J. E. LANGFORD.

RAIL TIE AND CLAMP.

APPLICATION FILED JUNE 16, 1919.

1,320,873.

Patented Nov. 4, 1919.

2 SHEETS—SHEET 1.

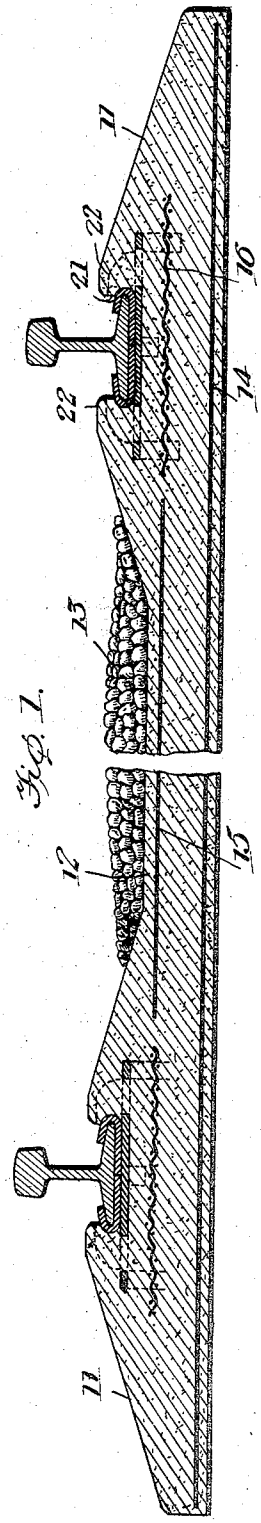


Fig. 1.

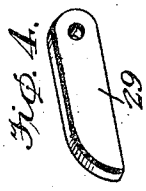


Fig. 4.

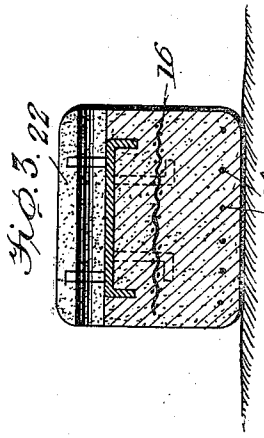


Fig. 3.

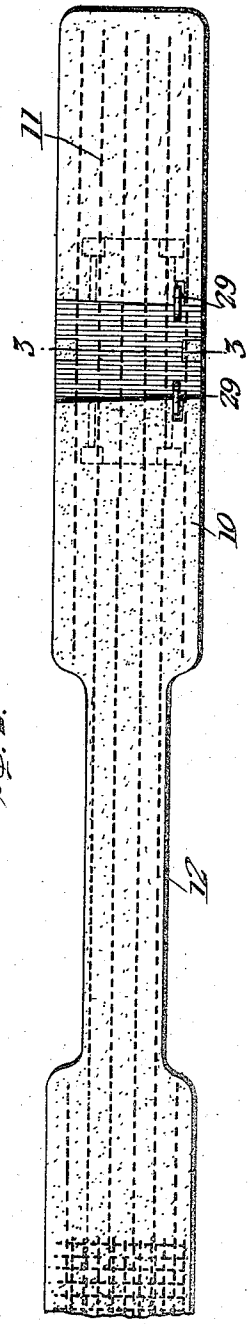


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 5.

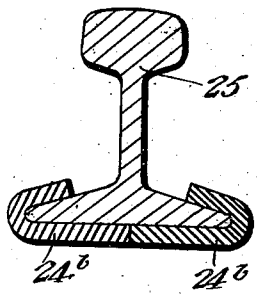


Fig. 6.

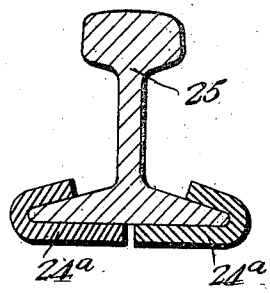
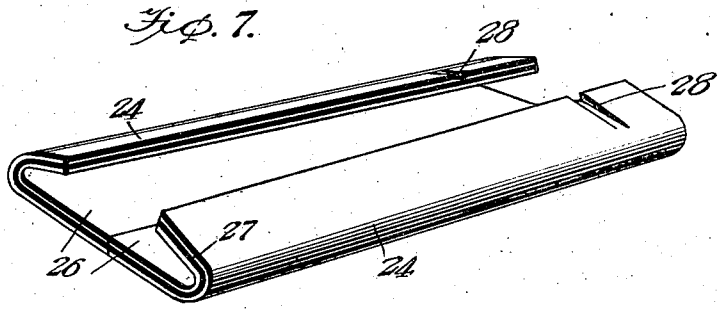


Fig. 7.



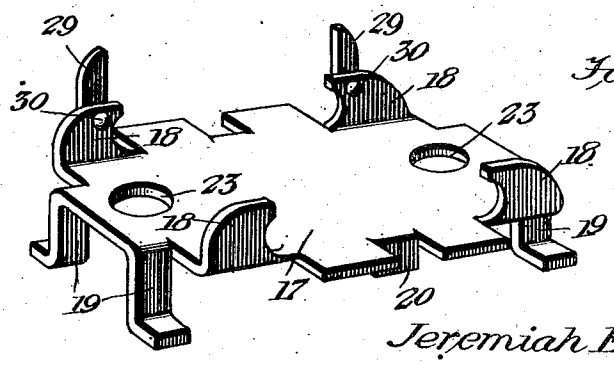


Fig. 8.

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UNITED STATES PATENT OFFICE.

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RAIL TIE AND CLAMP.

1,320,873. Specification of Letters Patent. Patented Nov. 4, 1919.

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To all whom it may concern:

Be it known that I, JEREMIAH E. LANGFORD, a citizen of the United States, and a resident of Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Rail Ties and Clamps, of which the following is a specification.

My present invention relates generally to rail ties and clamps and is more particularly a composition tie having means embedded therein adapted to provide for the effective holding of rails against displacement or overturning, whose outer surface is such that it may be immovably supported in the road bed and will be durable and effective in use far beyond the possibilities of the present wooden tie.

With the above general statement of the objects of my invention, further and more detailed objects as well as the resulting objects will be apparent from the following description wherein reference is made to the accompanying drawings, forming a part of this specification and including several figures of which:

Figure 1 is a sectional view taken lengthwise through my improved tie and illustrating its practical application,

Fig. 2 is a partial top plan view,

Fig. 3 is a vertical cross section taken substantially on line 3—3 of Fig. 2.

Fig. 4 is a detail perspective view of one of the wedge holding keys removed,

Figs. 5 and 6 are transverse vertical sections through different points of a rail engaged by the wedges, as hereinafter described,

Fig. 7 is a detail perspective view of a pair of the wedges,

Fig. 8 is a detail perspective view of one of the tie plates removed.

Referring now to these figures my invention includes a concrete tie generally indicated at 10 and of full thickness at its points of rail support, from which its upper surface tapers off toward the extremities as seen at 11 in Fig. 1 in particular, as well as toward its reduced central portion 12 where as seen in Fig. 2 it is also reduced in width. It is very obvious that the tie, being formed of concrete or similar plastic material, will by virtue of this very material last much longer than the usual wooden tie, and that while this material forms an extremely heavy tie I reduce the weight to a minimum by reducing its dimensions at certain points and effectively reinforcing its body as presently described.

It is furthermore obvious that the reduced central portion of the body of the tie, that is between its points of rail support, provides for more effective holding of the tie in the road bed by virtue of portions of the ballast within these reduced portions as for instance seen at 13 in Fig. 1.

Parallel, and adjacent to the lower surface of the tie body I preferably extend longitudinal reinforcing members 14 for the full length of the tie and above these reinforcements 14 and parallel therewith I preferably extend longitudinal reinforcing members 15 below the surface of the reduced portion 12 of the tie, which latter reinforcements extend between the points of rail support only. The points of rail support of the tie are furthermore preferably reinforced by mesh or the like reinforcing members 16 embedded in the body of the tie similar to the reinforcements 14 and 15 and located in the thickened end portions of the tie which support the rail seats and at approximately the height of the reinforcing members 15 as seen in Fig. 1.

At each of the points of rail support within the thickened end portions of the tie is a rail supporting plate 17, one of which is seen in detail in Fig. 8, provided with spaced upstanding side ears 18 whose inner opposing faces are concavely recessed, each of the plates 17 being formed of a single piece of material, the end portions of which are slit and bent angularly to form depending feet 19 located at the four corners of the plate. The side portions of the plate between the upstanding ears 18 are furthermore slit to provide intermediate depending tongues 20, and as seen by reference to Figs. 1 and 3 the plates 17 so formed are embedded in the upper surface of the thickened end portions of the tie so that the material of which the tie is formed covers the ears 18 and the tie thus remains with transverse rail receiving channels 21 between abutments 22 and of which the upper surfaces of the plates 17 form the bases. The inner surfaces of the abutments 22 integral with the body of the tie are undercut so as to coincide with the inner concavely recessed edges of the ears 18 embedded, as above stated, within the abutments, and it will be noted that the plates 17 so embedded in the tie, have their de-

pending feet 19 extending downwardly through the mesh reinforcing members 16 and thus coöperate with the tongues 20 which also depend well into the material of the tie, in securely locking the plates in position. By reference to Fig. 8 again it will be noted that each of the plates 17 has at its opposite ends openings 23 through which the material of the tie extends so as to further lock the plate in position.

With the rail seats as thus formed I utilize rail base embracing wedges 24 as seen particularly in Fig. 7, these wedges being employed in pairs, each extending around one side of the base of a rail 25 as seen in Figs. 5 and 6, and each tapering longitudinally and in the same direction so that when engaged with the rail base they may be driven into wedging engagement in the rail receiving channels of the tie and into engagement with the tapering faces of the abutments 22 and the concavely recessed inner faces of the rail plate ears 18. These wedges 24 have lower flat portions 26 on which the rail bases directly rest, and may be formed either in one piece as seen in Figs. 5 and 6 or, where electrical connections demand, they may be formed of two layers with an interposed insulating layer 27. It is obvious furthermore that by regulating the widths of the lower flat portions 26 of these wedges, their ability to grip the rails may be controlled without however detracting from their ability to engage the sides of the tie channels 21. Thus at a central point of a rail wedges are utilized of such width as seen at 24^a in Fig. 6 that when driven into the tie channels they will grip the rail as well as the sides of the channel, so as to thus defeat creeping of the rail, while toward the ends of the rail wider wedges will be utilized as seen at 24^b in Fig. 5 so that the inner edges of their lower flat portions 26 will engage before the rail is gripped and thus permit the end portions of the rail to move lengthwise for purposes of expansion and contraction under the effect of climatic changes.

The wedges 24 are also provided adjacent to one end with outer transverse grooves 28 into which locking keys 29 may be shifted after the wedges have been driven tight in operative position so as to prevent accidental displacement of the wedges in use. The locking keys 29, one of which is shown in detail in Fig. 4, are pivotally connected at 30 at one side of certain of the ears 18 of the rail receiving plates 17 as seen in Fig. 8, slots being left in the adjacent portions of the ties as seen in Fig. 2 so as to allow of ready movement of these keys into and out of the effective position shown in the latter figure.

Thus in utilizing my improved tie it is apparent that by seating the same, after formation, within the road bed to such a depth that the upper surface of the rail receiving plate 17 approximates the lower levels of the rails, portions of the ballast of the road bed may be disposed between the thickened end portions of the tie upon the upper surface of its reduced portion 12 as well as the sides of this reduced portion so as to effectively prevent shifting of the tie thereafter. The rails are then extended through the rail receiving channels of the tie, into which their bases may be rocked in the first instance if desired, and the wedges 24 are then disposed in position and driven snugly into engagement with the sides of the rail receiving channels either with or without binding engagement between these wedges and the rail bases as previously described.

My invention therefore provides a tie which will be extremely effective and durable in its use as such, and in addition provides for effectively gripping and holding rails in such manner as to prevent spreading or overturning and defeat tendency to creep while at the same time allowing for properly expansive and contractive movement under climatic changes.

I claim:

1. A composition rail tie having transverse rail-receiving channels in the upper face thereof adjacent its opposite ends, and rail-receiving plates embedded within the tie to form the bases of said channels and to receive the rails thereon, said plates having upstanding ears embedded in the material of the tie and the inner edges of which terminate flush with the side walls of the said channels, as described.

2. A composition rail tie having transverse rail-receiving channels in the upper face thereof adjacent its opposite ends, and rail-receiving plates embedded within the tie to form the bases of said channels and to receive the rails thereon, said plates having portions projecting into the body of the tie at opposite sides of its channels and provided with upstanding ears, the inner edges of which terminate flush with the side walls of the channels, as described.

3. A composition rail tie having reduced central and end portions and provided with transverse rail-receiving channels between said reduced portions, the side walls of which channels are under cut, rail-receiving plates forming the bases of said channels and having portions embedded in the material of the tie and including upright ears provided with recesses, the inner edges terminating flush with the under cut surfaces of the side walls of said channels, as described.

4. A composition rail tie having reduced central and end portions and provided with rail seats between the said reduced portions, reinforcements extending through the tie of

its full length adjacent to its lower surfaces, other reinforcements disposed beneath the said rail seats within the tie body and between the rail seats, rail-receiving plates embedded in the material of the tie at the said rail seats, and rail-holding wedges coöperating with portions of the said plates and the tie to securely hold rails on the said rail seats.

5. A composition rail tie having transverse rail-receiving channels, plates embedded in the material of the tie to form the bases of said channels and having upstanding portions whose inner faces terminate flush with the side walls of the channels, and rail-engaging wedges shiftable in the channels in engagement with the side walls of the channels and the said upstanding portions of the plates.

6. A composition rail tie having transverse rail-receiving channels, plates embedded in the material of the tie to form the bases of said channels and having upstanding portions whose inner faces terminate flush with the side walls of the channels, and rail-engaging wedges shiftable in the channels in engagement with the side walls of the channels and the said upstanding portions of the plates, said wedges having rail embracing portions movable into binding engagement with the bases of a rail, as described.

7. A composition rail tie having transverse rail-receiving channels, plates embedded in the material of the tie to form the bases of said channels and having upstanding portions whose inner faces terminate flush with the side walls of the channels, and rail-engaging wedges shiftable in the channels in engagement with the side walls of the channels and the said upstanding portions of the plates, said wedges having locking grooves and locking keys carried by certain of the upstanding portions of said plates and shiftable into engagement with the locking grooves of the wedges, as and for the purpose described.

8. A composition tie having transverse rail-receiving channels, rail receiving plates forming the bases of said channels and having apertured portions embedded in the material of the tie and provided with upstanding ears, the inner faces of which terminate flush with the side walls of the said channels, rail-engaging wedges shiftable within the said channels and into binding engagement with the side walls thereof and the ears of said plates, and provided with locking grooves, and movable keys pivoted to certain of the ears of said plates and shiftable in the grooves of said wedges to lock the latter against displacement.

JEREMIAH E. LANGFORD.