Sept. 14, 1926.

1,600,129

G. F. A. OCHS

RAILROAD TIE

Filed Jan. 27, 1926

2 Sheets-Sheet 1

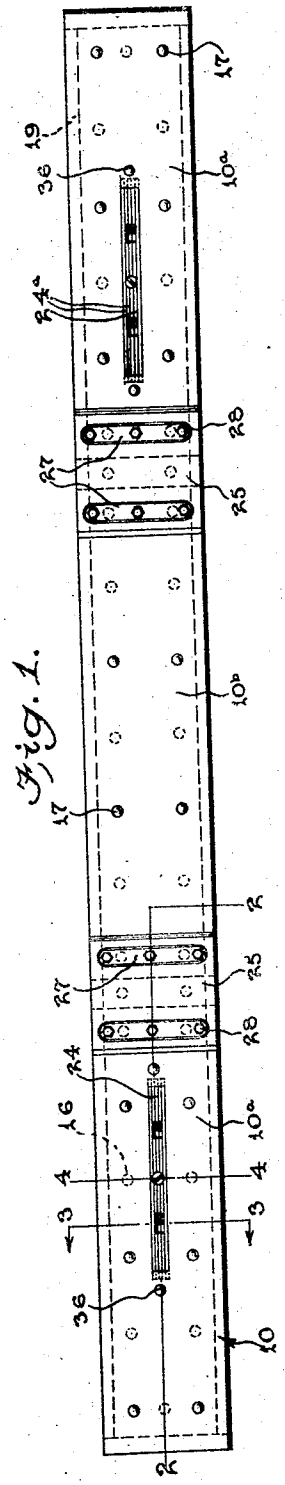


Fig. 1.

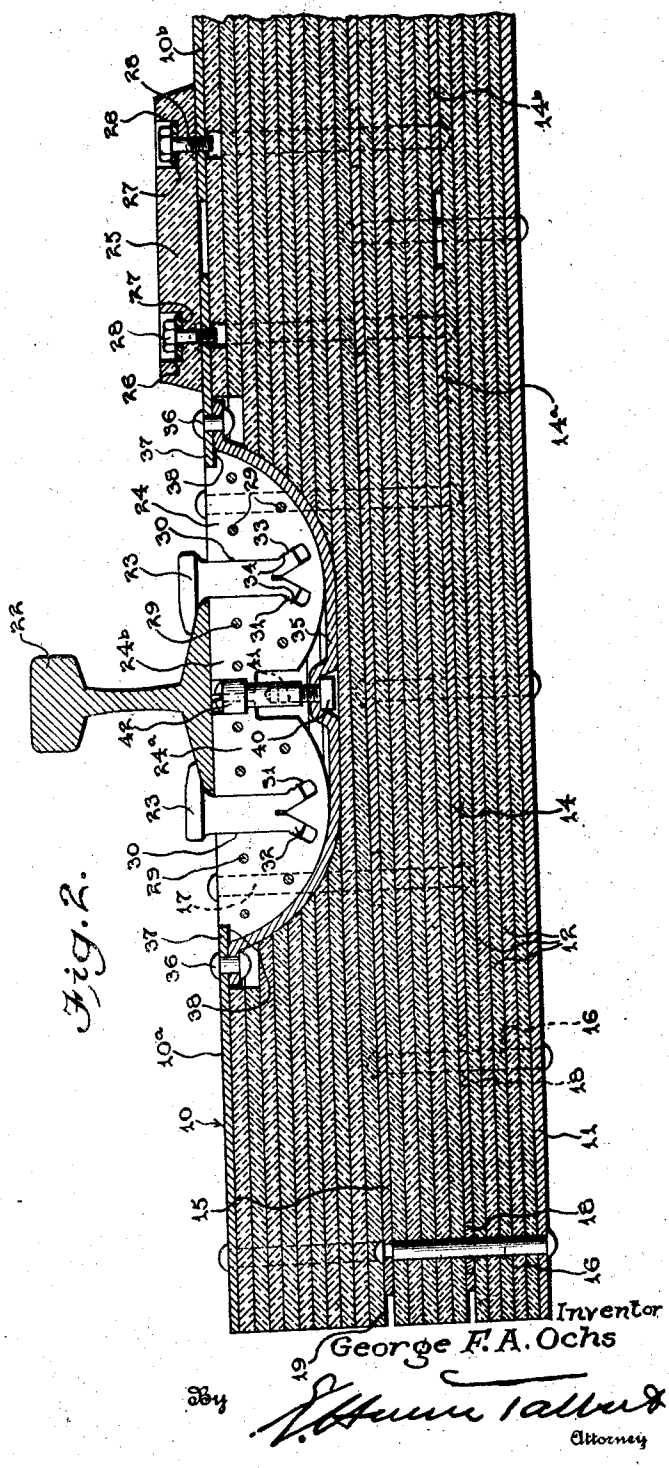


Fig. 2.

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Fig. 3.

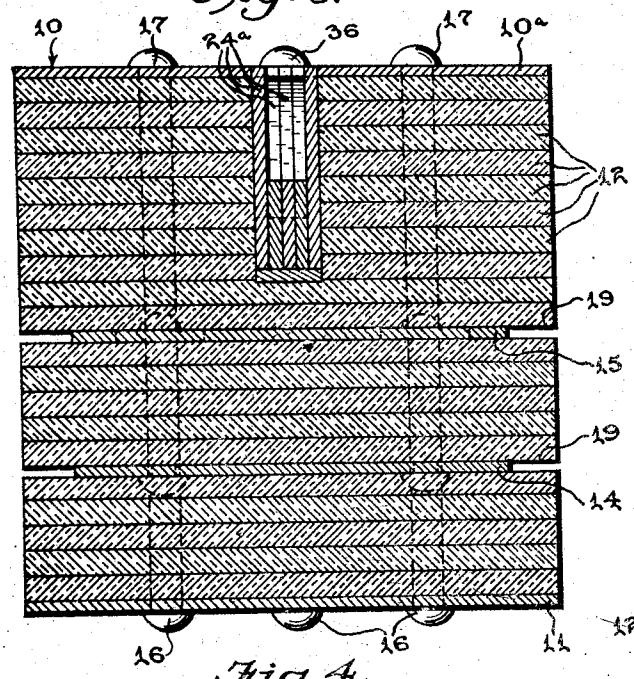


Fig. 4.

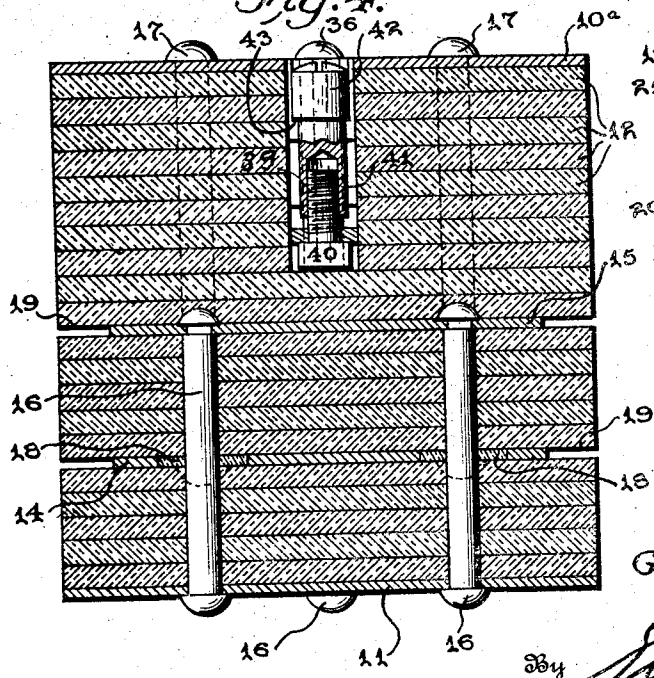
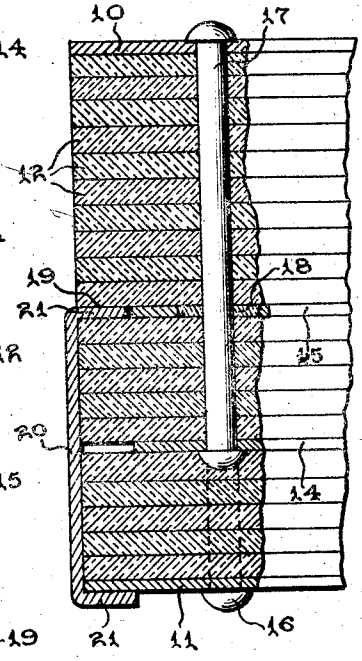


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE F. A. OCHS, OF NEWARK, NEW JERSEY.

RAILROAD TIE.

Application filed January 27, 1926. Serial No. 84,197.

The object of the invention is to provide a tie which may be easily and cheaply manufactured and employed as a substitute for the wooden ties generally in use and having sufficient strength to prevent failure of itself or its fastenings and sufficient bearing surface on the ballast to properly support the imposed loads; to provide a construction, in a device of this character, which will insure the supported track being maintained to gauge, surface and line under all conditions of load; to provide a substitute tie in which the means for securing the rail to the tie is so designed that a reasonable change of width or thickness of the base of the rail or variation of gauge may be made without removing the tie from the track or changing the position of the fastening means; to provide a construction capable of withstanding a reasonable amount of damage in the event of derailment of rolling stock; to provide a tie having a shape resisting the tendency of a supported track to get out of line but at the same time permit readily the correction of any disalignment should such occur; to provide a tie having sufficient length and breadth to provide a bearing surface per rail length of track at least equal to that obtained with wood ties, for the same class of track, without reducing the space between ties to such an extent as to make tamping difficult; to provide a bearing for the rail base which will always afford sufficient area to prevent widening of gauge by canting; to provide a construction in which the seats of the opposite rails of the track may be effectively insulated from each other so that the rails may be used as conductors for current in the operation of a signalling system; and to provide a construction in which the annual cost per unit of length of track for renewals and track maintenance will compare favorably with that of wood ties.

With this object in view, the invention consists in a construction and combination of parts of which a preferred embodiment is illustrated in the accompanying drawings, wherein:

Figure 1 is a top plan view of a tie constructed in accordance with the invention.

Figure 2 is a detail sectional view on the plane indicated by the line 2—2 of Figure 1.

Figure 3 is a transverse sectional view on the plane indicated by the line 3—3 of Figure 1.

Figure 4 is a transverse sectional view on the plane indicated by the line 4—4 of Figure 1.

Figure 5 is a detail sectional view showing a modification consisting of an end reinforcement.

The improved tie is of laminated form of which the top and bottom laminæ 10 and 11 consist of steel plates and the intermediate laminæ 12 consist of plates of insulating material, such as creosoted fiber or the like or a manufactured composition known as gyplap. Steel plates 14 and 15 are interposed at intermediate points in the thickness of the tie and serve as anchor plates for the inner ends of the assembling posts 16 and 17. The posts 16 are secured to the plate 15 and extend through the laminæ below that and through the bottom plate 11, being headed over on the under face of the lower plate as shown. Similarly the posts 17 are anchored in the plate 14 and extend through the laminæ above it, being headed over on the upper face of the top plate 10. The several laminæ comprising the tie are thus securely held together. Where the anchoring posts pass through the plates 14 and 15, they are surrounded by insulating washers 18 set in said plates. The plates 11, 14, 15 and 10 and the anchoring posts 16 and 17 are rendered non-corrosive by sherardizing, or they may be of an acceptable non-corrosive steel alloy.

While the plates 10 and 11 are co-extensive with the laminæ 12, the plates 14 and 15 are preferably dimensioned smaller than said laminæ and positioned so as to leave in the assembled tie the slots 19 extending throughout the periphery of the tie. This arrangement keeps the intermediate steel plates 14 and 15 out of contact with the ground but does not interfere with the employment of the reinforcement shown at 20 in Figure 5, this reinforcement consisting of a side plate overlapping the laminæ below the plate 15 and extending across the ends of the tie and along the sides, if desired, one of the flanges 21 of the reinforcing plate overlapping the bottom plate 11 on the lower face and the other flange extending into the slot 19, it being short enough not to effect edge contact with the plate 15.

The means for securing the track rails 22 to the tie consist of fastening spikes 23 adapted for insertion in anchor blocks 24

constituting inserts in the upper face of the tie, the upper faces of the inserts being flush with the top face of the top plate 10. Since the inserts are metallic, and since it is one of the purposes of the invention that the two rails constituting the track be electrically insulated from each other, the top plate 10 is divided so that it constitutes three sections, of which the two outer sections 10^a are connected with the anchor blocks and the intermediate section 10^b functions as securing means for the laminæ 12 at points intermediate between the anchor blocks. The spacing between the intermediate and outer sections of the top plate is approximately two inches, and these spaces are spanned by insulating cap blocks 25 recessed on the upper faces, as indicated at 26, for the reception of clamp plates 27, through which cap screws 28 pass to threadingly engage the sections of the top plate and secure the cap blocks in position. Recessing the upper faces of the cap blocks serves to leave the heads of the cap screws, when attached, below the upper surface of the cap blocks.

Since the top plate 10 is anchored to the plate 14, the division of the former into sections would be of no avail if the plate 14 were left continuous. This plate 14, therefore, comprises a plurality of sections 14^a and 14^b coresponding to the outer and intermediate sections of the plate 10. Since the laminæ 12 are of insulating material and since the plates 10 and 14 are of sectional form, as above indicated, there is no electrical continuity between the anchor blocks 24 at the opposite ends of the tie and therefore the two rails of the track supported by the tie are insulated from each other, thus adapting the rails for use as conducting agents for the electrical signalling current.

The anchor blocks constitute inserts and these are also preferably of laminar construction, the laminæ consisting of steel plates secured together by rivets 29, the intermediate laminæ being punched, so that in the assembled block a spike receiving pocket 30 is provided, terminating at its inner end in the divergent prong sockets 31 for the reception of the terminal prongs or fingers 32 of the spike 23 which is bifurcated at its lower end, so that in the operation of inserting it, the fingers 32 are deflected laterally in entering the sockets and thus secure the spikes in place in the anchor blocks with sufficient resistance to removal to meet all the strains ordinarily imposed upon the rail in practice. Certain of the laminæ comprising the anchor blocks are serrated, as indicated at 33, to provide teeth for interlocking engagement with teeth 34 on the fingers of the spikes.

The anchor blocks 24 comprise complemental sections 24^a seated at their under edge on an arcuate yoke plate 35 which is secured to the under face of the plate 10 by means of rivets 36. Where the top plate 10 is cut away to provide for the insertion of the anchor blocks, enough stock is left to provide the abutment flanges 37 for engagement with the shoulders 38 on the anchor block. The anchor blocks on the under edges being arcuate, are capable of slight rocking operation on the yoke plate so that the shoulders 38 may be brought into firm engagement with the abutment flanges when the fastening means for the anchor blocks is attached. The anchor block fastening means comprises a screw 39 having a preferably quadrangular head 40 engaged in a correspondingly shaped seat on the under face and at the center of the base plate 35. The screw 39 extends upwardly for the reception of a female screw 41 which extends through an eye bored half in each of the sections 24 of the anchor block and being counterbored for the reception of the head 42 of the screw 41. In the rotation of the screw 41, the head 42 is brought into engagement with the shoulder 43 formed at the bottom of the counterbore and the sections of the anchor block are thus rocked on the base plate and the shoulders 38 forced into firm engagement with the abutment flanges 37. The two sections of the anchor block are thus securely held in position in the tie, from which they may be removed, after the removal of the rail, merely by the detaching of the screw 41.

The invention having been described, what is claimed as new and useful is:

1. A railroad tie comprising a plurality of superposed laminæ of which some are metallic and the others of insulating material, and metallic assembling means for the laminæ to unite them into a composite structure in which the metallic laminæ are insulated from each other.

2. A railroad tie comprising a plurality of laminæ of which certain ones are metallic and the others of insulating material, the metallic laminæ defining the bottom and top of the tie and being positioned at intermediate points in its thickness, and anchor posts secured to the intermediate metallic laminæ and extending through and secured to the outside laminæ.

3. A railroad tie comprising a plurality of laminæ of which certain laminæ are metallic, the remaining laminæ being of insulating material and interposed between the metallic laminæ, one of which latter defines the top face of the tie and another the bottom face of the tie, and anchor posts secured to the intermediate metallic laminæ and extending through and being secured to the outer metallic laminæ, the anchor posts connecting with the opposite outside laminæ having their inner ends disposed in overlapping relation.

4. A railroad tie comprising a plurality of laminæ of which certain ones are metallic

and the remainder of insulating material, the metallic laminæ defining the bottom and top of the tie and being arranged at intermediate points in the thickness of the tie, anchor posts secured to the upper of the intermediate metallic laminæ and extending through and secured to the bottom lamina, additional anchor posts secured to the lower of the intermediate laminæ and extending through and secured to the top lamina, and anchor blocks seated in the top face of the tie and constituting seats for a rail carried thereby, the top metallic lamina and the lower of the intermediate metallic laminæ consisting of spaced sections.

5. A railroad tie comprising a plurality of laminæ of which certain ones are metallic and the remainder of insulating material, the metallic laminæ defining the bottom and top of the tie and being arranged at intermediate points in the thickness of the tie, anchor posts secured to the upper of the intermediate metallic laminæ and extending through and secured to the bottom lamina, additional anchor posts secured to the lower of the intermediate laminæ and extending through and secured to the top lamina, anchor blocks seated in the top face of the tie and constituting seats for a rail carried thereby, the top metallic lamina and the lower of the intermediate metallic laminæ consisting of spaced sections, and insulating cap blocks secured to the top metallic laminæ and spanning the spaces between the sections thereof.

In testimony whereof he affixes his signature.

GEORGE F. A. OCHS.