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F. SCHUMANN.
RAILROAD TIE.
APPLICATION FILED FEB. 26, 1909.

Patented Nov. 23, 1909.
2 SHEETS—SHEET 1.

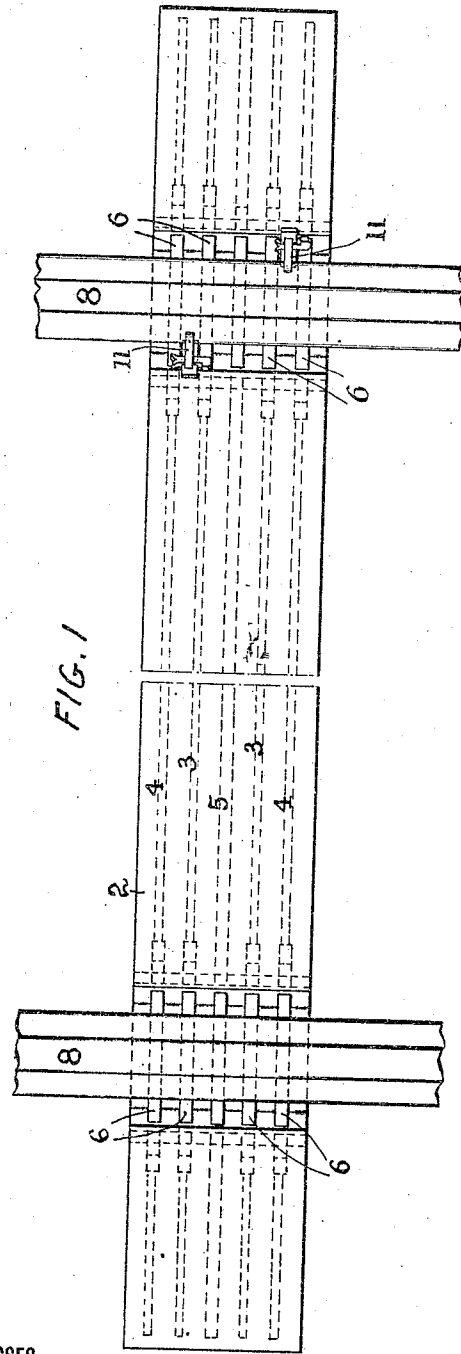


FIG. 1

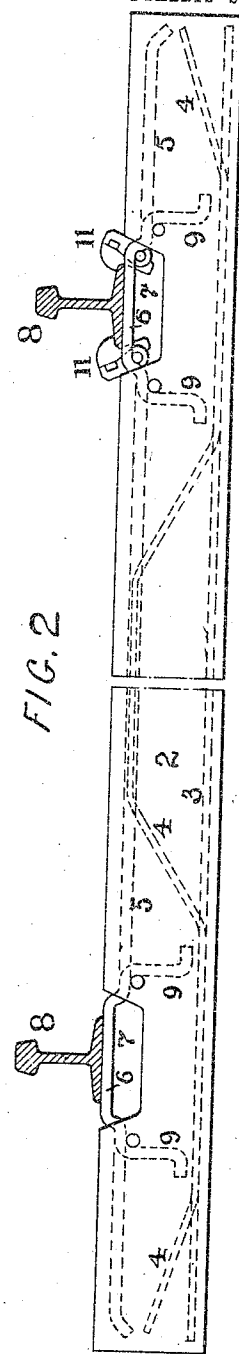


FIG. 2

WITNESSES

Daniel Webster, Jr.
R. M. Kelly

Francis Schumann INVENTOR
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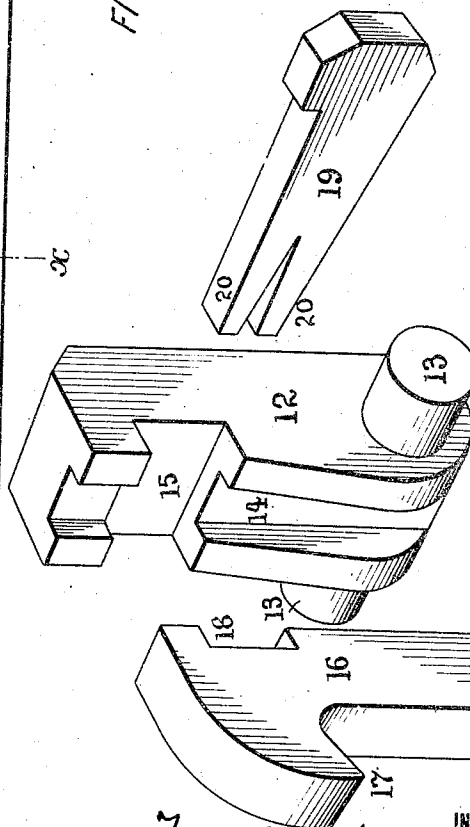
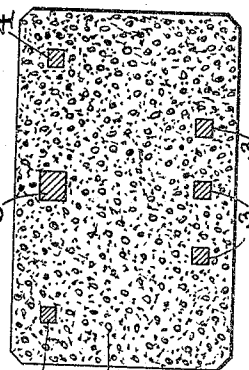
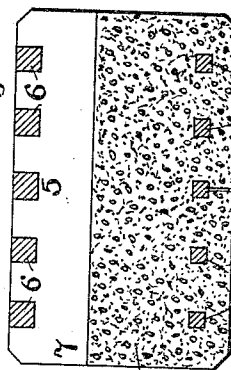
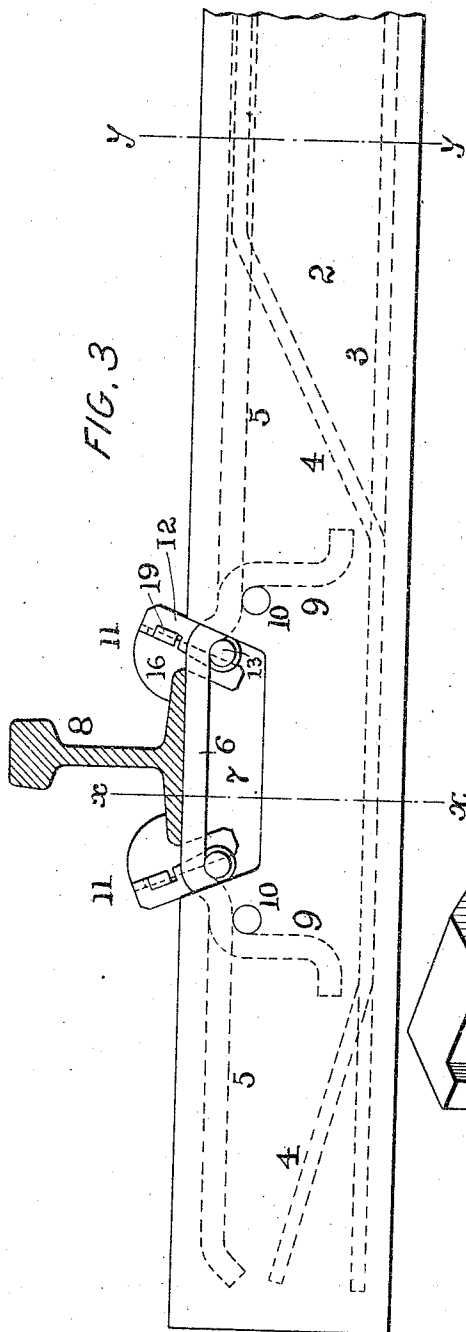
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UNITED STATES PATENT OFFICE.

FRANCIS SCHUMANN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO FRANK SHUMAN, OF PHILADELPHIA, PENNSYLVANIA.

RAILROAD-TIE.

940,740.

Specification of Letters Patent. Patented Nov. 23, 1909.

Application filed February 26, 1909. Serial No. 480,098.

To all whom it may concern:

Be it known that I, FRANCIS SCHUMANN, a citizen of the United States, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Railroad-Ties, of which the following is a specification.

My invention has reference to railroad ties and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings which form a part thereof.

The object of my invention is to provide a construction of railroad cross tie made of reinforced concrete which shall be durable, cheap and embody elasticity.

The difficulty heretofore experienced in the use of reinforced concrete railroad ties has resided in the fact that the ties have been so inelastic in their support for the rails that the wear and tear upon the rolling stock has been excessive due to the non yielding character of the said rail support. By my improved construction of tie this difficulty has been overcome and at the same time the cost has been reduced to a minimum consistent with strength.

My invention consists of a concrete tie reinforced by a series of longitudinal rods or bars those at the lower part being preferably arranged with portions bent upward so as to extend through upper portions of the concrete body, and said body being provided further with metallic chairs for the rails near each end, said chairs each comprising a plurality of parallel bars arranged horizontally above the concrete body and having their ends extending downward and embedded in the solid concrete body; further in providing in said tie a longitudinal reinforcing bar or rod extending approximately over the length of the tie and having portions exposed and arranged adjacent to the other exposed bars to constitute portions of the rail chairs; further in the above structure when combined with rail clamping devices for firmly clamping the rails to the chairs, said clamping devices being independent of the concrete body.

My invention further consists of a reinforced concrete railroad tie having longitudinal reinforcing metal bars and in which a portion of said bars near each end are brought above the surface of the concrete

body to constitute elastic metallic chairs for the rails.

My invention also comprehends details of construction which, together with the features above specified, will be better understood by reference to the accompanying drawings, in which:

Figure 1 is a plan of a concrete railroad tie embodying my invention; Fig. 2 is a side elevation of the same; Fig. 3 is an enlarged side elevation corresponding to one end of Fig. 2; Fig. 4 is a cross section of my improved tie on line $x-x$ of Fig. 3; Fig. 5 is a cross section of the same on line $y-y$ of Fig. 3; and Fig. 6 is a perspective view of the preferred clamping devices for the rail in detached relation.

2 is the concrete body and is reinforced throughout its length by rods or bars, preferably as shown, in which there is a central upper bar 5 of large cross section and five lower bars 3 and 4 of smaller cross section, the outer bar 4 upon each side of the three central bars 3 being preferably bent upward at the ends and also at the middle portions between the rail chairs, as clearly indicated in Fig. 2. It is preferable that these bars 4 be brought up to the level of the bar 5 at the middle portion of the tie so as to give trussed strength, though this is not essential to my invention.

Near each end of the tie and below the rails 8 the tie is recessed as at 7 and over these portions are arranged the metallic chairs 6 upon which the rails 8 are seated and to which they are clamped by clamping devices 11. The chairs consist of short bars 6, preferably four in number and arranged in pairs upon each side of the central bar 5, (Fig. 4), the ends of said bars 6 being extended downward and embedded in the concrete body 2 as indicated at 9. The bar 5 is also bent to a level of the chair bars 6 so as to coact with said bars in forming the chairs for the support of the rails.

In building up the tie short transverse rods 10 are positioned in the mold by which the chair bars 6 are suspended in proper position during the casting operation in the manufacture of the tie. When the tie has set and hardened these cross or transverse bars 10 are left in position and while further supporting the bars 6, they reinforce the body of concrete transversely adjacent to

the chair portions. These chair portions are preferably not extended above the upper level of the body and yet by recessing the body as at 7 they are so supported that all water will run away and avoid excessive rusting. By making the chair portions of greater length than the width of the base of the rails there will be given considerable elasticity of support so that the wear upon the rolling stock will be no greater than upon a well constructed road bed employing wooden cross ties.

The rails 8 may be secured to the metallic chairs in any suitable manner and for this purpose I prefer to employ clamping devices 11 of the character shown in Figs. 3 and 6. These clamping devices comprise the three parts 12, 16 and 19 (Fig. 6) of which the body 12 is placed between two of the chair bars 6 with the lateral lugs 13 extending under and locking with said bars and received in curved portions thereof as shown in Fig. 3. This body part 12 is provided with a vertical slot 14 and a transverse slot 15. The clamping block 16 fits into the slot 14 and has a nose 17 which fits over the flange of the rail and also has a transverse notch 18. The key 19 is driven through the transverse notch 18 of the block 16 and the slot 15 of the body 12 and being wedge shaped, it forces the clamping block 16 downward tightly upon the rail and clamps it upon the chair. When the rail is tightly clamped the prongs 20 of the wedge may be bent sidewise (Fig. 1) to prevent the wedge backing out. There are preferably two of the clamping devices for each chair, one between each pair of the bars 6, so that they are diagonally opposite, as shown in Fig. 1. In place of the clamping devices, above described, any of the ordinary types of bolts or fastening devices may be used, and hence I do not confine myself to any special means for attaching the rails to the chairs.

While ordinary concrete comprising cement and broken stone or sand is most convenient for use in my invention, I do not restrict myself to any special form of concrete, as any suitable character of such compound may be employed so long as it comprises a cohesive or binding material combined with a vitreous or hard substance such as sand or crushed stone.

I have described my invention in the form which I prefer to employ in practice, but I do not confine myself to the details of construction as these may be modified without departing from the spirit of the invention.

Having now described my invention what I claim as new and desire to secure by Letters Patent, is:

1. A railroad cross tie consisting of a reinforced concrete body provided near its end with metallic chairs for the rails, said chairs

each consisting of a plurality of metal bars forming a grid above the concrete surface and having their ends extending downward and embedded in the concrete body.

2. A railroad cross tie consisting of a reinforced concrete body provided near its ends with metallic chairs for the rails said chairs each consisting of a plurality of metal bars forming a grid above the concrete surface and having their ends extending downward and embedded in the concrete body and the two chair portions connected by a longitudinal bar embedded in the concrete body except adjacent to the chair portions.

3. A railroad cross tie consisting of a reinforced concrete body provided near its ends with depressed portions above which are arranged metallic chairs for the rails said chairs each consisting of a plurality of metal bars forming a grid above and out of contact with the concrete surface and having their ends extending downward and embedded in the concrete body.

4. A railroad cross tie consisting of a reinforced concrete body provided near its ends with metallic chairs for the rails said chairs each consisting of a plurality of metal bars forming a grid above the concrete surface and having their ends extending downward and embedded in the concrete body and transverse rods embedded in the concrete body and supporting the metal bars forming the chairs.

5. A railroad cross tie consisting of a reinforced concrete body provided near its ends with metallic chairs for the rails said chairs each consisting of a plurality of metal bars forming a grid above the concrete surface and having their ends extending downward and embedded in the concrete body in combination with the rails resting upon the chairs, and clamping devices secured to the chairs for clamping the rails to the chairs.

6. A railroad cross tie consisting of a reinforced concrete body provided near its ends with metallic chairs for the rails said chairs each consisting of a plurality of metal bars forming a grid above the concrete surface and having their ends extending downward and embedded in the concrete body in combination with the rails resting upon the chairs, and clamping devices secured to the chairs for clamping the rails to the chairs and each consisting of a body part engaging the underside of the chair bars, a clamping part carried by the body part and clamping the rail flange to the chair, and a wedge part driven in between the body and clamping parts for shifting the latter upon the former.

7. A concrete railroad tie having near each end a metallic chair portion consisting of a plurality of bent bars having horizontal upper portions upon which the rails rest and depending portions extending down-

ward and embedded in the concrete body, said horizontal chair portions being above and out of contact with the concrete body.

5 8. A concrete railroad tie having near each end a depressed portion 7 over which is secured a metallic chair portion consisting of a plurality of bent bars having horizontal upper portions upon which the rails rest and depending portions extending downward
10 and embedded in the concrete body, said horizontal chair portions being above and out of contact with the concrete body.

15 9. A concrete railroad tie having near each end a depressed portion 7 over which is secured a metallic chair portion consisting of a plurality of bent bars having horizontal upper portions upon which the rails rest and depending portions extending downward and embedded in the concrete
20 body, said horizontal chair portions above and out of contact with the concrete body and a longitudinal rod embedded in the concrete body and having portions extending above the concrete body adjacent to the
25 horizontal upper portions of the chairs.

10. A concrete railroad tie consisting of a concrete body provided near each end with a metallic chair for the rail said chair hav-

ing a horizontal part out of contact with and above the surface of the concrete and
30 downwardly extending ends embedded in the concrete body.

11. A concrete railroad tie consisting of a concrete body provided near each end with a metallic chair for the rail said chair having
35 a horizontal part out of contact with and above the surface of the concrete and downwardly extending ends embedded in the concrete body combined with the rails resting upon the chairs, and clamping devices for
40 clamping the rails to the chairs.

12. A railroad cross tie consisting of an elongated concrete body composed of a coagulated conglomerated mass of a mixture of binding material with a hard crushed
45 mineral substance combined with two metallic chairs for the rails composed of metal bars extending above the elongated concrete body and having their ends extending downward and embedded therein.
50

In testimony of which invention, I hereunto set my hand.

FRANCIS SCHUMANN.

Witnesses:

A. ROTHWELL MEEHAN,
KATHRYN H. MILLER.