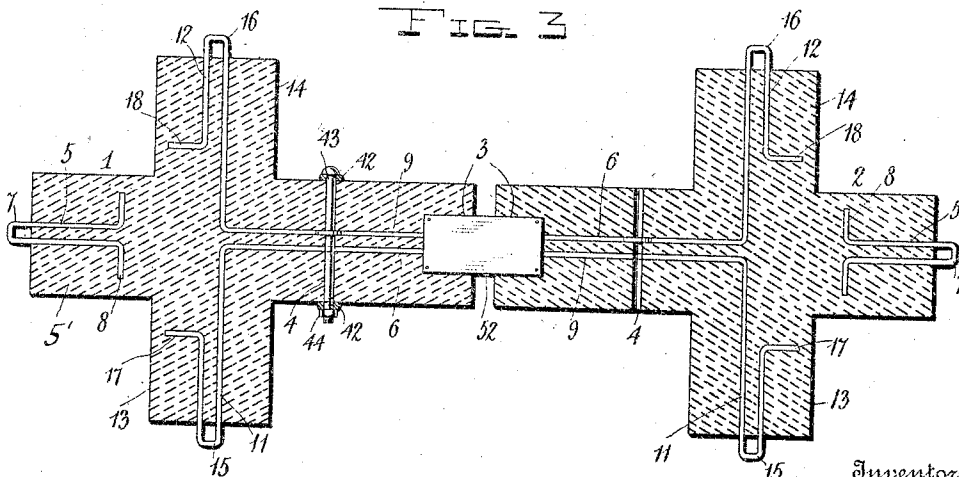


FIG. 3



Witnesses

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3 SHEETS—SHEET 2.

FIG. 4

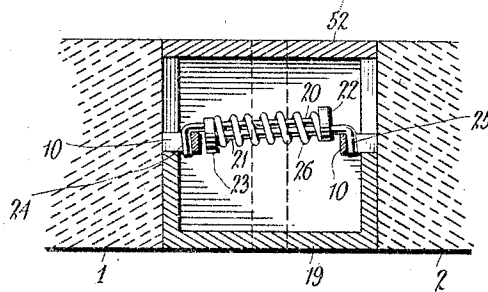


FIG. 5

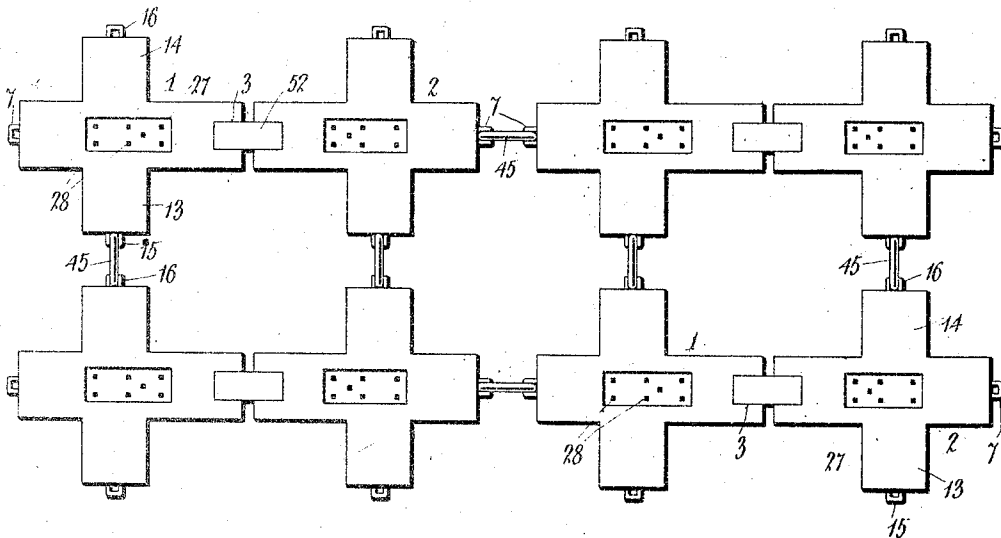
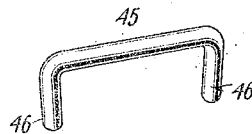


FIG. 6



Witnesses

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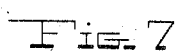
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UNITED STATES PATENT OFFICE.

LEVI N. BUELL AND JAMES E. WHEELER, OF CULLMAN, ALABAMA.

CONCRETE RAILROAD-TIE.

1,005,150.

Specification of Letters Patent.

Patented Oct. 10, 1911.

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To all whom it may concern:

Be it known that we, LEVI N. BUELL and JAMES E. WHEELER, citizens of the United States, residing at Cullman, in the county of Cullman, State of Alabama, have invented certain new and useful Improvements in Concrete Railroad-Ties; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to new and useful improvements in railway ties and more especially to reinforced concrete ties, and the object of our invention is to provide a tie of the above type in which allowance is made for the rigidity of concrete ties in comparison to those of wood.

A further object of our invention is to provide a concrete tie in which provision is made for slight independent motion of the rails, thus relieving much of the strain otherwise placed upon the ties when a car passes around a curve.

A further object of our invention is to form a concrete tie composed of two parts, each identical with the other and in which the upper and lower faces are identical, whereby the resultant tie, or either part thereof is reversible.

A further object of our invention is to provide a novel form of reinforcement for the tie which, while reinforcing the tie also provides means for securing a series of ties to each other, thus forming a continuous road bed.

A further object of our invention is to provide spacer blocks by means of which the distance between the ties may be increased if desired without forming any break in the road bed. And a still further object of our invention is to provide a novel means for securing the rail to the above described tie.

With these and other objects in view our invention will be more fully described, illustrated in the accompanying drawings which show a preferred embodiment of our invention and specifically pointed out in the appended claims.

In the drawings which form a part of this application, Figure 1 is a plan of one of our improved ties. Fig. 2 is a side elevation thereof. Fig. 3 is a section through the line 3—3 of Fig. 2 showing the reinforce-

ing means used. Fig. 4 is a detail sectional view on the line 4—4 of Fig. 1, showing means for yieldably securing the two members of our tie to each other. Fig. 5 is a plan view showing a number of our ties connected together to form a continuous rail bed. Fig. 6 is a detail perspective of the hook used in securing the ties together. Fig. 7 is a side elevation of one of the tie members with the rail secured thereto, the rail being shown in section. Fig. 8 is a detail perspective of the outer chair member used in securing the rail to the tie. Fig. 9 is a detail perspective of the inner chair member, and Fig. 10 is a plan view of one of the spacer blocks for use between the rails.

Referring more specifically to the drawings, in which similar reference numerals designate corresponding parts throughout, our improved tie will be seen to consist primarily of the two tie members 1 and 2 and as the construction of these members is identical a description of one will suffice for both. Each of these tie members is constructed in the form of a Latin cross the longer arm of which extends inwardly between the rails which are adapted to rest upon and extend along the cross arms. A recess 3, the purpose of which will be hereinafter explained, is formed in the end of the longer arm of each cross, while a transverse, centrally located bolt receiving bore 4 is also provided in said arms, intermediate between the recess 3 and the cross arms. The reinforcing means for the tie members as best shown in Fig. 3 of the drawings, consists of the metal rods 5 and 6 embedded in the concrete structure midway between the upper and lower faces of the tie. The member 5 is shown as substantially U-shaped with the loop portion of the U extending outwardly a slight distance from the end of the arm 5' of the member 1 to form an eye 7, while the ends are bent outwardly at right angles as at 8, thus anchoring the member 5 firmly in place. The other reinforcing member 6 consists of the substantially U-shaped member 9 having its loop portion extending out into the recess 3 to form an eye 10, while its side members are provided with the oppositely extending U-shaped portions 11 and 12 extending outwardly in the arms 13 and 14 respectively of the cross, the closed ends of said members forming the eyes 15 and 16, while the

free end of each of said members is bent outwardly at right angles as at 17 and 18 to firmly anchor the reinforcing rod in place. As described both the bore 4 and the reinforcing member 6 are centrally located and to prevent the member 6 from passing through the bore 4 we bend one side of the U-shaped portion 9 upwardly and the other side downwardly at that point, thus causing the reinforcing member 6 to pass part above and part below the bolt when the latter is in place, thereby preventing said bolt from breaking out of the tie.

The means of securing the two members of the tie together, as best shown in Fig. 4, consists of a casing 19, preferably formed of metal and adapted to be seated between the two members of the tie in the recesses 3 previously described. Seated within this casing are the two rods 20 and 21 carrying at their opposite ends collars 22 and 23 respectively while their other ends extend each through the collar carried by the other rod and terminate in the hooks 24 and 25 adapted to engage with the eyes 10 of the tie member, which eyes extend through suitable slots or apertures formed in the ends of the casing. Surrounding these rods and acting between the collars 22 and 23 is the heavy compression spring 26, the normal tendency of which is to bind the tie members closely together. This spring is so proportioned in size and strength however as to permit of a slight compression under the strain exerted upon the rail by the train in passing over the same, thus allowing a slight independent motion of the rails away from each other.

The upper face of each tie member is provided with a shallow recess 27 adapted to receive the base of the outer chair member when securing the rail in place. The bottom of each of these recesses 27 is provided with a plurality of downwardly extending recesses or sockets 28 adapted to receive downwardly extending lugs formed upon the lower face of the chairs thereby securing the same in place. As these ties are to be reversible the lower face of each of these members is similarly recessed, thus allowing the tie to be turned upside down in case its upper face becomes marred or broken by a derailed train or other cause.

As a means for securing the rail to our improved tie we have provided an outer chair member 29 and an inner chair member 30. The base of this outer chair member 29 is provided with a plurality of downwardly extending lugs 31 and is adapted to be seated in the recess 27 of the tie, the lugs 31 engaging with the sockets 28 formed therein. When in this position the base of the chair is flush with the top of the tie, thus forming an even seat for the rail, which in Fig. 7 is designated by the numeral 32. The

outer end of the plate of which this chair is formed is bent upwardly and inwardly over the flange of the rail and then extended up in a line with and bearing against the web of the rail with its upper end resting under and supporting the ball of the rail. The inner portion of this chair member extends inwardly to a considerable distance beyond the inner flange of the rail as shown at 33 and is provided with a plurality of apertures 34 adapted to register each with one of the sockets 28 formed in the tie. With the rail thus in place, the second or inner chair member is applied. This member consists primarily of the plate 35 provided with a plurality of downwardly extending lugs 36 adapted to pass through the aperture 34 of the chair member 29 and engage with the sockets 28 of the tie, said lugs being longer than the lugs 31 by the thickness of the chair 29, whereby they engage the tie to the same extent as do the lugs 31.

That portion of the plate 35 adjacent the rail curves upwardly over the inner flange of the rail and then upwardly against the web as at 37, its upper end bearing against the lower portion of the ball of the rail. In order to secure the combined chair and rail to the tie we provide the upper chair member 30, upon either side, with the perforated extensions or ears 38 through which extend the threaded ends 39 of bolts 40, which ends are provided with nuts 41. The other ends of these bolts 40 terminate each in an eye 42 through which is passed a bolt 43 which extends completely through the tie through the bolt receiving bore 4, said latter bolt being secured in place by means of a nut 44. It will be seen that by tightening the nuts 41 the chair and rail will be firmly clamped to the tie.

In laying the track with our improved tie we prefer to follow out the system shown in Fig. 5, namely that of securing each tie to the next one in the track by means of the hook member 45, which as shown in Fig. 6 consists of a bar or rod of metal provided at either end with a downwardly extending hook member 46 adapted to engage with the eyes 15 and 16 of the tie. By this means the ties are firmly secured to each other and all shifting of the track is avoided. Fig. 5 also shows the ties of one track secured to the ties of the other in case of a double track road.

Because of the enlarged bearing area between the tie and rail it is not necessary to use as many ties to the rail as is customary and upon straight stretches of track or upon tracks where the traffic is light the ties may be spaced at a considerable distance from each other. In order to permit this and at the same time to maintain the ties in their connected relation we have provided spacer

blocks 47 as best shown in Fig. 10 of the drawings. These spacer blocks may be of any length desired and are formed of concrete, reinforced in much the same manner as are the ties, with loops of the reinforcing members extending outwardly from either end to form the eyes 48 and 49. As will be readily understood these spacer blocks are to be placed between the ties and beneath the rail and secured to the ties by means of the hooks 45.

As described we have shown no means whatever for securing the rail and chair to each other and with our improved form of chair no such means is necessary. If desired however those portions of the chair members which bear against the web of the rail, together with the rail, may be provided with suitable bolt receiving apertures and a bolt 50 may be passed therethrough and secured in place by the nut 51. Another point not previously brought out is that the casing 19, which rests between the tie members and which incloses the spring 26 may be provided with a suitable cover or closure 52 to prevent any ballast from entering the casing and thus interfering with the action of the spring. It will be understood however that such minor changes in the details of the construction, may be made as desired, without in any way departing from the spirit of our invention.

As will be seen from the above we have provided a tie composed of two members, either, or both of which are reversible, that we have provided means for yieldably securing the members of the tie to each other, thus allowing for independent motion of the rails; and that we have also provided means for securing the ties as a whole to each other. It will also be seen that we have provided an improved chair by means of which the rail may be secured to the tie without the necessity of bolting the rail and chair together.

What we claim is:—

1. A tie comprising reversible members having their abutting ends recessed, cushioning means seated in said recesses, means for securing the members together, and rail securing means for said tie.

2. A reinforced concrete tie comprising two cross shaped reversible members, the reinforcement being extended to form centrally located eyes upon the ends of each arm, means for securing a plurality of said members together to form a continuous series of complete tie units, and means for securing rails to said ties.

3. A tie comprising two members having their inner ends bifurcated and provided with eyes, means for securing a rail to each member, means for yieldably securing said members together, said means consisting of two disks, two rods each slidable through one of said disks and secured by one end to the other, hooks carried by the free ends of said rods and engaging said eyes, and a helical spring surrounding said rods and bearing against the inner faces of said disks.

4. A yieldable tie provided with transverse bores intermediate its length and with recesses in its upper face, said recesses being provided with a plurality of sockets, and means for securing a rail to said tie, said means comprising an outer rail engaging chair member adapted to be seated in one of said recesses and provided with a plurality of downwardly extending lugs and a plurality of apertures, said lugs engaging with a part of said sockets and said recesses registering with the remainder thereof, an inner rail engaging chair adapted to be seated upon said outer chair and provided with a plurality of downwardly extending lugs adapted to pass through the recesses of said first mentioned chair and to engage with the sockets with which they register, said latter chair being provided with extending sides each having a bolt receiving aperture, a bolt passed through one of said transverse bores and carrying an eye bolt at each end, said eye bolts being passed upwardly through the apertures of said inner chair and nuts for said bolts.

In testimony whereof, we affix our signatures, in presence of two witnesses.

LEVI N. BUELL.

JAMES E. WHEELER.

Witnesses:

JAMES M. TRIMBLE,
D. M. PHILLIPS.