M. A. LEWIS.

CONCRETE RAILWAY TIE.

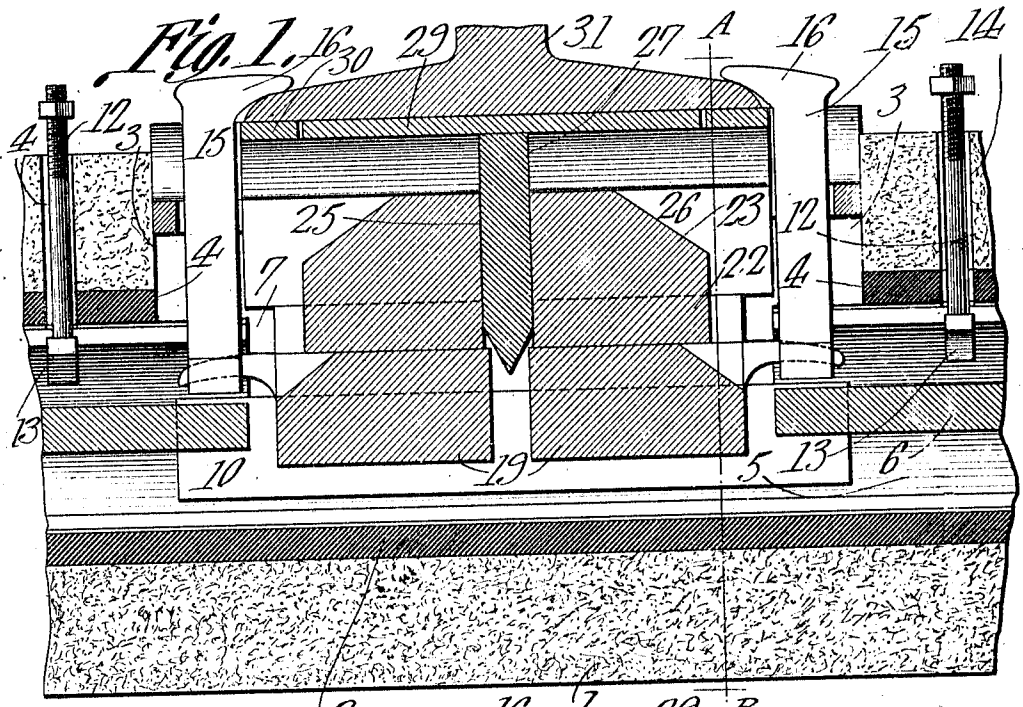
APPLICATION FILED MAR. 2, 1909.

1,004,046.

Patented Sept. 26, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



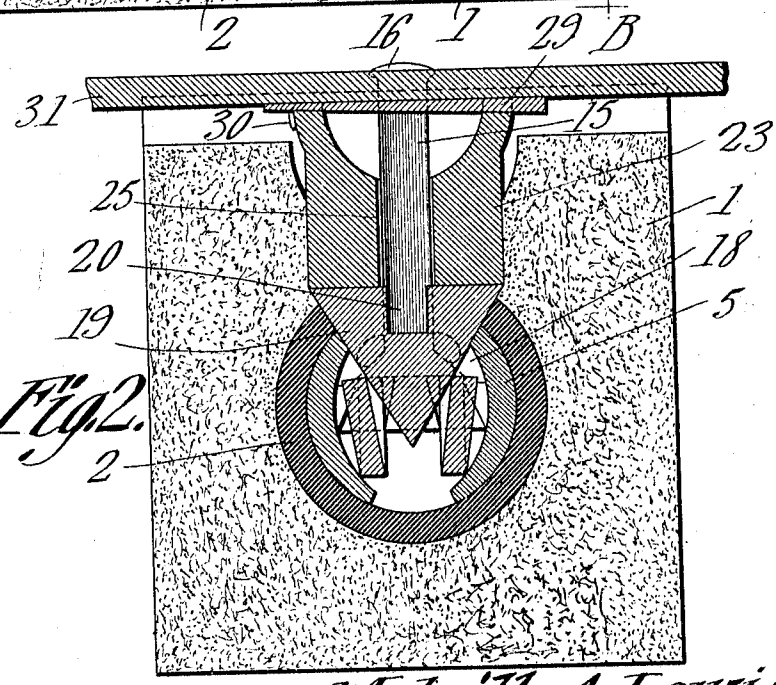


Fig. 2.

Witnesses

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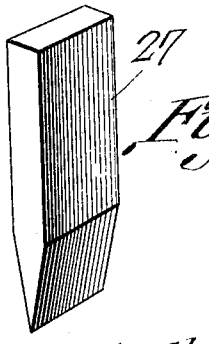


Fig. 6.

Fig. 3.

Fig. 4.

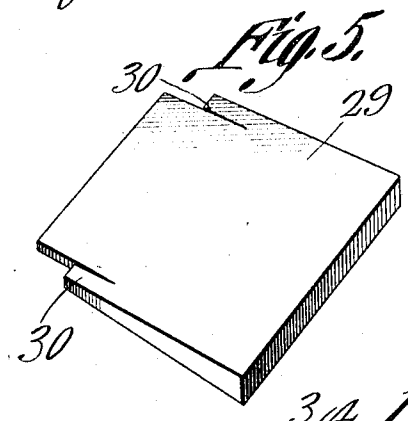
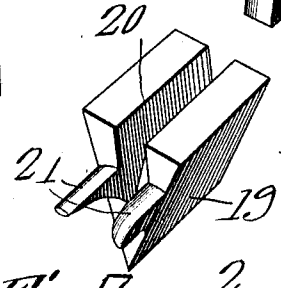


Fig. 5.



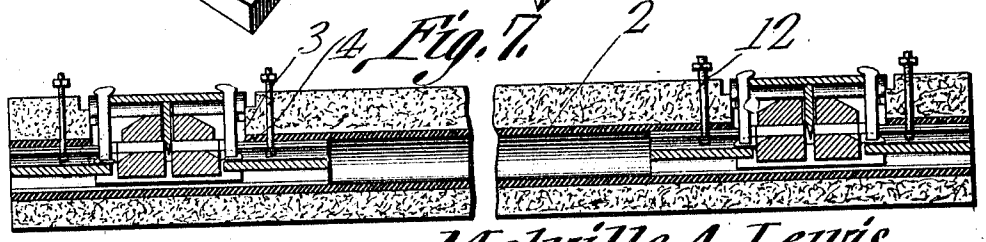


Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

MELVILLE A. LEWIS, OF KELLOGG, IDAHO.

CONCRETE RAILWAY-TIE.

1,004,046. Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed March 2, 1909. Serial No. 480,932.

To all whom it may concern:

Be it known that I, MELVILLE A. LEWIS, a citizen of the United States, residing at Kellogg, in the county of Shoshone, State of Idaho, have invented a new and useful Concrete Railway-Tie, of which the following is a specification.

This invention relates to composite railroad ties, its object being to provide a tie the body of which is made up principally of a plastic material such as concrete and in which is housed a tubular cushioning member formed of a nonconducting material which will not be affected by exposure.

A further object is to provide improved means mounted within the tie and supported by the cushioning element, for attaching rails to the tie, said attaching means including devices for preventing displacement of the rail engaging portions.

A further object is to provide a composite tie of this character embodying all the desirable characteristics of the ordinary wood tie.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a central longitudinal section through a portion of a tie and through the rail engaging devices combined therewith, a portion of a rail being shown. Fig. 2 is a section on line A—B Fig. 1. Fig. 3 is a perspective view of a portion of one of the cores used in connection with the tie, a rail engaging member and an anchoring bolt being shown in connection therewith. Fig. 4 is a perspective view of the rail chair and its supporting wedges separated. Fig. 5 is a perspective view of the rail supporting wedge. Fig. 6 is a perspective view of the spreading wedge. Fig. 7 is a central longitudinal section on a reduced scale, through the complete tie, the rail engaging devices, the rail chair, and coöperating parts being removed.

Referring to the figures by characters of reference 1 designates the body of the tie, the same being formed of concrete or other plastic material and being preferably angular in outline. Arranged longitudinally within this body is a cylindrical tubular cushion preferably made up of a roll of fibrous material such as what is known as bituminized fiber, said cushion being extended throughout the length of the body 1, as indicated at 2, and being open at its ends. Openings 3 are formed in the body 1 at a distance apart equal to the distance between the rails when properly assembled on the tie and these openings register with corresponding openings 4 formed in the tubular cushion 2.

Arranged within each end portion of the cushion 2 is a metallic core 5 preferably formed of an eye beam the flanges of which are curved so as to produce a substantially cylindrical core, said flanges being spaced apart along their longitudinal edges and the web 6 of the core being cut away at a point between the ends thereof and as indicated at 7. A spacing lug 8 extends from the center of each end wall of the opening 7 in the web 6 and spacing shoulders 9 are also formed upon said end walls close to the sides of the core. The notches formed between these lugs and shoulders are adapted to receive the ends of spring bars 10 extending longitudinally within the opening 7 and bearing downwardly upon the lower curved flanges of the core 5.

It is to be understood that each core fits snugly within the tubular cushioning member 2 and each core can be securely held against longitudinal movement relative to the cushioning member and the body 1, by means of an anchoring bolt 12 having a flattened head 13 capable of being inserted between the upper flanges of the core and then given a one quarter turn so as to prevent its withdrawal through the space between the flanges. This bolt extends through openings in the cushioning element 2 and in the body 1 and has a tightening nut which, when screwed on to the bolt, serves to draw the head 13 upwardly into frictional engagement with the upper flanges of the core, thus securely binding the core in place. The opening in the tie body and in the cushioning member, has been indicated at 14 in Fig. 1.

In order to secure a rail to the tie, rail engaging devices such as indicated at 15 are

employed, each of these devices having the general appearance of a spike, it being provided at its upper end with a head 16 for engaging the base flange of a rail. The lower end of the member 15 however, has an enlargement 17 insertible under the overhanging upper flanges of the core so as to bring the member 15 between said flanges. One of these members 15 is placed in engagement with the upper flanges adjacent each end of oppositely disposed elongated recesses 18 formed in the flanges adjacent the center of the core. Supporting wedges 19 are adapted to be mounted on the spring bars or strips 11, each of these wedges being formed, in its upper face, with a longitudinal groove 20 while extending from one end of the wedge are downwardly curved outwardly diverging prongs 21 designed to straddle the adjacent rail engaging device 15 and to lie between the enlargement 17 on said device and the upper portions of the adjacent flanges of the core. The groove 20 receives a rib 22 formed longitudinally along the bottom of a rail chair 23. A longitudinally extending channel 24 is formed in the upper face of this chair and a passage 25 extends downwardly through the chair from the center of this channel. Openings 26 are also formed in the end portions of the chair and the rib 22 is located entirely between these openings, said rib being bisected by the passage 25. After the wedges 19 have been properly seated on and between the bars 11 and with their prongs 21 embracing the devices 15, the chair is placed on them and a spreading pin 27 tapered, as shown in Fig. 6, is driven downwardly through the passage 25 and between the wedges 19 so as to shift said wedges in opposite directions. Longitudinally extending recesses 28, of different depths are formed in the side portions of the chair 23 at the top thereof and receive a supporting wedge plate 29 having side fingers 30. The rail 31 is adapted to bear directly on this plate and the flanges of the rail are engaged by the head 16. It will be apparent that the inclined surface of the supporting wedge plate 29, by a downward pressure of the rail thereon will force the spreading pin 27 downwardly so that the prongs 21 will tightly engage the fastening devices 15 thus holding them against upward movement. The wedge plate 29 can then be driven transversely of the rail so as to take up any play between the parts and the fingers 30 may then be bent downwardly over one side of the chair so as to prevent the wedge from pulling out of position.

With the parts thus assembled it will be apparent that when the rail is subjected to a considerable weight, as when a car is passing thereover, this weight, instead of being transmitted directly to the plastic material constituting the body of the tie, will be received by the tubular cushioning member 2 in which the core 5 is located. The jarring and the vibrations produced by the movement of the cars over the tie will not, therefore, result in injury to the said tie and practically the same cushioning effect will be obtained as where an ordinary wooden tie is employed. It will be obvious that the rail engaging devices cannot pull out of the tie and, therefore, the rails will be constantly held in place.

As heretofore stated the cushioning element 2 is preferably formed of bituminized fiber this material being capable of withstanding exposure to air and moisture and also constituting means for insulating the rails from each other. Said material also constitutes an efficient cushion and it has been found that, by utilizing a tube of this material and housing the weight receiving core therein, the cushioning effect is greatly improved as compared with the ordinary flat cushions commonly employed. Not only does the said element 2 cushion the rails but the cushioning action is obtained by the yielding of the bars 11 between which the wedges extend.

It will be seen that by constructing and arranging the parts as shown, the spreading pin or member 27 will move downwardly by gravity automatically as the parts become worn. Undesirable looseness of the parts is thus prevented.

Obviously, after the tie has been subjected to long continued use, the resilient supporting bars 10 will become worn and cause the rails to gradually settle on to the tie body. These bars can ultimately be reversed or new ones substituted therefor.

While the structure has been described as including a plastic body substantially angular in outline it is to be understood that, if preferred, a continuous plastic bed may be employed and the cushioning elements and cores may be arranged therein at desired intervals.

What is claimed is:—

1. A railroad tie including a body, a tubular cushioning member housed therein, and means for distributing the weight of a rail and its load upon the inner surface of said cushioning member.

2. A railroad tie including a body, a tubular cushioning member housed therein, a non-yielding core supported within said cushioning member, and means engaging the core for supporting and fastening a rail.

3. A railway tie including a body, a tubular cushioning element of non-conducting material housed within the body, and means for distributing the weight of a rail and its load upon the inner surface of said element.

4. A railroad tie including a body, a tubular cushioning member extending longitu-

dinally therein, a core of non-yielding material housed within said member, elastic devices supported by the core, a rail supporting element, and means for exerting a spreading action upon said elastic devices when said element is subjected to a load.

5. A railroad tie including a body, a tubular cushioning member embedded therein, a non-yielding core housed within and bearing against said cushioning member, a rail chair, spaced elastic elements supported in the core, and means interposed between said chair and elements for exerting a spreading action upon the elements when the chair is subjected to a load.

6. A railroad tie including a body, a tubular cushioning member embedded therein, a core housed within the cushioning member, elastic elements mounted within the core, a rail chair, rail engaging devices extending into the core and through said chair, and means shiftable by the application of a load to the chair, for spreading the elastic elements and gripping the rail engaging devices to hold said devices against removal from the core.

7. A railroad tie including a tubular cushioning member, a plastic body molded thereabout, a core housed within the cushioning member, rail fastening devices movably mounted within the core, oppositely disposed elements for engaging said devices to hold them against movement relative to the core, and means shiftable by a rail subjected to a load, for moving said elements relative to the rail engaging devices to take up play between said devices and the rail.

8. The combination with a railroad tie and a core mounted therein, of spaced elastic devices supported in the core, rail engaging devices, a rail chair, means interposed between the chair and elastic devices for spreading said devices when the chair is subjected to a load, and means shiftable by a rail subjected to a load for shifting said means relative to the rail engaging devices.

9. The combination with a tie and a core housed therein, of elastic devices supported within the core, wedges extending between said devices, rail engaging elements extending into and retained by the core, means upon the wedges for embracing said elements and shifting them in a downward direction, a spreading element projecting between the wedges, and means for transmitting a load to said spreading element from a rail engaged by said devices.

10. A railroad tie including a tubular non-conducting cushioning element, a plastic body molded therearound, and means for distributing the weight of a rail and its load to the inner surface of said cushioning element.

11. A railroad tie including a body, a tubular core of bituminized fiber within the body, and means for distributing the weight of a rail and its load to the inner surface of the core.

Dated and signed at Kellogg, Idaho, Feb. 24th, 1909.

MELVILLE A. LEWIS.

Witnesses:
M. A. CAVANAGH,
WILLIAM TURTON.