Oct. 14, 1930. W. C. YEOMANS 1,778,618

CONCRETE TIE

Original Filed Nov. 5, 1928

Fig. 1

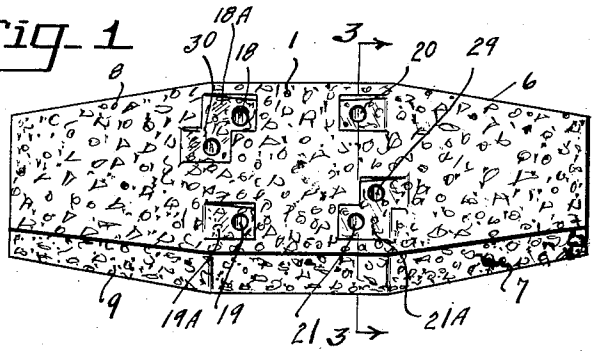


Fig. 3

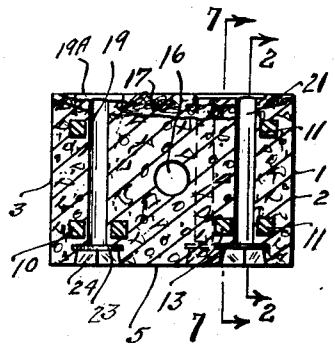
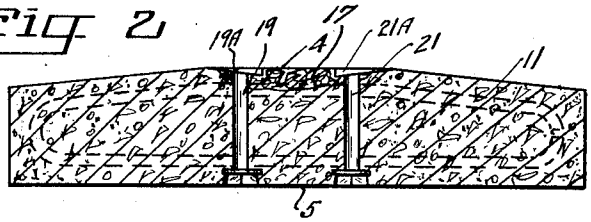


Fig. 2



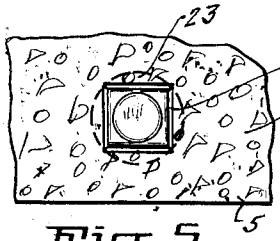


Fig. 5

Fig. 8

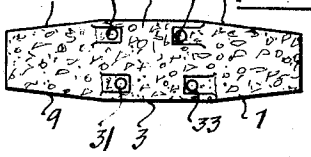


Fig. 4

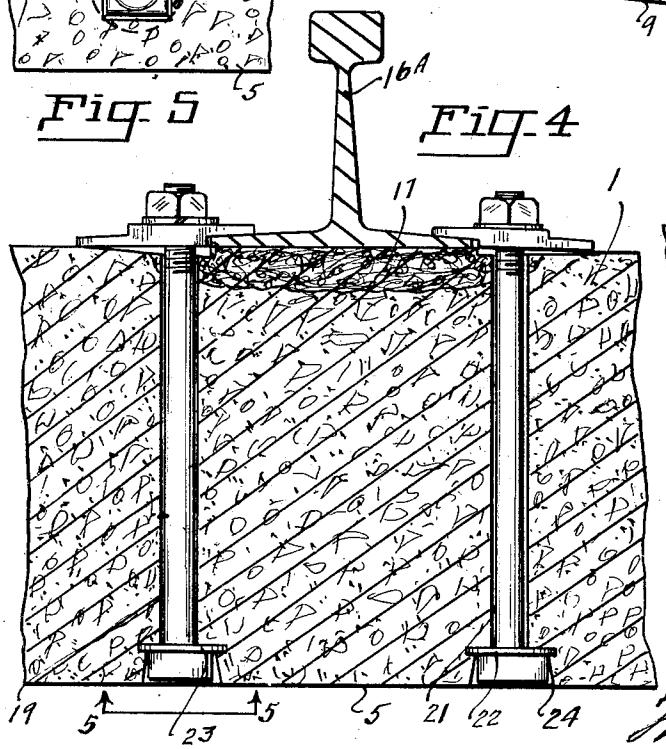


Fig. 6

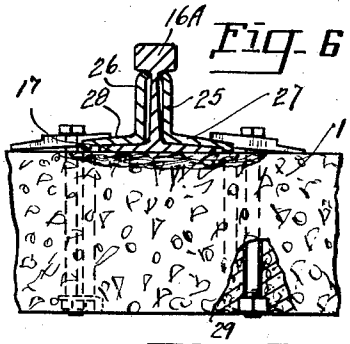
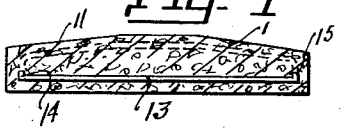


Fig. 7



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UNITED STATES PATENT OFFICE

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CONCRETE TIE

Application filed November 5, 1928, Serial No. 317,245. Renewed May 6, 1930.

My present application relates to Patent 1,700,963, granted me February 5, 1929, upon railway ties; and upon my United States patent application, Serial Number 277,286, filed May 12, 1928, upon railway ties, and upon United States application filed on or about October 11, 1928, upon rail clips; and upon a design patent, and an application for a moulding form for concrete ties, filed concurrently herewith.

My invention relates to improvements in concrete ties for use in railway service.

The primary purpose and object of my new tie construction is to adapt the concrete tie which is relatively permanent construction to different sizes and weight of rails without the removal or replacement of the tie itself.

A further object of my invention resides in novel and useful means for the maintaining of the fastening bolts in a relatively removable fixed position so that the fastening nuts may be turned and tightened or loosened, with means being provided for the preventing of the turning of the bolt itself during the turning of the nut.

A further object of my invention resides in a metallic element being disposed within the tie upon which the head of the fastening bolt may be made to engage thereby preventing through use, the loosening of the bolt relative to the tie.

A further object of my invention resides in the placing of clip seats in the top surface of the tie to permit the rail clip to follow the fastening bolt in the event of wear of the tie by the rail being disposed thereupon.

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 perspective, top, plan view of a complete tie unit.

Fig. 2 is a sectional, side elevation of the mechanism illustrated in Fig. 1, the same being taken on line 2—2 of Fig. 3, looking in the direction indicated.

Fig. 3 is an end, sectional view, the same being taken on line 3—3 of Fig. 1, looking in the direction indicated.

Fig. 4 is a fragmentary, sectional, side view of the tie, and a section of the rail, and the rail clips, made to illustrate the adaptation of the fastening bolts relative to that of the rail clips and of the rail clips relative to that of the rail and to the tie.

Fig. 5 is a fragmentary, inverted, plan view of the base of the tie made to illustrate the adaptation of the fastening bolt to the tie and illustrating the wearing plate disposed within the tie and upon which the bolt head comes to rest, the same being taken on line 5—5 of Fig. 4, looking in the direction indicated.

Fig. 6 is a fragmentary, sectional, side view, of the tie and of the rail, and of the angle bars or fish plates, shown in position relative to the rail and illustrating the rail clips in position relative to that of the tie and of the angle bars.

Fig. 7 is a sectional, side view of the assembled tie, taken on line 7—7 of Fig. 3, looking in the direction indicated. This view is made to illustrate the secondary reinforcing bar disposed within the tie.

Fig. 8 is a top, plan view of a preferred embodiment of tie construction, illustrating the rail clip depressions disposed in staggered relationship upon the face or top of the tie.

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

1 is the body portion of the tie. The tie has parallel side walls 2 and 3 and a portion of the top wall 4 in parallel alignment with the bottom 5. The ends of the side walls 6, 7, 8 and 9 taper to form a concrete tie block of a single piece of concrete to be molded from plastic material. Two endless reinforcing members 10 and 11 are disposed one at each side of the tie member, the reinforcing members being in spaced relationship with the walls of the tie and spaced apart, with two reinforcing members 12 and 13 disposed in spaced relationship with each other and spaced apart from the bottom of the tie. The

members 12 and 13 are preferably made as illustrated in Fig. 7, having upturned ends 14 and 15 disposed at each end of each reinforcing rod. An opening 16 is disposed longitudinally of the tie through which fastening and spacer bars run to connect the oppositely disposed tie members that are disposed as pairs of ties in the line of rails. The upper surface 4 forms a seat upon which the railway rail 16A rests. In order to increase the wearing value and the bearing value of that portion of the tie upon which the rail rests, the same may be increased by the placing of a metallic aggregate 17 upon which the base of the rail rests. Fastening holes 18, 19, 20 and 21 are disposed oppositely to each other, through which fastening bolts may be made to pass. In order to prevent the heads of the bolts from wearing the concrete, metallic washers 22 and 23 are cast integrally with and at the time the tie is cast, with a head receiving opening 24 disposed outwardly therefrom within which the head of the bolt may be made to engage. If square headed bolts are to be used, the depression is formed four sided so that when the bolt head is disposed within the depression, the nut or threaded member disposed upon the threaded end of the bolt may be turned in either direction without the rotation of the bolt within the hole.

Rail clips are used in conjunction with the fastening bolts for engaging the upper surface of the base of the rail and for forming a locking relationship between the fastening bolt, the tie, and the rail. In order to compensate for the rail wear between the rail and the tie, depressions 21A are formed in the upper surface of the tie adjacent the holes through which the fastening bolts pass. The depressions 21A are inclined, the lowermost point being disposed closely adjacent the portion 17, as clearly shown in Figure 2. Thus, it will be apparent that as the surface 17 wears down, due to vibration set up by rolling stock in passage over the rail, such wear may be compensated for by tightening of the fastening bolts. Tightening of the fastening bolts will, of course, move the clip members downwardly toward the lowermost point of the depressions 21A, and consequently effect a binding action upon the upper part of the rail base.

Where the angle bars 25 and 26 are placed at the rail joints, the bases 27 and 28 of the angle bars form a spread greater than the width of the base of the rail. This necessitates the placing of additional holes 29 and 30 through the tie so that the fastening down bolts may be made to pass through these holes for maintaining the angle bars and the rails in tight relationship with the tie. The added holes 29 and 30 provide for the laying of heavier rails upon the ties, without the necessity of taking the tie up to place the added holes therein or to replace the same with other ties having holes spaced apart sufficiently to provide for the added width of the rail base.

On the base side of the tie and at the lower end of the holes 29 and 30 nuts may be cast within the base of the tie and adjacent the bearing washers so that when it is desired to use the holes 29 and 30 the fastening down bolts may be placed through the rail clips with the head of the bolt up and the threaded member down to engage the nut disposed therein, the nut being previously treated with a noncorrosive compound, as tar, so that the threads will not be corroded away when placed in use.

The tie may be made as illustrated in Fig. 8, wherein the bolt holes are made in pairs so that holes 31 and 32 are spaced equidistant from the center line of the tie and wherein holes 33 and 34 are each spaced equidistant from the center line. Ties made in this maner provide for the added width of rail base by the staggered holes placed therethrough. The nuts may or may not be threaded and protected nuts may or may not be placed in the tie and in registerable alignment with the fastening holes for which the same are intended.

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. The combination of a plastic reinforced tie having a bearing surface, a rail resting upon said surface, of rail fastening members including clips arranged upon opposite sides of said rail, and said clip members being disposed within inclined depressed portions of said tie, whereby on tightening said fastening members said clip members will be drawn into said depressed portions into snug contact with said rail.

2. The combination with a rail having a base, of a tie member having depressed portions disposed closely adjacent the portion defined by the rail base, said depressed portions being inclined downwardly toward the rail base, a clip arranged within said depressed portion and adapted to bear upon said rail base, and fastening means for securing said clip in contact with said rail base.

3. The combination of a rail having a base, a tie having a rail bearing surface, apertures disposed upon opposite sides of said surface and extending through said tie, said apertures terminating in depressed portions, said depressed portions being inclined downwardly toward the rail base, clip members fitted

within said depressed portions, headed bolts within the apertures and extending through said clip members, and nuts threaded upon the bolt members for securing said clip members upon said rail base.

4. The combination of a rail having a base, a tie having a rail bearing surface, staggered apertures disposed upon opposite sides of said surface to accommodate rails of varying base widths, and extending through said tie, said apertures terminating in depressed portions, said depressed portions being inclined downwardly toward the rail base, clip members fitted within said depressed portions, headed bolts within the apertures and extending through said clip members, and nuts threaded upon the bolt members for securing said clip members upon said rail base.

5. A railway rail fastener comprising a tie having a plurality of apertures extending through the tie, said apertures terminating in angular faced recesses upon one side thereof, the opposite side terminating in depressed portions for reception of clip elements, said depressed portions having inclined bottom walls extended toward the medial portion of the rail, and fastening means extending through said apertures and clip members for securing the parts in mutual relation.

WALLACE C. YEOMANS.