R. J. WELLS.

RAILWAY TIE.

APPLICATION FILED APR. 7, 1921.

1,413,085. **Patented Apr. 18, 1922.**

Fig. 1

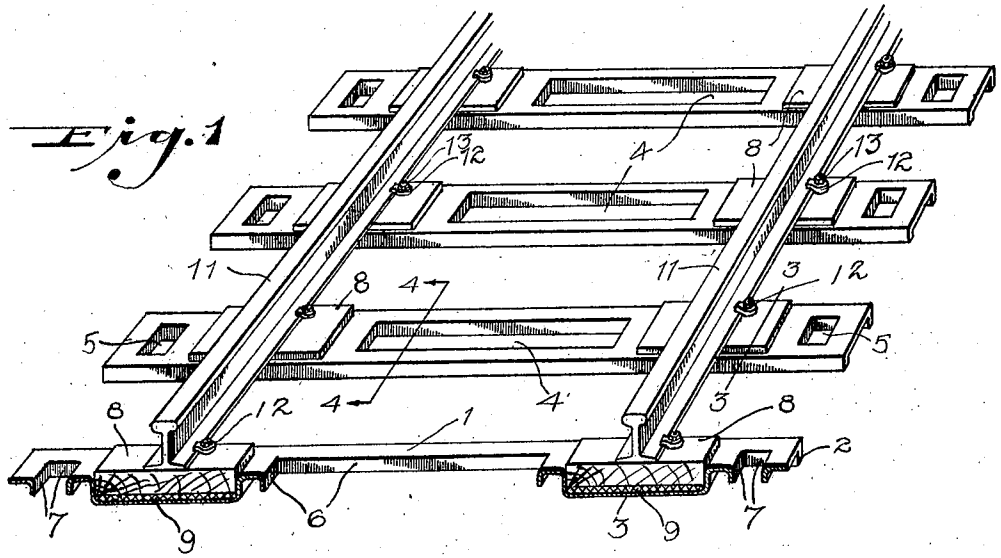


Fig. 3

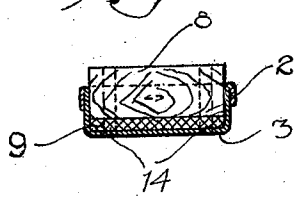


Fig. 4

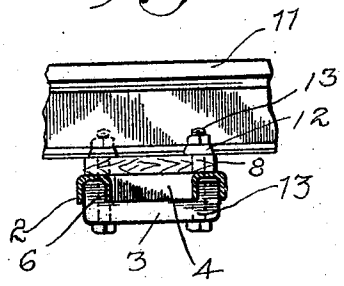


Fig. 2

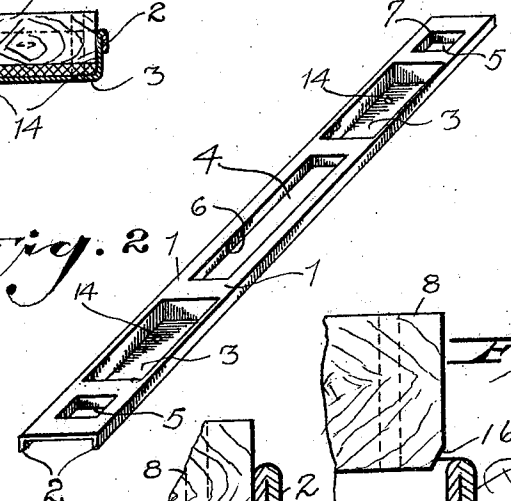
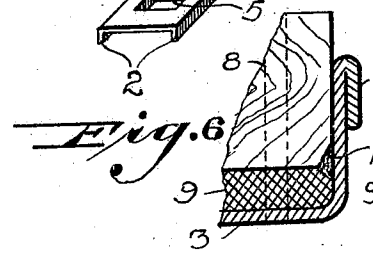


Fig. 5

Fig. 6



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RAILWAY TIE.

1,413,085. Specification of Letters Patent. Patented Apr. 18, 1922.

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To all whom it may concern:

Be it known that I, RALPH J. WELLS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Railway Ties, of which the following is a specification.

This invention relates to railway ties and more particularly to a tie for open track work, or cross country trackage.

The object of the invention is to simplify the structure of such devices whereby they will not only be cheapened in construction, but will be more efficient in use, of maximum strength and durability, affording increased safety, and unlikely to get out of repair.

Heretofore various forms of concrete ties have been devised, which, however, have been found too heavy and unwieldy for general use in railway track construction and repair work. It has also been a common practice to embed a skeleton tie construction in a concrete road bed. Such construction, however, is quite expensive and cannot at the present time be practically employed outside of the city. The object of the present invention is to afford a metallic tie suitable for installation in open track construction, which will be comparatively light and easily transported, capable of being readily installed in either new or old trackage, and which will have sufficient anchorage to insure it against creepage.

Metallic ties are not new in the art, but numerous attempts have been made to employ various metallic forms varying from simple tie beams to complicated shapes. These, however, have been heretofore proven excessively rigid. It has been found in practice that while a solid road bed is spoken of as being desirable, such road bed must possess a certain degree of elasticity or resiliency, and that without this resiliency a track laid upon either rigid concrete ties or rigid metallic ties will be disagreeable to ride over, and will induce undue wear of rails and ties, as well as rapid deterioration of the rolling stock.

A further important feature of the present invention is to incorporate with a metallic tie, resilient rail supporting sleeper blocks whereby the objectionable feature of metallic and concrete ties is effectively overcome.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the feature of construction, the parts and combinations thereof, and the mode of operation or their equivalents as hereinafter described and set forth in the claims.

Referring to the drawings, Fig. 1 is a perspective view of a portion of railway track embodying the tie forming the subject matter hereof, one of which has been shown in section. Fig. 2 is a perspective view of the metallic form preparatory to receiving the sleeper block. Fig. 3 is a transverse sectional view of a tie on line 3—3 of Fig. 1. Fig. 4 is a transverse sectional view of the tie on line 4—4 of Fig. 1. Fig. 5 is a transverse sectional view showing the wooden sleeper block about to be inserted into the pocket of the tie and Fig. 6 is a similar view showing the sleeper block firmly embedded in the tie.

Like parts are indicated by similar characters of reference throughout the several views.

The railway tie forming the subject matter hereof embodies a metallic form or shape 1, which may be rolled, pressed or otherwise formed from sheet steel, or other metal. This form 1 is of elongated rectangular shape, having downturned marginal flanges 2, while located in the top face of the form are depressed spaced pockets or recesses 3. To lighten the weight of the tie and furthermore to prevent center binding, or teetering while in use, an opening 4 is provided in the medial portion of the form 1, and to further reduce the weight other openings 5 are formed adjacent to the ends thereof. These openings 4 and 5 may also be provided with down turned flanges 6 and 7 as shown in the drawings, or such down turned flanges may be entirely omitted. However, these flanges 6 and 7 as well as the down-turned marginal flanges 2 by embedding themselves in the road way serve as anchorage flanges to prevent the creep or displacement of the ties under the impact of traffic. By removing the excess of material from the center of the tie as at 4, the bearing surface and resistance of the tie at this point are materially reduced in comparison with that beneath the rails, whereby under the impact of traffic the tie will seat uniformly upon the road bed, and will not rest wholly at its center with the ends relieved or loose, which condition is

termed "center binding." By thus reducing the resistance and bearing surface of the tie, this portion will tend to settle into the roadbed uniformly with the ends of the tie, the difference in pressure to which it is subjected being compensated by the reduction of bearing surface. Located in the depression or pockets 3 of the form 1 are sleeper blocks 8, preferably though not necessarily of wood, which sleeper blocks rest upon cushion strata 9 of asphaltum or other resilient material placed in the bottom of the depression or pocket 3 beneath such blocks. The use of wooden sleeper blocks submerged in a body of asphaltum, pitch or other similar material is not new in the art per se. However, it has heretofore been the practice to provide a recess in the tie considerably larger than the sleeper block and entirely surround the sleeper block with the yielding or resilient packing material. In practice it has been found that such packing material when softened by summer heat is readily displaced and forced out of the recess or pocket by the pressure and constant pounding of traffic upon the sleeper block. Such packing material cannot be retained in a structure which contemplates the submersion or inclosing of the sleeper block therein. This difficulty has been overcome by fitting the sleeper block 8 to the pocket or recess 3 allowing only sufficient clearance between the block and the walls of the recess to compensate for expansion and contraction of the parts. In other words, the sleeper block is utilized as a closer or stopper for the pocket or recess to prevent the escape of the cushioning material 9. The intervening space if any between the sleeper block and the side walls of the pocket is preferably sealed with a suitable material not subject to expansion or contraction or rendered fluid by summer heat, nor easily dislodged by the vibration incident to traffic over the rails. An asbestos packing will be found suitable, although other material may be utilized for caulking or sealing these blocks in their recesses or pockets. The rails 11, rest upon the sleeper blocks 8, and are secured in position by clamp plates 12, which engage the base flange of the rail and are secured by bolts 13 which extend through suitable holes 14 in the bottom of the pockets or recesses 3, and thence through the sleeper block 8 and interposed stratum of cushioning material. These bolts carry the clamp plates 12, which engage the base flanges of the rails. The tie as thus constructed is installed on the road bed and the rails laid thereon, in a new construction, and inserted beneath the rails in repair work in exactly the same manner as is now employed in installing the ordinary wooden ties. The ties are subject to the same tamping operations by which the grade of the track is established and maintained, and in all other respects the operation and function are identical with those of the wooden ties. However, they possess the advantage of greater durability and equal if not greater resiliency than wooden ties, and are equally as economical. They further afford an increased degree of safety since there is much less danger of rails becoming loosened or spreading, inasmuch as the attachment means affords positive connection of the rails with the metallic form and hence one with the other. While possessing greater durability and strength than wood ties, a metallic tie constructed as described will be of less weight and less bulky and hence more easily and cheaply transported.

While various methods of sealing or caulking the sleeper block in the recess or pocket may be employed for the purpose of excluding moisture, and particularly preventing the oozing or escape of the cushioning material, the preferred form of sealing the intervening crevice or joint has been shown in Figs. 5 and 6. After depositing the body 9 of cushion material in the bottom of the receptacle 3, a quantity of packing material 15 is distributed about the walls of the receptacle and also about the bolt and the block 8 is inserted. The block 8 is preferably though not necessarily chamfered or somewhat reduced in size adjacent to its inner face as at 16 to form intermediate the inner face of the block and the wall of the receptacle an inverted pocket or groove, as at 17, within which the body of packing material 15 is compressed by the inserted sleeper block 8. The pressure of traffic upon the sleeper block is transmitted thence to the cushion body 9 in the bottom of the receptacle, the tendency of which toward displacement tends to force the packing body 15 upward within the inverted V-shaped pocket or groove, and thence into the intervening crevice between the block and the side wall of the receptacle. Thus this body of packing material is forced into the crevice to seal the same, from the inner face of the block and is subjected to the constant pressure of the traffic on the cushion body 9. This body of packing material may be of any suitable or desired form either of powder or granular or plate character, or it may be in strands, such as tow. Asbestos has been found to be a desirable packing substance. Any tendency of the cushion material 9 toward displacement as when softened or rendered plastic by summer heat, whereby the material would ooze or escape serves only to drive the packing material more firmly and securely into the opening or crevice, and so prevent the leakage of the cushion body.

From the above description it will be apparent that there is thus provided a device

of the character described, possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific details shown, but that the means and construction herein disclosed comprise but one of several modes of putting the invention into effect and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. A railway tie comprising a continuous sheet metal body, integral spaced pockets formed therein by depressing the material of said sheet at separated points, to form containers for a body of resilient material, a quantity of resilient cushion material located in the pocket, sleeper blocks seated within the pockets upon the cushion material, and means for sealing the pockets about said blocks to prevent the escape of the cushion material and the entrance of moisture.

2. A railway rail support comprising a main body having a pocket therein, a yielding body in the bottom of the pocket, a sleeper block resting upon the yielding body and tending to distort the yielding body under the influence of pressure applied to said sleeper block, an upwardly converging space between the block and the walls of the pocket, and a body of packing material subjected to upward pressure within such space by the distortion of the yielding body due to pressure of the sleeper block.

3. A railway rail support, a main body having a pocket therein, a sleeper block resiliently mounted in said pocket and packing means sealing the intervening space between the block and the walls of the pocket and compressed therein by the resilient action of the sleeper block.

4. A railway tie comprising a single continuous piece of sheet material, the opposite margins of which are downturned, to form flanges, the medial portion of the sheet being depressed at spaced intervals to a depth greater than the downturned flanges to form receptacles for sleeper blocks, said sheet having an opening formed therein intermediate said depressed pockets to prevent center binding, and resilient sleeper blocks seated in said pockets.

5. In a railway tie member, a single piece of sheet material, two integral spaced pockets formed therein, said piece of sheet material having openings therein, and down turned marginal flanges surrounding the openings.

6. In a railway tie, a receptacle, a body of cushion material therein, a sleeper block positioned within the receptacle and resting upon the cushion, and a body of packing material interposed between the block and cushion adjacent to the walls of the receptacle.

7. In a railway tie, a receptacle, a body of cushion material therein, a sleeper block resting upon the cushion material within the receptacle, and a body of packing material introduced from the under side of the block, into the clearance space between the block and walls of the receptacle.

8. In a railway tie, a receptacle, a body of cushion material, a quantity of packing material also within the receptacle, and a sleeper block bearing upon the cushion material and by its pressure thereon tending to displace the packing material by forcing it into the crevice between the block and walls of the receptacle.

9. In a railway tie, a receptacle, a body of cushion material therein, a sleeper block inserted in the receptacle upon the cushion material therein, the inner face of the block being reduced at its edges to form an inverted marginal pocket intermediate the sleeper block and the walls of the receptacle and a body of packing material located in said inverted pocket.

10. In a railway tie, a receptacle, a body of cushion material therein, a sleeper block inserted in the receptacle and bearing upon the cushion material, and a body of packing material tending to seal the opening about said block, said packing material being subjected to the pressure of traffic under the influence of which it tends to enter the opening.

11. In a railway tie, a receptacle, a body of cushion material therein, a sleeper block resting upon the cushion materials, bolts passing through the sleeper block, and packing material subjected to the yielding pressure of the cushion material to seal the bolt openings.

In testimony whereof, I have hereunto set my hand this 18th day of March, A. D. 1921.

RALPH J. WELLS.

Witnesses:
HARRY F. NOLAN,
GEORGE C. HELWIG.