

A. HENRY.
FERROCONCRETE SLEEPER.
APPLICATION FILED DEC. 4, 1911.

1,036,234.

Patented Aug. 20, 1912.
2 SHEETS—SHEET 1.

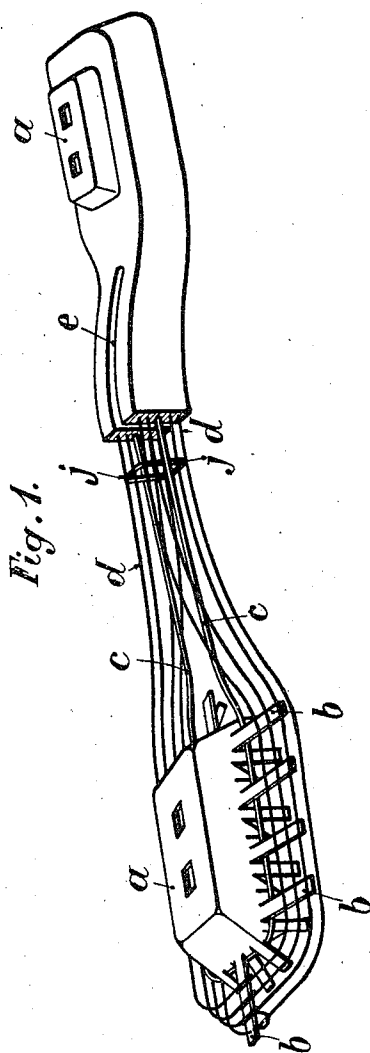


Fig. 1.

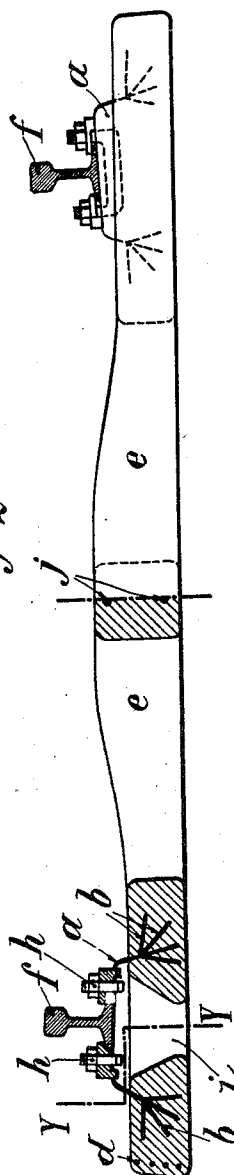


Fig. 2.

Witnesses:
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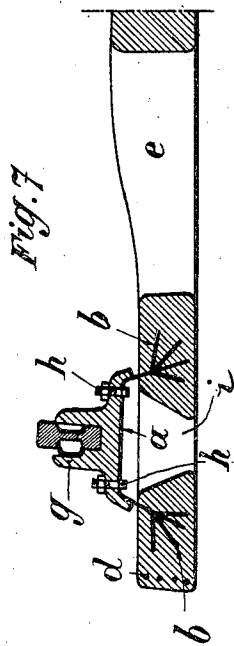
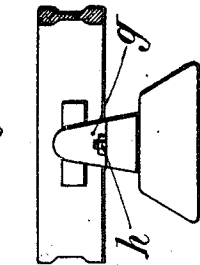
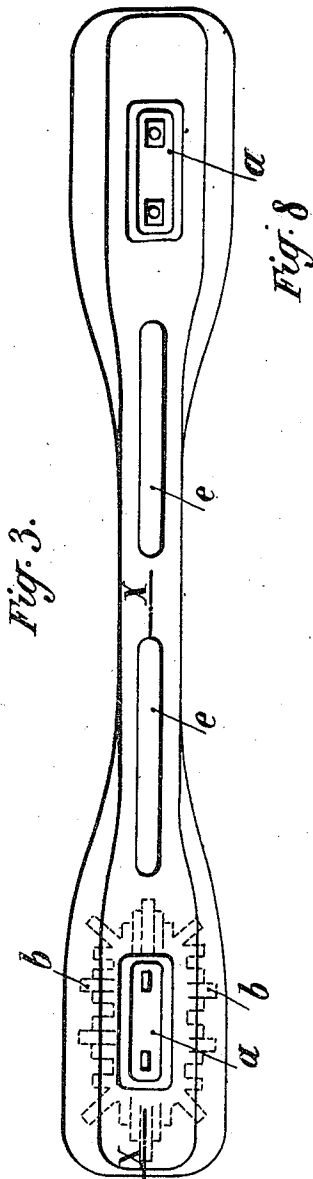


Fig. 5

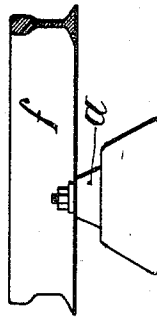


Fig. 6

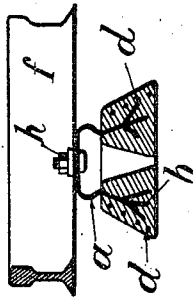
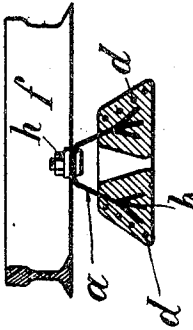


Fig. 4



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UNITED STATES PATENT OFFICE.

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FERROCONCRETE SLEEPER.

1,036,234.

Specification of Letters Patent.

Patented Aug. 20, 1912.

Application filed December 4, 1911. Serial No. 663,662.

To all whom it may concern:

Be it known that I, ALBERT HENRY, a resident of Paris, France, and a citizen of France, have invented a new and useful Improvement in Ferroconcrete Sleepers, which invention is fully set forth in the following specification.

The present invention has for its object the production of a ferro-concrete sleeper constituted particularly by two hollow metal casings or seatings on which the rails rest and are fixed, either directly or by means of chairs, the seatings being incased by the concrete, the steel wire reinforcements of which completely encompass the lower parts of the seatings.

The steel wire reinforcements approach one another toward the center of the sleeper and are arranged in a manner to constitute two hollow spaces with vertical walls and to increase the resistance of the sleeper to bending in the vertical direction.

The seatings, formed of iron, steel, etc., are preferably cut at their base to form tongues which assure a perfect connection and bond with the concrete and its reinforcement. The seatings form a bearing that resists crushing in spite of their small weight, and they constitute an intermediary between the rail and the body of the sleeper. They thus deaden by their elasticity the shocks which tend to destroy the concrete. Moreover, the multiple connections in the concrete absorb the pressures already moderated without the concrete being damaged; the seating has the advantage of yielding to the oscillating movements of the rail, in the longitudinal direction, under the successive rolling loads; these strains are not transferred to the sleeper which always remains level instead of tending to oscillate on its longitudinal axis, an oscillation which produces deterioration and gives rise to the defect which may be styled the "dance" or the up and down movement of the sleeper.

The following description and accompanying drawings will explain the characteristics of the ferro-concrete sleeper and of the rail attachment, which constitute the object of this invention.

Figure 1 represents in perspective and by way of example a sleeper, according to the present invention, for supporting flange rails. Fig. 2 represents a part elevation and a part section along line X—X of Fig. 3, which figure is a plan of the sleeper. Figs.

4 and 5 represent the sleeper in vertical section along line Y—Y of Fig. 2 and in end view respectively. Fig. 6 is a sectional view of a slightly different form of sleeper. Figs. 7 and 8 show in part longitudinal section and in end view, a sleeper according to this invention supporting a double headed rail mounted on a chair.

This reinforced concrete sleeper is constituted essentially, as has been said above, by two hollow steel supports forming a bearing *a* on which the rails are fixed and which are cut at the base to form tongues *b* for connection with the concrete and the reinforcement. The bearings or seatings are connected together in the concrete by a main reinforcement *c* which passes between and is held by the tongues *b*, which reinforcement comprises one or more steel rods or bars of suitable section. The concrete is also surrounded by a second reinforcement, which may be arranged as shown in the drawings, that is to say may consist of steel wires completely surrounding the lower portions of the concrete around the seatings and which are brought toward one another and straightened toward the middle of the sleeper as clearly seen in Fig. 1. In this way the reinforcement forms between its two central doubled portions, which are connected together by a stirrup *J* buried in the concrete (as is seen in Fig. 2), two cavities or slots *e* having vertical sides, the object of which is to facilitate the positioning of the sleeper in the ballast when that is pushed back to the middle of the track under the pressure from the rails. This arrangement has also the effect of augmenting the resistance at the middle of the sleeper by lightening it and prevents any movement in the direction of the track, by opposing a vertical abutment against the ballast. Finally, the openings *i* can be arranged under the seatings *a* to lighten the sleeper and permit the passage of bolts for the fixing of the flange rails *f*. When headed bolts cannot be used, bolts formed as in Fig. 2 may be used. The most convenient arrangement consists in arranging oval holes for the passage of headed bolts *h* or clips or studs, to permit the adjustment of the gage.

In the modified sleeper shown in Figs. 7 and 8 the rail chairs *g* are fixed to the seatings by means of headed bolts *h* or by any other means.

As will be understood, this kind of sleeper,

besides the advantages set forth above, resists the creeping of the track as also the sidewise movements, by reason of the fact that the sleeper presents vertical faces sufficiently buried in the ballast.

Having thus described the nature of my said invention and the best means I know of carrying the same into practical effect, I claim:—

10 1. A reinforced concrete sleeper comprising a concrete tie member, hollow metal rail seatings embedded in said concrete and extending above its surface to form resilient rail supports, and metal reinforcing wires
15 or rods which are embedded in the tie member and extend around the bases of said seatings.

20 2. A reinforced concrete sleeper comprising a concrete tie member having a longitudinal slot in its central portion, hollow metal rail seatings embedded in said concrete and extending above its surface to form resilient

rail supports, and metal reinforcing wires or rods arranged in two groups each running through the tie member to reinforce the concrete on both sides of the slot, said wires extending around the bases of both seatings. 25

3. A reinforced concrete sleeper comprising a concrete tie member, hollow metal rail seatings having legged projections in staggered relation embedded in the concrete, said seatings extending above the concrete to form resilient rail supports and reinforcing wires or rods embedded in the tie member and threading said legs around the
35 seatings.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALBERT HENRY.

Witnesses:

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GABRIEL BELLARD.