W. H. KNICKREHM.

COMPOSITE RAILWAY TIE.

APPLICATION FILED MAY 25, 1915.

1,154,779. Patented Sept. 28, 1915.

FIG. 1.

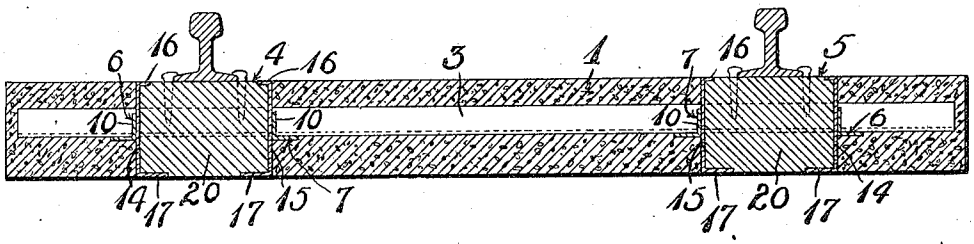


FIG. 2.

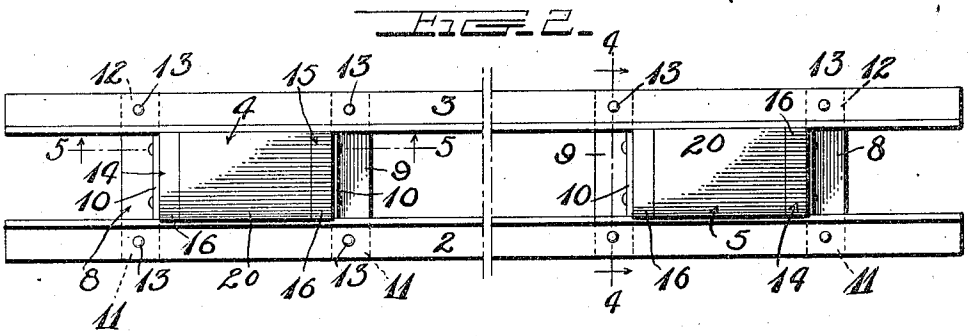


FIG. 3.

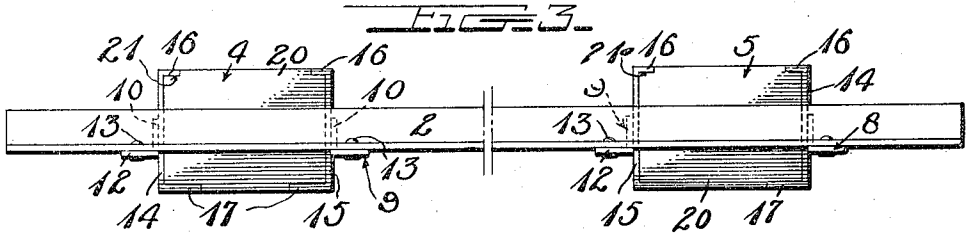


FIG. 5.

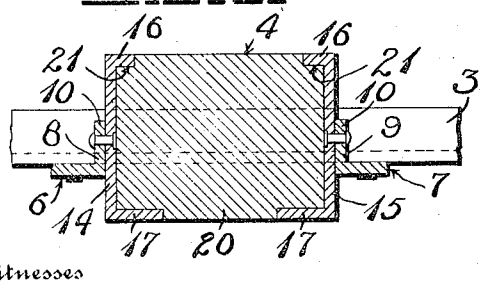
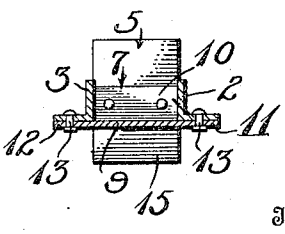


FIG. 4.



Witnesses

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COMPOSITE RAILWAY-TIE.

1,154,779. Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed May 25, 1915. Serial No. 30,376.

To all whom it may concern:

Be it known that I, WILLIAM H. KNICKREHM, a citizen of the United States, residing at Somonauk, in the county of Dekalb and State of Illinois, have invented certain new and useful Improvements in Composite Railway-Ties; and I do 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.

This invention relates to the subject of track structures for railways, and has special reference to cross ties which are commonly termed reinforced cement or composition ties and which are employed as a substitute for the ordinary wooden ties generally used.

To this end the invention contemplates a simple and thoroughly practical construction of tie which may be characterized as a composite tie inasmuch as it embodies in its organization the general characteristics and advantages of a cement or concrete tie as well as those of a metallic tie, while also preserving and utilizing the advantages of a wooden tie by providing wooden cushions for the bearing supports of the rails.

A general object of the invention is to provide a composite tie possessing in the metal parts ample strength and rigidity to carry the loads required, said metal parts being protected by concrete.

Another object of the invention is to provide a metallic frame work for such a tie, so constructed that the wooden cushioning members are rigidly and securely held therein without necessitating any fastening elements being passed into said cushioning members, the only fastening members necessary being those which secure the rail to the cushions.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings, Figure 1 represents a longitudinal section of a complete tie constructed in accordance with this invention; Fig. 2 is a plan view of the metallic frame detached; Fig. 3 is a side elevation thereof; Fig. 4 is a transverse vertical section taken on the line 4—4 of Fig. 3; Fig. 5 is an enlarged detail longitudinal section taken on the line 5—5 of Fig. 2.

The improved tie contemplated by the present invention consists of a concrete body portion 1 in which is embedded and completely enveloped a longitudinally extending metallic reinforcing structure which constitutes a metal frame for the tie body while at the same time acting in the capacity of a reinforcing unit to strengthen and stiffen the tie throughout. The term "concrete" is used in its general and broad application and comprehends any of the cements or cement compositions such as are ordinarily used in structural work of different kinds. Thus it will be understood that the present invention is not limited to any particular kind of concrete or cement material in the formation of the body portion 1 of the tie. In this connection it will also be understood that the term "concrete body portion" is simply intended to include the concrete envelop or filling material for the tie proper which essentially consists of the metallic bars 2 and 3 and the cushions 4 and 5 associated therewith in the manner hereinafter more fully described.

The concrete body portion 1 of the tie is intended to preserve the conventional outline and dimension of the ordinary wooden cross tie and is designed to be molded and compressed about the interior metal frame by any suitable or improved means to provide a tie of sufficient width and having the necessary bearing surfaces to properly hold it in the ballast and to meet the traffic requirements.

The distinctive feature of the invention resides in the form and construction of the interior metallic frame which as shown comprises two angle bars 2 and 3 spaced laterally apart and secured in spaced relation by means of pairs of longitudinally spaced cross bars 6 and 7 arranged near the opposite ends of the bars 2 and 3. Each pair of these cross bars is constructed of two angle irons 8 and 9 with the opposite ends of their vertical flanges cut away to leave an upright flange which is of a length corresponding to the distance which it is desired to space the bars 2 and 3. The projecting ends 11 and 12 of the lateral members or flanges of these cross bars pass under and engage the lower faces of the lateral flanges of the bars 2 and 3 and are secured thereto by suitable fastening elements 13. Secured to the upright flanges 10 of the cross bars 8 and 9 are two plates 14 and 15 which extend beyond the

upper and lower edges of the bars 2 and 3 and are provided at their upper ends with inturned flanges 16 and at their lower ends with inturned flanges 17, the flanges 17 being preferably of greater width than the flanges 16 to afford a proper supporting base for the rail bearing cushioning blocks 20 to be described, the upper flanges 16 being of the narrowest width possible consistent with the bearing surface and strength necessary in order that the upper faces of the blocks may be exposed as much as possible to receive and support the track rails which they are designed to carry. These rail cushioning blocks 20 are of a width corresponding to the distance between the bars 2 and 3 and are of a length sufficient to afford ample supporting surface for the track rails which are to be mounted thereon. These blocks 20 have their upper faces recessed at their opposite ends as shown at 21 to receive the flanges 16 of the supporting plates 14 and 15 and to adapt the rail engaging faces of said blocks to project above said flanges. The lower faces of these blocks are also recessed at their opposite ends to receive the flanges 17 of the plates 14 and 15 between which and the upper flanges 16 thereof said blocks are securely clamped to hold them against vertical movement, the blocks being held against longitudinal movement by the bars 2 and 3 and against lateral movement by the plates 14 and 15 which are secured to the cross bars 8 and 9 which connect said bars 2 and 3. Referring to the mounting of these rail bearing cushions 20 they are located at points in the tie body where rail bearing supports are to be provided for the opposite track rails and when the cement body 1 is formed therearound, the upper faces of these blocks are left exposed and are arranged flush with the upper faces of the cement body of the tie so that the rails may rest on said blocks and be secured thereto by any suitable fastening elements.

From the above description, it will be obvious that when the metallic frame just described is incased in the cement body 1, the cement will flow around the lateral flanges of the bars 2 and 3 and the cross bars 8 and 9 and thus securely lock said frame in said body against all possibility of its movement in any direction therein.

I claim as my invention:

1. A reinforcing frame for composite railway ties comprising a pair of laterally spaced angle bars, two pairs of cross bars connecting said angle bars, said pair being spaced apart the distance the track rails are to be spaced, the members of each pair being spaced apart and having plates secured thereto, a rail cushioning element mounted between each pair of cross bars, and means on said plates for engaging said elements to hold them in operative position.

2. A reinforcing frame for composite railway ties comprising a pair of laterally spaced angle bars, two pairs of cross bars connecting said angle bars, said pairs being spaced apart the distance the track rails are to be spaced, the members of each pair being spaced apart and having plates secured thereto, said plates having inturned flanges at their upper and lower ends, a rail cushion disposed between each pair of plates and engaged by said flanges whereby they are held in operative position.

3. A reinforcing frame for composite railway ties comprising a pair of laterally spaced angle bars, two pairs of cross bars connecting said angle bars, said pairs being spaced apart the distance the track rails are to be spaced, the members of each pair being spaced apart and having plates secured thereto, said plates having inturned flanges at their upper and lower ends, a rail cushion disposed between each pair of plates and having recesses in their upper and lower faces to receive said plate flanges whereby said cushions are held in operative position.

4. A reinforcing frame for composite railway ties comprising a pair of laterally spaced angle bars, two pairs of cross bars connecting said angle bars, said pairs being spaced apart the distance the track rails are to be spaced, the members of each pair being spaced apart and having plates secured thereto, said plates having inturned flanges at their upper and lower ends, a rail cushion disposed between each pair of plates and having recesses in their upper and lower faces to receive said plate flanges whereby said cushions are held in operative position, the recesses in the upper face of said cushions being deeper than the thickness of the flanges to position the upper face of the cushion above the flanges.

5. A reinforcing frame for composite railway ties comprising a pair of laterally spaced angle bars, two pairs of cross bars connecting said angle bars, said pairs being spaced apart the distance the track rails are to be spaced, the members of each pair being spaced apart and having plates secured thereto, said plates having inturned flanges at their upper and lower ends, a rail cushion disposed between each pair of plates having recesses in their upper and lower faces to receive said plate flanges whereby said cushions are held in operative position, the lower flanges of said plates being wider than their upper flanges.

6. A reinforcing frame for composite railway ties comprising a pair of laterally spaced angle bars, two pairs of cross bars connecting said angle bars, said pairs being spaced apart the distance the track rails are to be spaced, the members of each pair being spaced apart, and each composed of an angle bar with one flange cut away at its

opposite ends to provide attaching means for said cross bars, and a rail cushion secured between each pair of cross bars.

7. A reinforcing frame for composite railway ties comprising a pair of laterally spaced angle bars, two pairs of cross bars connecting said angle bars, said pairs being spaced apart the distance the track rails are to be spaced, the members of each pair being spaced apart, and each composed of an angle bar with one flange cut away at its opposite ends to provide attaching means for said cross bars, the cut away flange of each cross bar being disposed between the upright flanges of the angle bars and forming spacers therefor, the projecting ends of the other flange extending under the horizontal flanges of the longitudinal angle bars and secured thereto.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM H. KNICKREHM.

Witnesses:
JOHN W. STAHL,
EDWARD P. DEVINE.