

E. J. ROSENCRANS & H. SANDERSON.
 CONCRETE RAILROAD CROSS TIE.
 APPLICATION FILED OCT. 14, 1912.

1,054,365.

Patented Feb. 25, 1913.

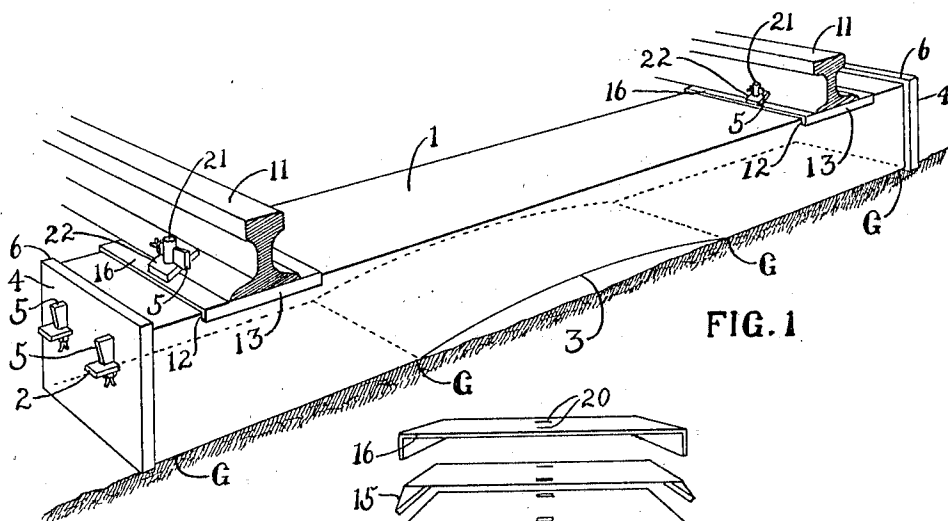


FIG. 1

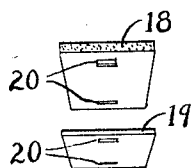


FIG. 5

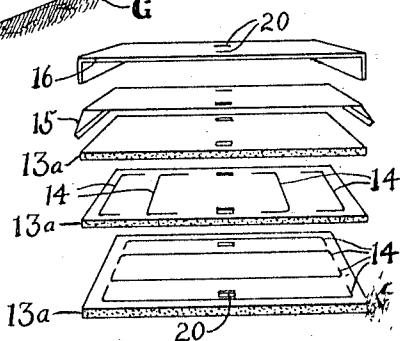


FIG. 4

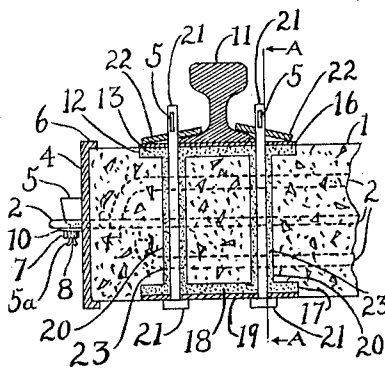


FIG. 2

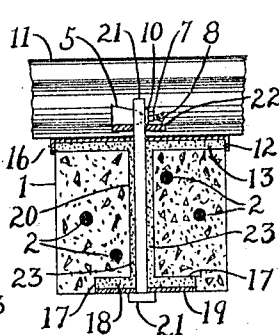


FIG. 3

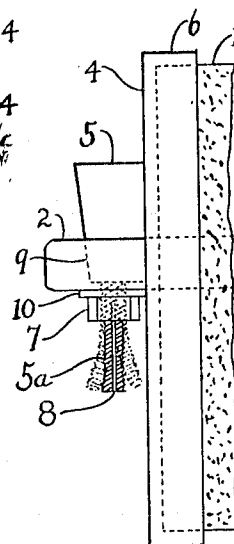


FIG. 6

WITNESSES

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UNITED STATES PATENT OFFICE.

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CONCRETE RAILROAD CROSS-TIE.

1,054,365.

Specification of Letters Patent.

Patented Feb. 25, 1913.

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To all whom it may concern:

Be it known that we, ERNEST J. ROSENCRANS, a citizen of the United States, residing at San Jose, in the county of Santa Clara and State of California, and HENRY SANDERSON, a British subject, residing at San Jose, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Concrete Railroad Cross-Ties, of which the following is a specification.

Our invention relates to improvement in concrete railroad cross-ties, and especially to means for prevention of friction between the rail and the concrete cross-tie, and means for prevention of the upward strain in the center of said tie, which in a short time, without prevention, will cause said tie to crack and crumble at the center point and become useless. Also, in the construction of a concrete cross-tie it becomes necessary to have the rail-engaging bolts pass through the concrete cross-tie perpendicularly, and fitted so the same can be removed in case of breakage, with heads on the lower ends of said bolts which are drawn up against the under side of said concrete tie by the fastening of the rail to said tie by said bolts; and by the constant pounding on the rail plates incident to the passage of trains and other railway rolling stock over the tracks will, without prevention, cause the heads of these bolts to wear upward into the concrete tie, and the side motion of said bolts will cause them to wear in their passage through the concrete tie, and give an undesirable vibration to the rail. It is also found by experience that the concrete tie, without prevention, will become chipped and broken at its ends, and badly defaced.

It is the main object of this invention to obviate these objectionable features, as well as to increase the effective life of the concrete railroad cross-tie, and to increase its durability and efficiency.

Further objects and advantages will appear in the following description.

Our invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a perspective view, showing the accompanying parts in position. Fig. 2

is a fragmentary, longitudinal, vertical section through the tie and rail. Fig. 3 is a vertical cross-section on line "A—A" of Fig. 2. Fig. 4 is a perspective view of the component parts of the upper anti-friction pads and plates. Fig. 5 is a perspective view of the component parts of the under anti-friction pads and plates. Fig. 6 is a side elevation of the split and threaded key in position.

Similar numerals refer to similar parts throughout the several views.

In the drawings here presented, we have shown the invention as applied to a concrete tie 1, of suitable dimensions, which may be constructed of any well-known material and suitably reinforced by rods, as 2.

3 is transverse curvilinear channel approximately in the center of the under surface of said tie, and extending a distance each way from the center of said tie to the ground bearings thereof, shown at G, said channel being of the required depth at the center of said tie upward, to prevent any ground strain coming on the center of said tie by the downward pressure on the end bearings, G, of said tie by the passage of trains and other railway rolling stock; the ground bearings, shown at G, extend inward a distance from each end of said tie to the transverse curvilinear channel shown at 3. Two of the reinforcing rods shown at 2, Fig. 1, extend out a distance from each end of said tie, and have slots cut near the ends thereof for the purpose of fastening protection plates 4, by taper keys 5, to the ends of said tie for the purpose of protecting the ends thereof from being chipped and broken; said plate 4 is made of metal of the proper thickness, having a flange, shown at 6, turned at right angles thereon to fit the end of said tie, for further protection to the end of said tie; this metallic plate 4, not only protects the end of said concrete tie, but gives it strength and durability. Key 5 is made of steel of the proper length, width, and thickness, tapering to its lower end where the same is made round, as shown at 5^a, having a thread cut on the round part thereof to receive a threaded nut, shown at 7; the threaded end, 5^a, is then split as shown at 8, Fig. 6. When this key 5 is placed in slot 9, washer 10 is placed on over the threaded part 5^a thereof, when the threaded nut 7 is turned on, and by this nut

the key 5 is drawn into place through slot 9; the split 8 is then opened a distance to prevent the nut 7 from turning back and loosening key 5.

5 In the top side of tie 1, directly under the rail 11, is cast a recess 12, for the purpose of placing therein anti-friction pad 13; said anti-friction pad 13 (parts shown at 13^a and 13^b, Fig. 4) is composed of three 10 layers of asbestos or any other fibrous and incombustible material, preferably asbestos, and inlaid between the layers of the material are steel wires 14, for the purpose of reinforcing, strengthening, and keeping the 15 fibrous parts of said anti-friction pad 13, in place; this anti-friction pad, when made up, has a thin metallic plate 15, shown at Fig. 4, over the top of the three layers, having its ends bent down and inward a distance, and 20 is for the purpose of holding the layers of said anti-friction pad 13 together after said layers have been compressed together, with the steel wire reinforcing wires 14 therein, by hydraulic pressure; the fibrous material 25 of this anti-friction pad on the under side thereof, comes in contact with the concrete tie 1, in recess 12, and adheres by reason of the roughness of the same, thereby becoming a fixed matter preventing any friction 30 from the rail 11 on the concrete tie 1, at this point. Friction plate 16 is made of iron of the proper width and thickness, having its ends bent at right-angles a distance, for the purpose of protecting the ends of 35 anti-friction pad 13, when in place; this friction plate 16, rests on top of metallic plate 15, and anti-friction pad 13, and under the rail 11, and is for the purpose of receiving the friction of rail 11. In the under 40 side of tie 1, is cast a recess 17, shown in Figs. 2 and 3, for the purpose of placing therein anti-friction pad 18, and iron plate 19; this iron plate 19, and anti-friction pad 18, have two holes bored through their flat 45 surfaces that correspond with the two holes cast in tie 1, and shown at 20, to receive

bolts 21, which pass up and through anti-friction pad 13; and through friction plate 16, and through fish-plates 22; these bolts, 21, fasten rail 11 to tie 1, by keys 5. These 50 holes 20, are made larger than the bolts 21, to allow for the packing of a fibrous and incombustible material around said bolts, shown at 23, Figs. 2 and 3, to prevent any friction in their passage through the con- 55 crete tie 1.

From the foregoing description it can be seen that this invention applied to concrete ties will increase their life, durability, and efficiency. 60

Having thus described our invention, what we claim and desire to secure by Letters Patent, is—

1. In a concrete railroad cross-tie reinforced in any suitable manner, having anti- 65 friction pads reinforced with steel wires and metallic plates, and having recesses cast in the top side of said tie to receive said anti-friction pads, and recesses cast in the 70 under side of said tie to receive said anti-friction pads, in combination with friction plates on the outside of said anti-friction pads to receive the friction of the rails as shown and described.

2. In a concrete railroad cross-tie, the 75 combination of a taper key having its lower end rounded and threaded to receive a threaded nut, said threaded portion being split, adapted to open to retain said nut in place, bolts embedded within the concrete 80 tie with anti-friction material; means of fastening the rail, fish-plates, anti-friction pads, and friction plates to said tie, all as shown and described.

In testimony whereof we have signed our 85 names to this specification in the presence of two subscribing witnesses.

ERNEST J. ROSENCRANS.
HENRY SANDERSON.

Witnesses:

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B. BERNAL.