

H. HINTERMANN.
RAILWAY SLEEPER OF REINFORCED CONCRETE.
APPLICATION FILED MAR. 4, 1910.

1,046,389.

Patented Dec. 3, 1912.

FIG. 1 _

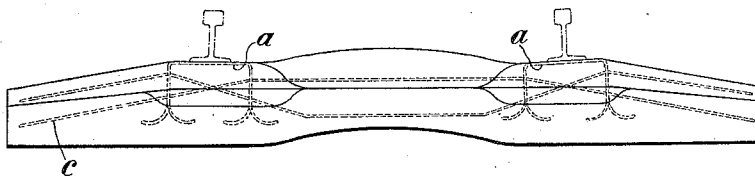


FIG. 2 _

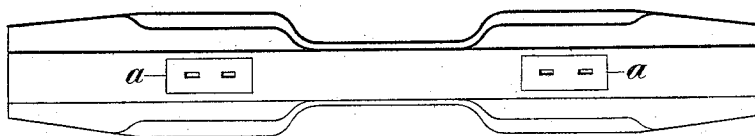


FIG. 3 _

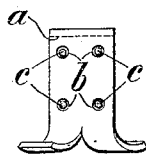
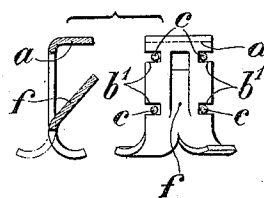


FIG. 4 _



WITNESSES:

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RAILWAY-SLEEPER OF REINFORCED CONCRETE.

1,046,389.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERMANN HINTERMANN, a citizen of the Swiss Republic, and resident of London, England, Great Britain, have invented new and useful Improvements in Railway-Sleepers of Reinforced Concrete, of which the following is a full, clear, and exact specification.

This invention relates to cross-ties, or sleepers, for railway rails of the kind wherein the tie body of reinforced concrete is provided with supporting frames for the rails. Its main object is to combine the reinforcement of the sleeper directly with U-shaped rail supports in such a manner that the reinforcing rods are directly fastened to the side limbs of the said supports to form a rigid framework in the concrete body, the parts of which are especially prevented from any relative lateral displacement.

The improved railway sleeper comprises, in combination with reinforcement iron rods in the concrete body U-shaped rail securing supports embedded in the upper part of the concrete body, having re-curved foot parts at the lower end of their side limbs, and the side limbs of which are provided with openings through which pass iron reinforcement rods to the side limbs of said rail supports, at the openings thereof, or so as to firmly interconnect the rail supports by their side limbs. By this arrangement of parts the rail securing supports are combined not only with the concrete body, but are also fastened securely to one another, so as to be incapable of any lateral displacement and at the same time by means of their limbs they serve also to maintain the position of the rods of the reinforcement with regard to one another and act practically as a component of the reinforcement.

The accompanying drawing illustrates the invention as follows:

Figure 1 shows in elevation and Fig. 2 in plan view the reinforced concrete sleeper with the supports which serve for the securing of the rails thereon. Fig. 3 shows a side elevation of one of the rail securing supports in question. Fig. 4 shows a modification of the rail securing support.

In this drawing, *a* indicates the rail securing supports which are each formed of a single plate of iron bent on one side into the form of a U. The back part of each support *a* is provided with the necessary bolt holes for the rail clamps or chairs. The side

limbs of the supports *a* have at their lower ends recurved and also outwardly spread foot parts in any required number; this bending and drawing of the rail support ends has the object of preventing the sharp edges of the iron from coming to rest underneath vertically upon the concrete and acting as cutters, which would on account of the rolling blows acting from above gradually cut deeper and deeper; on the other hand by means of this special form, a thoroughly secure anchoring of the supports is secured in the reinforced concrete. The side limbs of the supports *a* are provided with holes *b* (Fig. 3) or with slots *b'* (Fig. 4) in which the iron rods *c* of the reinforcement of the concrete are inserted or passed without interruption at this place. These reinforcement rods *c* are secured against longitudinal displacement at each of the rail support limbs by suitable bending or by a reinforcement or even by means of setting rings, keys, or the like. The two rail securing supports of a sleeper when connected together in this manner form together with the iron reinforcement of the sleeper itself a connected rigid framework, which possesses an intimate connection with the concrete on all sides, whereby also the best possible distribution of the strains throughout the whole sleeper, together with a permanent retention of track gage without special gaging device, is secured between the rails. The insertion of the iron rods in the limbs of the rail support can be varied in several ways.

In the modification illustrated in Fig. 4, the rods placed in the slots *b'* can be secured in their position by hacking out and bending over the edges of the rail support limbs. The rail supports themselves can be provided by stamping inward or outward, or both inward and outward projecting retaining flaps, as illustrated in Fig. 4 at *f*.

While herein I have spoken of a reinforced concrete sleeper, the sleeper is really a trussed-steel structure sleeper; as it is, without any concrete, a self-contained steel structure. The addition of concrete is only a subsidiary or interfilling, not the main matter; it could be substituted by asphalt or similar material.

What I claim is:

1. In railway cross-ties of reinforced concrete, the combination of U-shaped rail securing supports each comprising a single plate of iron bent on one side in the form

of a U and having a back part provided with bolt holes for securing the rail clamps or chairs, the side limbs of the supports having their lower ends recurved and also outwardly spread foot parts, the side limbs also being provided with openings; iron reinforcing rods passed through said openings and secured therein against longitudinal displacement and connecting the supports in pairs; and a concrete body completely surrounding said limbs and rods.

2. In railway cross-ties of reinforced concrete, the combination of U-shaped rail securing supports each comprising a single plate of iron bent on one side in the form of a U and having a back part provided with bolt holes for securing the rail clamps or chairs, the side limbs of the supports having their lower ends recurved and also outwardly spread foot parts in any required number, the side limbs also being provided with openings; iron reinforcing rods passed through said openings and secured therein against longitudinal displacement and connecting the supports in pairs; and a concrete body completely surrounding said limbs and rods; said supports being provided with inwardly and outwardly project-

ing retaining flaps, said rods being offset and bent over the said supports.

3. In railway cross-ties of reinforced concrete, the combination of U-shaped rail securing supports each comprising a single plate bent on one side in the form of a U and having a back part provided with bolt holes for securing the said clamps or chairs the side limbs of the supports having slots, the supports having their lower ends recurved and outwardly spreading and provided by stamping inwardly and outwardly projecting retaining flaps; reinforcing rods passed through said slots and having offset parts and secured in place by bending over the edge of the support and a concrete body surrounding said limbs and rods and having the portion between the supports upwardly curved in the form of an arch.

In witness whereof I have hereunto signed my name this Friday of February 18th 1910, in the presence of two subscribing witnesses.

HERMANN HINTERMANN.

Witnesses:

AMAND BRAUN,
ANDREAS TSCHAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."