

March 10, 1931.

W. C. YEOMANS

1,795,817

CONCRETE RAILWAY TIE

Filed Sept. 9, 1929

2 Sheets-Sheet 1

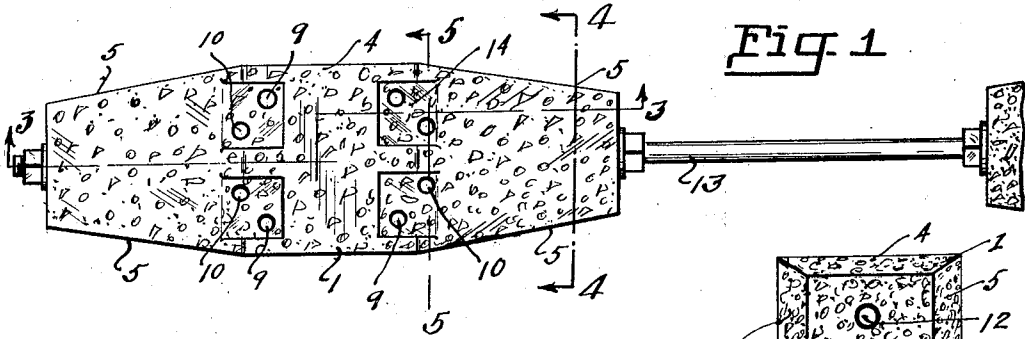


Fig. 1

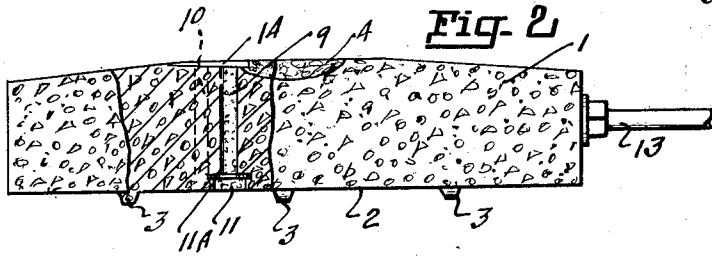


Fig. 2

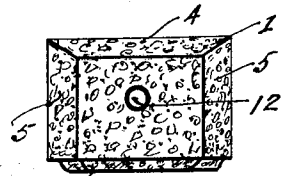


Fig. 4

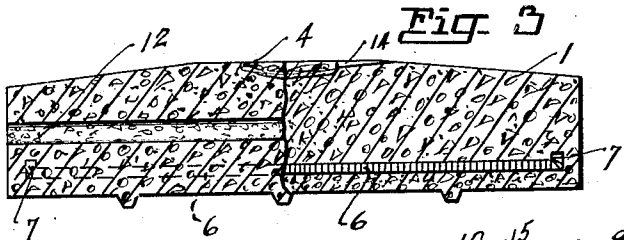


Fig. 3

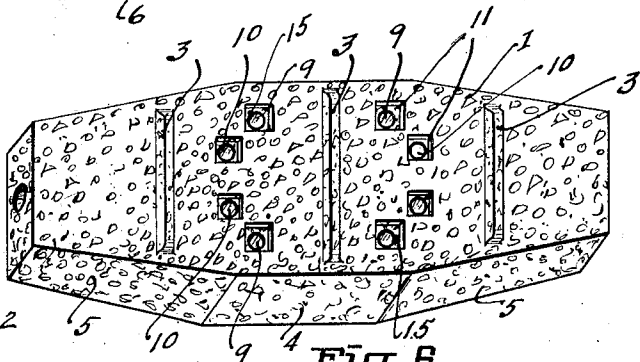
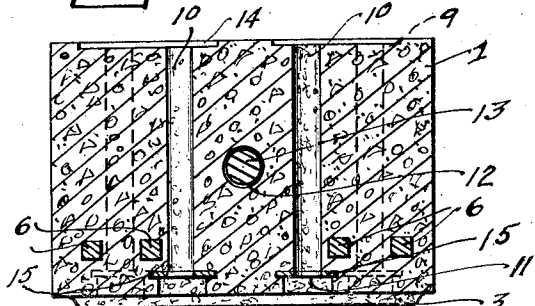


Fig. 5

Fig. 6



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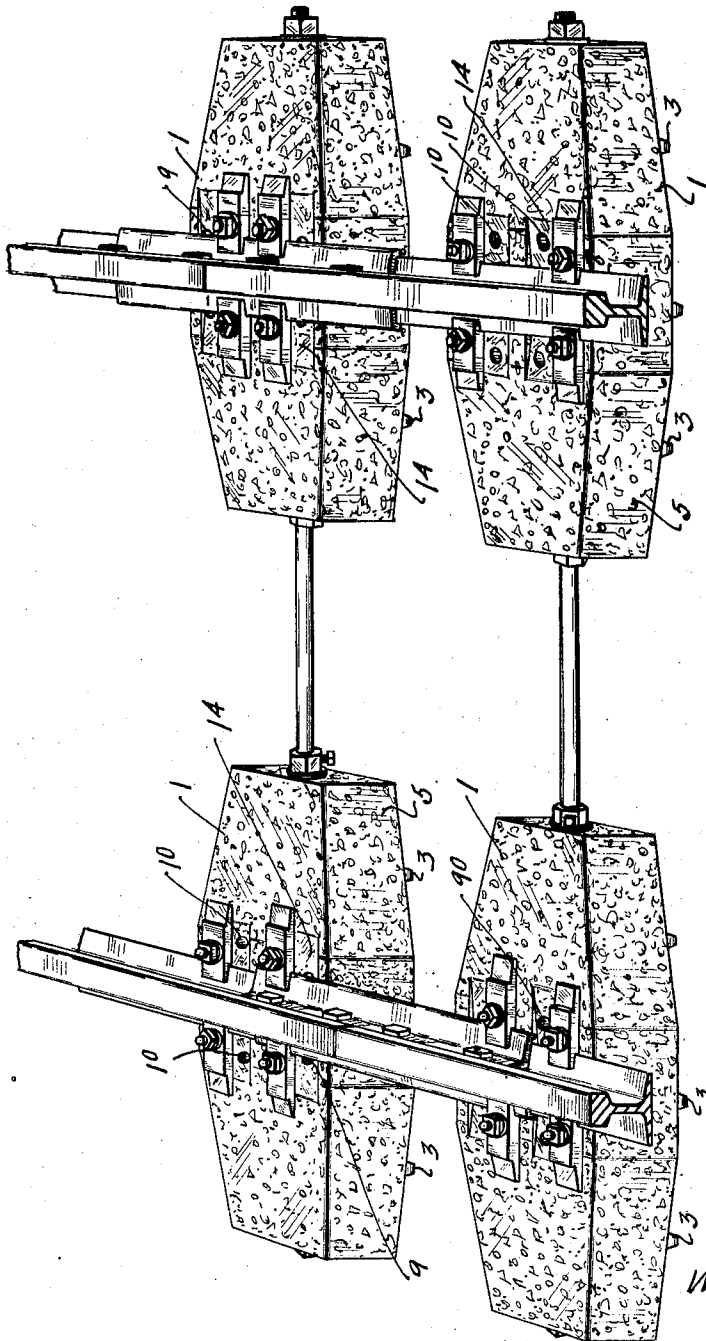


Fig. 1

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CONCRETE RAILWAY TIE

Application filed September 9, 1929. Serial No. 391,488.

My invention relates to railway ties and more particularly to railway ties made of concrete or other plastic material.

My new and improved tie may be produced at a minimum cost and will be relatively permanent.

The tie is so shaped as to reduce the number of ties to a minimum. The ties are sufficiently large in bearing area to support trains of the heaviest wheel loadings, sufficiently spaced apart to develop the bridging strength of the rails and have a sufficient bearing area to support the loads without undue settlement.

The invention consists primarily of a one-piece block having a base formed substantially in a straight line and downwardly extending from which are a plurality of spaced bars running transversely of the base. The object of the bars is to prevent the movement of the tie longitudinally. The tie is larger in cross-sectional area at its mid-section than at either end. Reinforcing is placed adjacent the base of the tie and a central opening or hole runs longitudinally of the tie.

I provide means for insulating the tie from the tie bolt to prevent short-circuiting of the electric current used in the block systems now in general use in railway practice. I accomplish this by forming the tie in a manner that all metallic elements disposed within the tie are placed in spaced relation with each other. I make the ties larger at their mid-section than at the oppositely disposed ends in order to prevent the movement of the tie within the ballast, as I have found the making of the same tapered, locks the tie relative to the ballast with which the same is surrounded. I also place reinforcing in the base of the tie unit to afford the same greater supporting value. In the placing of concrete ties the same constitutes, when properly placed and of proper weight, a road bed that is relatively permanent except with the occasional realignment that is made by the section crew, and it is therefore desirable to provide a rail support and fastening for the rail that may be adapted to different widths of rail base. I place holes vertically within the tie unit spaced at different distances from the center of the tie in order that rails of different

widths of base may be secured to the tie. Means are provided within the base of the tie for receiving the heads of the bolts and to prevent the same turning therein. Recesses are also provided at the top of the tie for receiving the rail clips therein.

A further object of my invention consists in providing a tie unit that will have a maximum supporting value and yet small enough to be handled as individual units by single workmen.

A further object of my invention consists in making the tie units adapted for being fastened together by fastening elements that may be adjusted from time to time for maintaining the track in alignment and the rails in precise spaced relationship with each other.

Still further objects of my invention consist in providing a tie structure that will remain fixedly positioned in alignment and one that will require a minimum of realignment and reballast adjustment.

With these and incidental objects in view, the invention consists in certain novel features of construction and combination of parts, the essential elements of which are set forth in the appended claims, and a preferred form of embodiment of which is hereinafter shown with reference to the drawings which accompany and form a part of this specification.

In the drawings:

Fig. 1 is a top, plan view of one of the tie units illustrating the fastenings disposed therein and illustrating one end of the adjacent tie unit, the two of which comprise a complete tie.

Fig. 2 is a side elevation, partially in section, of the mechanism illustrated in Fig. 1.

Fig. 3 is a side elevation, partially in section, of the mechanism illustrated in Figs. 1 and 2 the same being taken on lines 3—3 of Fig. 1 looking in the direction indicated.

Fig. 4 is an end view of the mechanism illustrated in Fig. 1 the same being taken on line 4—4 of Fig. 1 looking in the direction indicated.

Fig. 5 is a vertical, sectional view of the mechanism illustrated in Fig. 1, the same be-

ing taken on line 5—5 of Fig. 1 looking in the direction indicated.

5 Fig. 6 is an inverted, perspective, plan view of one tie unit the same being made primarily to illustrate the base of the tie and the fastening holes into which the heads of the fastening bolts are positioned. The holes are countersunk to prevent the turning of the head when the bolt is being tightened upon the rail clip.

10 Fig. 7 is a perspective, end view of a track-section illustrating two full sets of ties in position and illustrating a rail joint upon one pair of the ties being so placed that ends of the angle bar rest upon each of the adjacent tie sections and illustrating upon the oppositely disposed rail a joint formed central of one of the ties only.

20 Like reference characters refer to like parts throughout the several views.

I preferably form my tie unit 1 of a single piece of concrete aggregate or other tie structure formed from plastic material. The tie preferably has a base 2 that lies substantially within a single plane. Downwardly extending, lateral, cross bars 3 are disposed in spaced relationship upon the base of the tie, the purpose of which is to prevent the longitudinal movement of the tie when placed within the road bed.

30 I have found best results are obtained wherein the cross bars are three in number but I do not wish to be limited to three bars as the number and size of the same will depend upon the character of surface to which the tie units are to be adapted. I preferably form the mid-section 4 of my tie greater in cross section area than the ends and provide sloping side walls 5 that taper uniformly from a point lying just outside of the base of the widest rail to be used upon the tie. Reinforcing bars 6 are placed in spaced relationship with the base of the tie and run longitudinally of the tie. The bars preferably have an offset end 7 provided at either end to increase the supporting value of the reinforcing steel near the ends of the same. In order that the tie may be accommodated to rails of different weight, or to rails having different widths of base, I provide a plurality of holes 9 disposed at oppositely disposed sides of the center line of the tie through which fastening bolts may be passed for maintaining the rail clips in position that engage the rail base. I also provide a second series of holes 10 disposed farther from the central line of the tie in order to accommodate rails of greater width of base and to accommodate angle bars, adapted to the rails, upon the tie surface. Recesses 11 are formed within the base of the tie for receiving the heads of the bolts therein that are used for fastening the rail clips. These recesses are to prevent the turning of the bolt within the respective holes when the bolt is being tightened

while securing the rail clip in place. A central hole 12 runs longitudinally of the tie through which a spacer and fastening bolt 13 pass. The hole 12 is made substantially larger than that of the tie rod, or tie bolt, in order that the rod may be insulated from the tie itself, thereby lessening the tendency of electric shorts being developed between the tie, the rail and the ground. The reinforcing bars 6 lie outside of the bolts in order that the tendency of electric shorts may be also lessened or reduced to a minimum. Clip receiving recesses 14 are formed within the upper surface of the tie into which the rail clips may be made to engage, or for maintaining the rail clips in spaced relationship with the tie body when a material amount of wear has occurred between the tie and the rail, thereby permitting the clip to be depressed within the tie surface. The depth of the recesses 14 is greater than the amount of normal wear that occurs within the upper surface of the tie during the normal life of the tie.

I mold a washer 15 within the base of the tie body and so place the washer that the head of the bolt will rest directly against the washer and the purpose of the washer is to prevent the wear of the concrete by the head of the bolt.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein shown and described, as it is susceptible of embodiment in various forms, all coming within the scope of the claims which follow.

What I claim is:

1. In a device of the class described, the combination of a body element made of a single piece, reinforcing placed in spaced relationship with the bottom side of the body element, cross bars spaced apart running transversely of the bottom of the body element, said body element having its greatest cross sectional area between its ends and having sloping side walls to produce tapering ends, a hole running longitudinally of the body element, holes spaced apart running from the top to the bottom of the body element and at different spacings from the cross center line of the body element and a countersunk hole disposed at the bottom end of each of the spaced holes and a depression formed in the body element at the upper end of each of the holes.

2. In a device of the class described, a body element, metallic reinforcing elements running longitudinally of the body element and in spaced relation with the bottom surface of the body element, a fastening hole disposed longitudinally and centrally of the body element said hole being substantially larger than

the fastening bolt disposed therein, cross bars disposed laterally of the base of the body element and in spaced relation with each other, spaced holes extending vertically through the body element, recesses disposed at each end of the spaced holes, said holes being in spaced relation with the reinforcing bars and the longitudinal hole, and a metallic washer formed integral with the body element and forming the inner surface of each depression formed within the base of the body element.

3. A device of the class described comprising a body element formed from a single piece of concrete, said body element being reinforced and having its central section of greatest cross sectional area, uniform inclined side walls forming tapered ends upon the body element, a fastening hole, running longitudinally of and centrally within the body element, spaced holes disposed vertically through the body element adapted for permitting the placement of different type rails upon the body element, counter sunk bolt head holes disposed at the base end of the spaced holes, clip receiving recesses formed within the upper surface of the body element, spaced bars outwardly extending from the base of the element and running transversely of the base, and reinforcing bars disposed longitudinally within the body element near its base, said bars having upturned ends.

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