

June 19, 1923.

1,458,946

J. KRUTTSCHNITT

REINFORCED CONCRETE RAILROAD TIE

Filed March 22, 1922

2 Sheets-Sheet 1

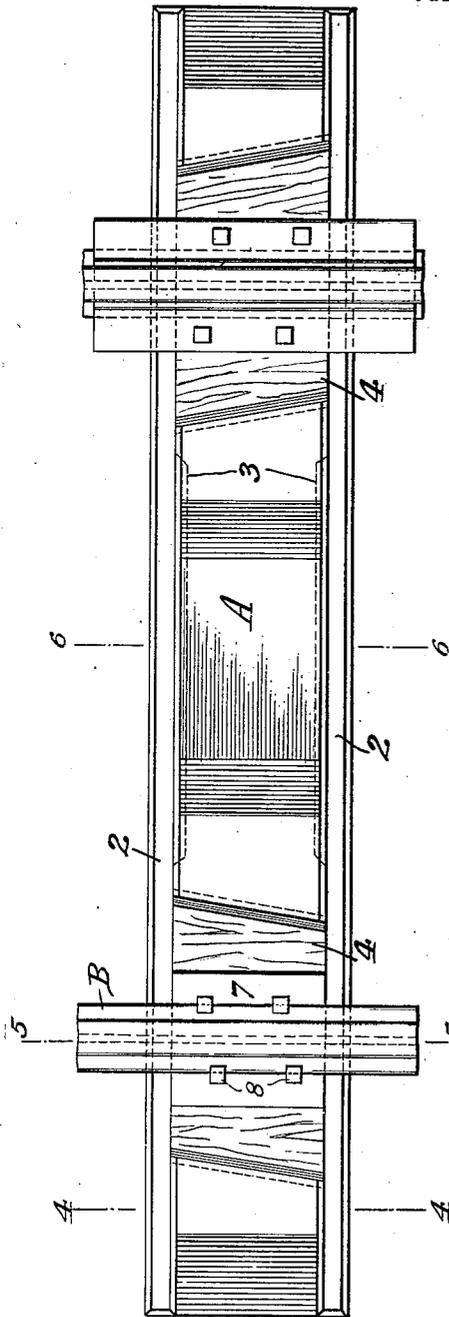


Fig. 1.

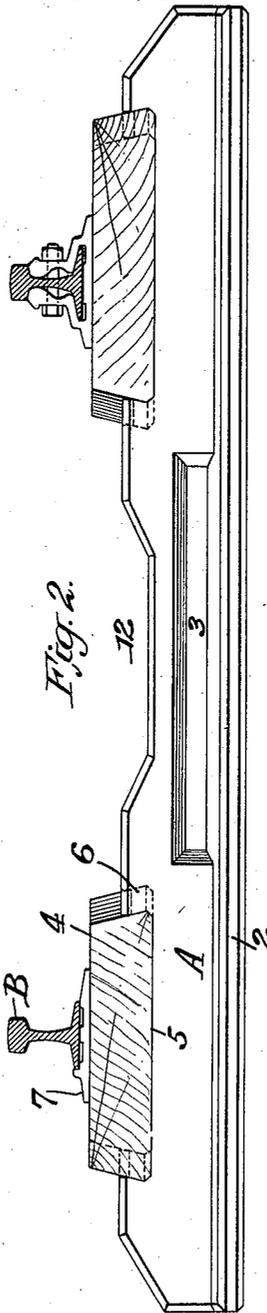


Fig. 2.

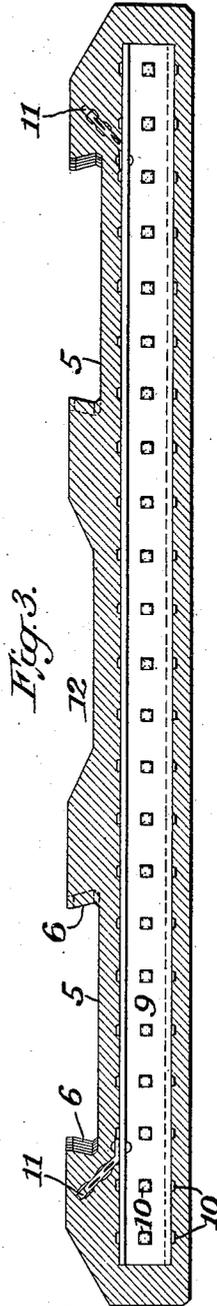


Fig. 3.

Inventor

By his Attorney
Julius Kruttschnitt
Clarence D. Kerr

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2 Sheets-Sheet 2

Fig. 6.

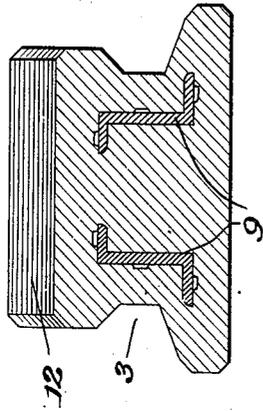


Fig. 5.

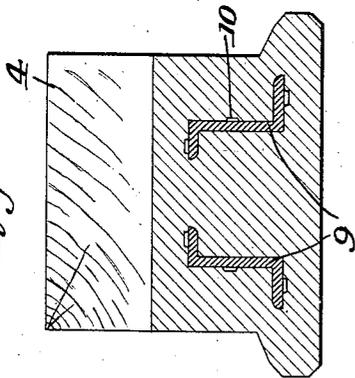


Fig. 4.

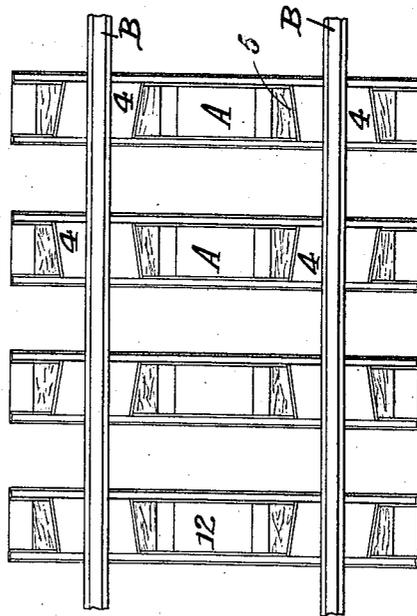
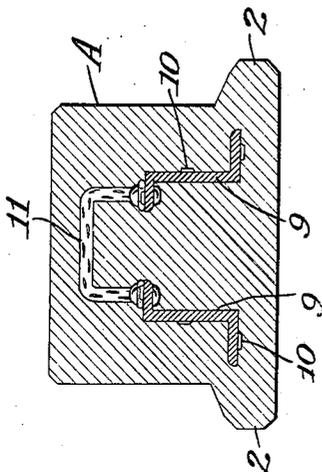


Fig. 7.

Inventor
Julius Kruttschnitt
By his Attorney
Clarence D. Kerr

UNITED STATES PATENT OFFICE.

JULIUS KRUTTSCHNITT, OF NEW CANAAN, CONNECTICUT.

REENFORCED-CONCRETE RAILROAD TIE.

Application filed March 22, 1922. Serial No. 545,641.

To all whom it may concern:

Be it known that I, JULIUS KRUTTSCHNITT, a citizen of the United States, residing at New Canaan, county of Fairfield, State of Connecticut, have invented new and useful Improvements in Reenforced-Concrete Railroad Ties, of which the following is a specification, reference being had to the accompanying drawings, in which—

Fig. 1 is a plan of my improved tie; Fig. 2 is an elevation thereof; Fig. 3 is a longitudinal section but with the cushioning blocks removed; Figs. 4, 5 and 6 are sections on lines 4—4, 5—5 and 6—6, respectively, of Fig. 1; and Fig. 7 is a plan showing the application of the rails to a plurality of ties.

My invention relates to railroad ties and comprises a reenforced concrete tie having therein cushioning blocks to which the tie plates and rails are attached, and which are retained in position in the ties by the securing of the rails thereto. My improved tie is so designed that the reenforcing bars are arranged to give it the necessary strength and are so anchored in the tie as to prevent working therein, to resist unbalanced stresses, when the load on the tie is not equally distributed, and give it the maximum stiffness and thereby prevent cracking of the concrete. My invention also comprises the various features which I shall hereinafter describe and claim.

Referring to the drawings, the tie A, which is made of reenforced concrete, is substantially rectangular in cross-section and has laterally extending flanges 2 which give it a broad bearing and afford a large area to prevent shifting, and recesses or panels 3 in the sides thereof into which ballast may be tamped and which anchor the tie particularly against endwise movement on curves. The rails B are connected to the ties A through the blocks 4, which are preferably made of hard wood. Each block 4 is seated in a pocket or recess 5 arranged diagonally in the tie, which has under-cut sides 6 inclined at an angle to the axis of the tie, but preferably parallel with each other, and the sides of the blocks are likewise inclined or bevelled on a diagonal to fit the under-cut sides 6 of the recesses 5.

In securing the rails to the ties, the blocks 4 are first driven into the recesses 5; the rails are preferably seated on tie plates 7 and are attached to the ties by means of the usual spikes 8 which are driven into the wooden blocks 4 through the apertures in

the tie plates. As is shown in Figs. 1 and 7, the two recesses in each tie are arranged at an angle to each other, while in Fig. 7 the recesses at the same side of adjacent ties are angled relative to each other. The diagonal arrangement of the recesses serves to hold the blocks in position in the recesses and prevents creeping of the blocks, while arranging them alternately counteracts the tendency of the rail to work transversely of the ties.

The tie is reenforced by Z-bars 9, which extend substantially from end to end of the tie. The Z-bars have struck up portions 10 which assist in anchoring the bars firmly in the concrete. Secured to the Z-bars near their ends, and bridging the space between them, are the stirrup-shaped members 11, which extend upwardly at an angle from the Z-bars and serve to stiffen the tie, hold the Z-bars in position and reenforce the concrete at the outer corners of the recesses 5 and thus prevent cracking of the tie.

The tie A is also formed with a central depressed portion 12, which not only serves to lighten the tie but also affords a further bearing for ballast.

Ties constructed in accordance with my invention have the following advantages: Fewer ties are required than where wooden ties are used, owing to the greater and more unyielding bearing area provided, which also results in employing a smaller number of track fasteners; the wooden blocks which are held in accurately located recesses make the gauge easy to maintain; the blocks are of a size sufficient to afford ample insulation where electrical insulation is required; the blocks act to cushion the rails and thus lessen the noise and vibration and add to the comfort of travel, and bolts and other fastenings between tie and wood blocks are unnecessary and replacement of the blocks may therefore readily be made.

The design of the steel reinforcing members is of particular advantage, since the flanges and struck-up portions of the Z-bars enable them to be securely anchored in the tie so that working between tie and bars is practically impossible, while the stirrup-shaped members not only act to hold the Z-bars in position and to prevent cracking of the concrete about the outer sides of the recesses but are also for the purpose of resisting torsional stresses.

The terms and expressions which I have

employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any mechanical equivalents of the features shown and described, or portions thereof, but recognize that various structural modifications are possible within the scope of the invention claimed.

What I claim is:

10 1. A reinforced concrete railroad tie having in its upper surface a plurality of recesses, the axes of which are arranged at an angle to each other, each recess being adapted to receive a rail supporting block, each recess
15 comprising means for holding one of the blocks from movement except along the axis of the block, and means for fastening a rail to the block arranged with the rail to prevent movement of each such block along its
20 own axis.

2. A reinforced concrete railroad tie hav-

ing in its upper surface a plurality of recesses, blocks seating in said recesses supporting rails, and fasteners for securing the rails to the blocks, the sides of the recesses
25 and the rail fasteners comprising means for anchoring the blocks in the recesses, the axes of the recesses being arranged diagonally to the axes of the rails.

3. A reinforced concrete railroad tie having in its upper surface two recesses, rail supporting blocks seating in said recesses, reinforcing bars of Z-form extending substantially from end to end of the tie, and bars connecting the said Z-bars near their ends,
35 such connecting bars extending at an angle upward in the region of the outer sides of said recesses, said connecting bars acting to anchor the Z-bars in spaced relation in the tie to reinforce corners of the recesses and
40 resist torsional stresses.

JULIUS KRUTTSCHNITT.