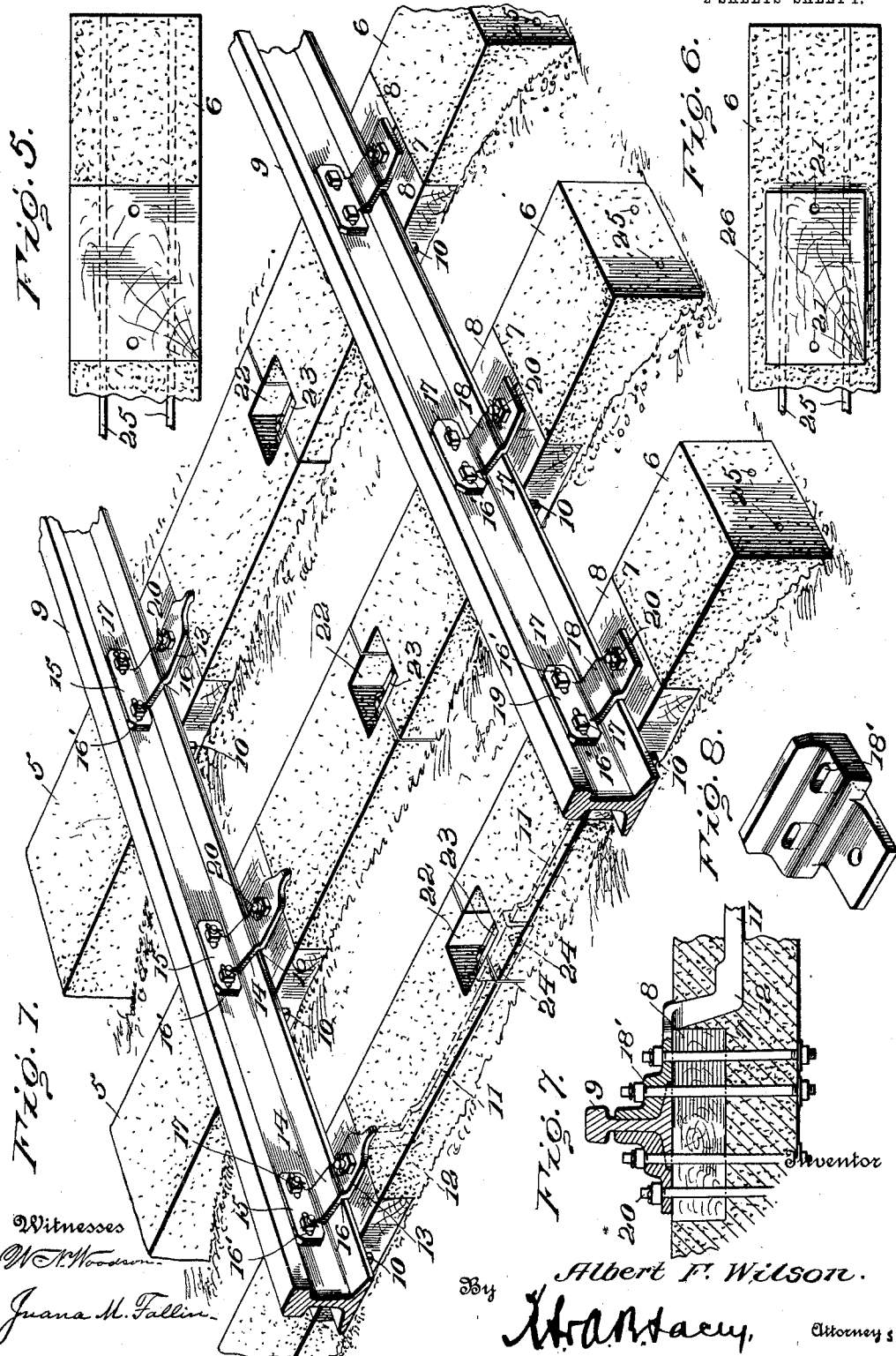


1,002,617.

2 SHEETS—SHEET 1.



A. F. WILSON.
 CONCRETE RAILWAY CROSS TIE.
 APPLICATION FILED DEC. 9, 1910.

1,002,617.

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2 SHEETS—SHEET 2.

Fig. 2.

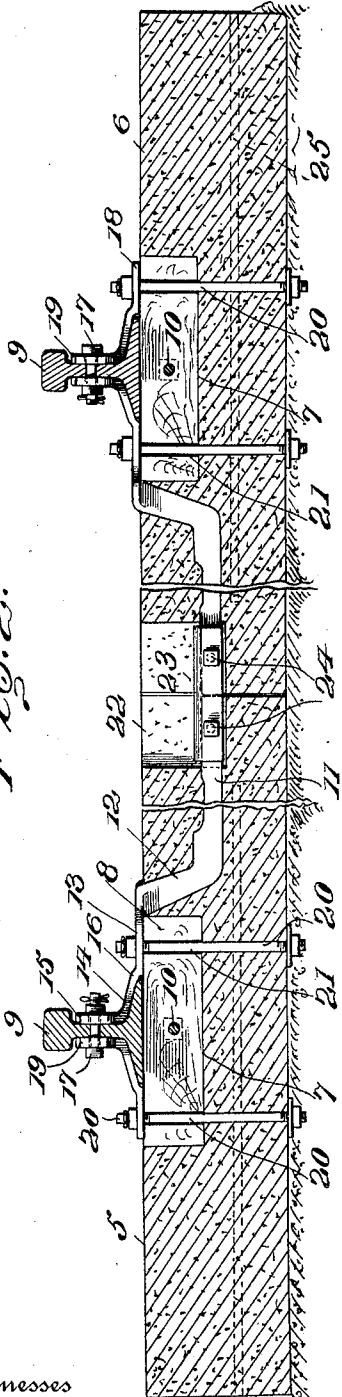


Fig. 3.

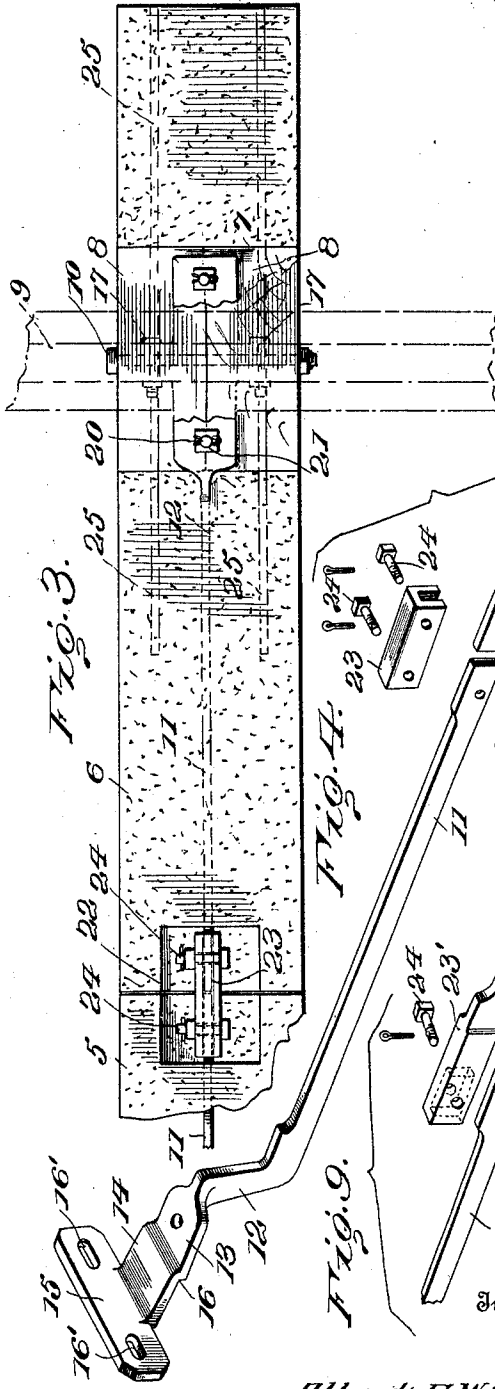


Fig. 4.

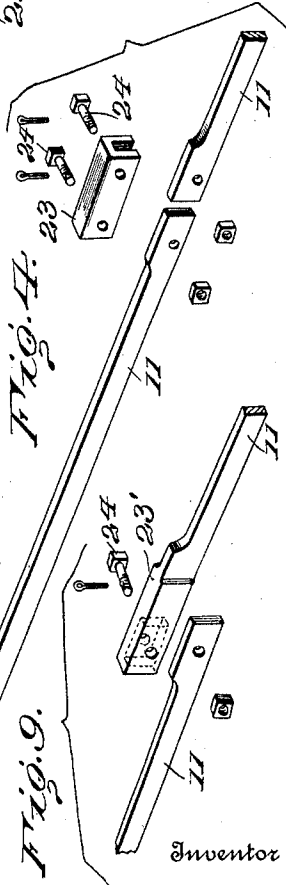
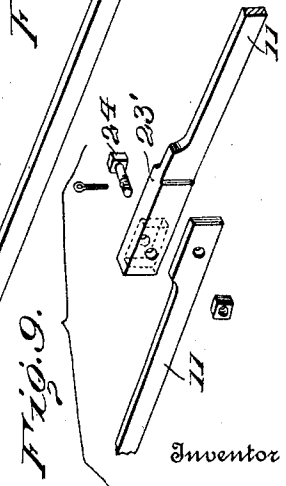


Fig. 5.



Witnesses
 W. A. Woodson
 Juana M. Fallin

Albert F. Wilson.

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Attorneys

UNITED STATES PATENT OFFICE.

ALBERT F. WILSON, OF MONTGOMERY, ALABAMA.

CONCRETE RAILWAY CROSS-TIE.

1,002,617.

Specification of Letters Patent.

Patented Sept. 5, 1911.

Application filed December 9, 1910. Serial No. 596,512.

To all whom it may concern:

Be it known that I, ALBERT F. WILSON, citizen of the United States, residing at Montgomery, in the county of Montgomery and State of Alabama, have invented certain new and useful Improvements in Concrete Railway Cross-Ties, of which the following is a specification.

This invention relates to railway cross ties and more particularly to a concrete tie especially designed to take the place of the ordinary wooden cross ties now in general use.

The object of the invention is to provide a concrete tie of simple and durable construction, capable of being readily positioned on a road bed and which will effectually withstand the deleterious action of the elements for an indefinite period without liability of cracking or otherwise disintegrating.

A further object is to provide a reinforced concrete tie including mating sections having their inner ends united by a coupling member so as to permit a limited vertical movement of one tie section relatively to the other and thus prevent injury to the tie incident to the passage of cars and other railway rolling stock.

A further object is to provide each tie section with a reinforcing bar, the inner end of which is pivotally connected to the coupling member, while the outer end is extended above the surface of the tie and is bent to produce a brace for engagement with one side of the adjacent rail, there being a similar brace arranged on the opposite side of each rail and co-acting with the mating brace to clamp the rail in position on the cross tie.

A further object is to form the mating rail braces with registering slots for the reception of bolts or similar fastening devices so as to permit free expansion and contraction of the rails, while at the same time preventing vertical movement of the rails with respect to the cross tie.

A further object is to form the upper surface of the tie with a seating recess adapted to receive the removable pillar block, the latter forming in effect a cushion for the rails and serving to receive and absorb the shock or impact imparted thereto.

A still further object of the invention is generally to improve this class of devices,

so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a portion of a railway track provided with a reinforced concrete tie constructed in accordance with my invention; Fig. 2 is a longitudinal sectional view of one of the cross ties; Fig. 3 is a top plan view; Fig. 4 is a perspective view of one of the reinforcing bars detached, showing the coupling member in position above the same; Fig. 5 is a top plan view showing a modified form of cushioning block; Fig. 6 is a similar view, showing a further modification; Fig. 7 is a vertical sectional view, showing a different manner of connecting the reinforcing bars to the rail; Fig. 8 is a perspective view of one of the clamping members used in connection with the clamping bar shown in Fig. 7; Fig. 9 is a detail perspective view, showing a modified form of clamping bar.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The improved railway cross tie forming the subject matter of the present invention, comprises mating sections 5 and 6, each preferably formed from cement, concrete or other plastic material molded into the desired shape, as shown. The upper surface of each tie section is provided with a seating recess 7 opening through the opposite longitudinal edges of the tie and adapted to receive a cushioning block 8 preferably formed of wood and upon which is supported the adjacent rail 9. The block 8 is preferably formed in two sections having transverse openings formed therein for the reception of bolts or similar fastening devices 10 by means of which the sections may be firmly held in assembled position. If desired however, these bolts 10 may be omitted.

Embedded in the concrete or other material forming the body of each tie section,

is a reinforcing bar 11, the outer end of which is extended upwardly to form an inclined arm 12 and thence bent laterally to produce a flat plate 13 adapted to bear
 5 against the upper surface of the adjacent block 8, the metal being thence extended upwardly to form an inclined plate 14 terminating in a vertically disposed brace 15 adapted to bear against the web of the adjacent rail 9. The plate 14 is offset at 16
 10 to accommodate the base of the rail 9, while the brace 15 is extended laterally on opposite sides of the plate 14 and provided with one or more longitudinally disposed slots
 15 16' to permit the passage of securing bolts 17.

Arranged on the outer side of each rail 9, is a clamping member 18 which bears against the base of the rail and terminates
 20 in a vertically disposed brace 19, similar in construction to the brace 15. The members 13 and 18 are provided with openings adapted to receive bolts 20, the latter being extended through registering recesses 21
 25 formed in the block 8 and also through the base of the adjacent tie section, thus to clamp the members 13 and 18 in engagement with the rail, and at the same time prevent accidental displacement of the block 8. It
 30 will here be noted that the width of the slots 16' is approximately the same as the diameter of the securing bolts 17 so as to prevent vertical movement of the rails with respect to the cross tie, while at the same
 35 time permitting free expansion and contraction of the rails. It will also be noted that by forming the block 8 in two sections, either section may be readily removed and replaced by merely detaching the bolt 10
 40 and without the necessity of removing or otherwise disturbing the adjacent rail. The block 8 not only serves to support the adjacent rail 9, but also serves to receive and absorb the shock or impact imparted to the
 45 rails when a train is passing thereover.

The inner end of each tie section is cut-away to form a seating recess 22 to accommodate a coupling member 23, the latter being substantially U-shaped in cross section and adapted to receive the ends of the adjacent reinforcing bars 11. Each bar 11 is
 50 pivotally connected to the coupling member 23 by a bolt 24 so as to permit a limited vertical movement of one tie section relative to the other and thus prevent cracking or otherwise injuring the tie incident to vibrations and other strains caused by the
 55 passage of cars and other railway rolling stock. The top of the coupling member 23 is preferably closed so as to form a stop for the adjacent reinforcing bar 11 and thus limit the tilting or yielding movement of the adjacent tie section, while the lower end of the coupling member is open and spaced
 60 slightly from the bottom of the seating recess 22 so as to permit free tilting movement of the tie sections without binding or wedging action between the parts. If
 65 desired however, the coupling member may be open at the top and closed at the bottom, or open or closed at both the top and bottom, as may be found most desirable, and in some cases, the reinforcing bars may be rigidly united or formed from a continuous strip of spring metal, in which case, the inner ends of the tie sections will be spaced apart a sufficient distance to allow the spring bar to yield at the center of the cross tie. The seating recess 22 is preferably wider than the coupling member so as to permit the insertion of a wrench or other suitable tool for the purpose of applying the bolts 24 and also to facilitate assembling the tie sections. Thus it will be seen that the coupling member 23 serves to prevent separation lengthwise of the tie sections, while at the same time allowing one tie section to yield vertically with respect to the other.

The inclined arm 12 serves to center the bar 11 with respect to the tie, there being auxiliary bars or rods 25 embedded in the concrete on opposite sides of the bar 11 to assist in reinforcing and strengthening the tie.

If desired, the block 8 may be formed of a single piece of wood, as shown in Fig. 5 of the drawings, instead of being formed in sections, and in some cases, the seating recess 7 may terminate short of the opposite longitudinal edges of the tie sections so as to form shoulders 26 which prevent the block from being withdrawn laterally from the seating recess, as best shown in Fig. 6 of the drawings.

In some cases, the coupling member 23 may be formed integral with one of the reinforcing bars 11 and the mating bar pivotally connected to said coupling member, as indicated at 23' in Fig. 9, thus allowing a limited vertical movement of one tie section relatively to the other, while at the same time dispensing with one of the securing bolts.

Should it be found in practice, that the slots have a tendency to weaken the webs of the rails, said slots may be omitted from the braces and formed in the inclined plates 14, as indicated at 18' in Figs. 7 and 8 of the drawings.

Particular attention is called to the fact that the bars 11 and braces 15 and 19, not only serve to firmly anchor the rails on the cross tie, but also serve to reinforce the tie and prevent spreading of the rails, thus rendering the structure a safety device.

It will of course be understood, that the braces 15 and inclined plates 14, as well as the clamping members 18, may each be formed with either a single slot or a plu-

ality of slots, without departing from the spirit of the invention.

A tie constructed in accordance with the present invention will not only out live an ordinary wooden tie, but being made in sections, may be readily handled and the sections thereof quickly assembled and placed in position on a road bed.

Having thus described the invention, what is claimed as new is:

1. A concrete cross tie including mating sections, and reinforcing members embedded in said sections and having their inner ends united and their outer ends extended above the top of the tie for engagement with the web of a rail.

2. A concrete cross tie including mating sections having their inner ends provided with recesses, a coupling member seated in said recesses, and reinforcing members having their inner ends connected with the coupling member and their outer ends extended above the top of the tie and provided with braces for engagement with the web of a rail.

3. A concrete cross tie including mating sections having their inner ends cut-away to produce recesses and their upper faces provided with seating recesses, blocks fitting in said seating recesses, a coupling member spanning the cut-away portions of the tie sections, and a reinforcing bar embedded in each tie section and having its inner end pivotally connected to the coupling member and its outer end extended above the upper surface of the tie and in contact with the block for engagement with the web of a rail.

4. A concrete cross tie including mating sections, one of which has a limited vertical movement with respect to the other, cushioning blocks embedded in the upper surface of the tie sections, a reinforcing member embedded in each tie section and having their outer ends disposed in contact with the adjacent block and thence bent upwardly to form slotted braces for contact with the web of a rail, clamps having similar braces co-acting with the first mentioned braces, and securing bolts piercing the webs of the rails and seated in the slots in said braces.

5. A concrete cross tie including mating sections, one of which has a limited vertical movement with respect to the other, there being seating recesses formed in the upper surface of each tie section and opening through the opposite longitudinal edges thereof, a sectional block fitted in each seating recess and adapted to support a rail, a reinforcing bar embedded in each tie section and having its outer end disposed in contact with the adjacent cushioning block and thence inclined laterally and upwardly to form an elongated brace having slots therein, a clamp secured to each block and

provided with a similar slotted brace, bolts extending through the slots in said braces, and a coupling member spanning the tie sections at the inner ends thereof and pivotally connected with the adjacent reinforcing bars.

6. A concrete cross tie including mating sections, a coupling member connecting the inner ends of said sections, a reinforcing bar embedded in each section and having its inner end pivotally connected with the coupling member and its outer end inclined upwardly and thence extended laterally to form a plate terminating in an upstanding longitudinally slotted brace for contact with the web of a rail, cushioning blocks countersunk in the upper faces of the tie sections and bearing against the flat plates of the reinforcing bars, a clamping member secured to each block and provided with a similar slotted brace, bolts piercing the webs of the rails and seated in said slots, and fastening devices extending through the clamping members, reinforcing bars and blocks for engagement with the adjacent tie section.

7. A concrete cross tie including mating sections having their inner ends cut-away to produce recesses, a coupling member seated in said recesses and having its lower side open and its upper side closed, a reinforcing bar embedded in each tie section and having its inner end pivotally connected with the coupling member and its outer end extended above the top of the tie for engagement with the web of a rail, and blocks countersunk in the upper faces of the tie sections and forming a cushion for the rails.

8. A concrete cross tie including mating sections, a cushioning block countersunk in the upper surface of each tie section, reinforcing bars embedded in the tie sections and having their outer ends inclined upwardly and extended laterally to form a flat horizontally disposed plate for contact with the upper surface of the adjacent cushioning block, each bar being thence offset and inclined laterally to accommodate the flange of a rail, and thence extended upwardly to produce a longitudinally disposed slotted brace adapted to bear against the web of the rail, clamping members secured to the blocks and having similar slotted braces for contact with the webs of the rails, fastening devices piercing the rails and seated in said slots, and a coupling member forming a connection between the inner ends of the reinforcing bars.

9. A concrete cross tie including mating sections having their upper surfaces provided with seating recesses opening through the opposite sides thereof, cushioning blocks seated in said recesses and formed of mating sections, fastening devices extending transversely through the sections of the

- blocks, reinforcing bars having their outer ends extended above the upper surface of the tie sections and bent laterally for engagement with the flange of a rail, clamping members secured to the blocks and co-acting with the reinforcing bars, and a coupling member forming a connection between the reinforcing bars at the inner ends of the tie sections.
- 10 10. A concrete cross tie including mating sections, one of which has a limited vertical movement with respect to the other, and a reinforcing member embedded in and connecting said sections, the outer ends of the reinforcing member being extended above the top of the tie for engagement with a rail.
- 15

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

ALBERT F. WILSON. [L. S.]

Witnesses:

SAMUEL N. ACKER,
W. N. WOODSON.

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