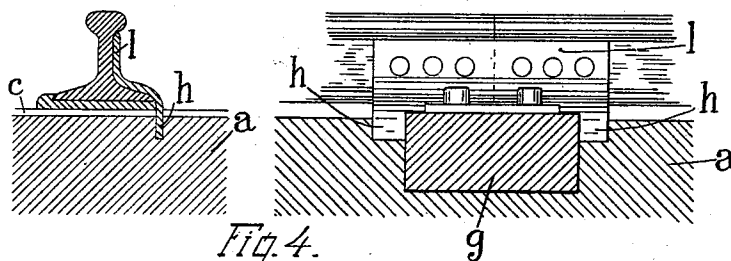
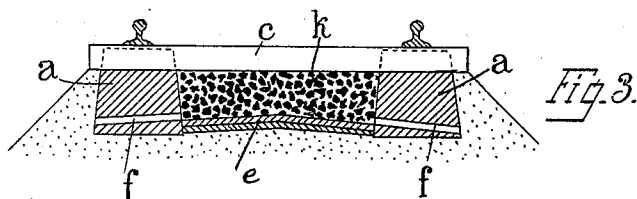
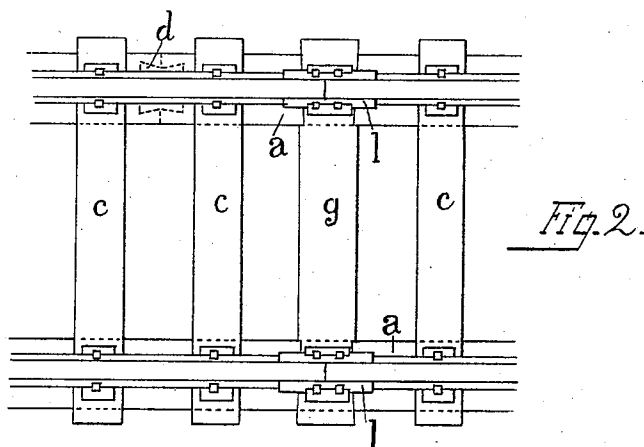
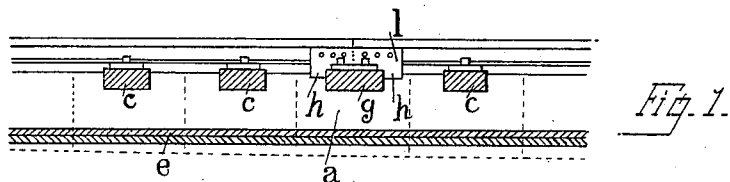


(No Model.)

F. PFEIFFER & C. LIER.
RAILWAY CONSTRUCTION.

No. 539,592.

Patented May 21, 1895.



Witnesses:
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UNITED STATES PATENT OFFICE.

FRIEDRICH PFEIFFER AND CARL LIER, OF WALKENRIED, GERMANY.

RAILWAY CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 539,592, dated May 21, 1895.

Application filed August 18, 1894. Serial No. 520,705. (No model.)

To all whom it may concern:

Be it known that we, FRIEDRICH PFEIFFER and CARL LIER, subjects of the Emperor of Germany, and residents of Walkenried, in the Empire of Germany, have invented a new and useful Railway Construction, of which the following is a specification.

In the construction of railways it has hitherto been impossible to efficiently secure the rails against shifting and displacement. Whether in the case of cross or longitudinal sleepers, the external influences exercise the same shifting effect upon the superstructure. The present invention overcomes this drawback, shifting of the superstructure being prevented, not by using, as in previous railway constructions, a relatively thin layer of gravel or sand, but by laying under the rails a double track of concrete embedded in sand, in which the cross sleepers rest. In this way the sleepers are held by fastenings, which take up the pulling and pressing effect, united to a rigid inflexible whole.

In the accompanying drawings, Figure 1 shows a cross-section through a part of the superstructure and substructure. Fig. 2 shows a plan view of the railway-track. Fig. 3 shows a cross-section of the same. Fig. 4 shows the manner of setting the fish-plates in the concrete blocks.

As is shown in Fig. 3, underneath each rail is a substructure *a* of a trapezoidal cross-section. This is formed in suitable manner of concrete blocks, and has formed in it at certain distances, drain-channels *f*, running slantingly toward the outside. These carry away the rain-water, which falling between the concrete tracks *a a*, runs through the gravel filling *k*, lying on the roof-shaped concrete layer *e*. The concrete layer *e* keeps the tracks *a* in place. The tops of the concrete tracks *a a*, which protrude somewhat less than the thickness of a sleeper above the sand, are grooved out at suitable distances, for the reception of the cross-sleepers *c*. These project only a small fraction of their thickness above the surface of the concrete blocks *a a*, so that the rails nowhere lie directly upon the concrete tracks, whereby, first, the shock of a

railway-train running over it, has no direct effect upon the concrete foundation, and, secondly, the necessary elasticity of the rails is preserved. The separate concrete blocks are secured together by dove-tail shaped wedges *d*.

Some of the sleepers are constructed and set in special manner. They are made in a dove-tail form, and as *g* in Fig. 2 shows, are let into the concrete tracks. It is obvious that sleepers of this description cannot possibly undergo any lateral movement. The rails are moreover especially secured from shifting by the suitably formed fish-plates *l*.

As Figs. 1, 2 and 4 show, the fish-plates are provided with two lugs *h h*, between which the cross sleeper *g* lies, and which as Fig. 4 shows are let into the concrete foundation. By means of these fish-plates, which are fastened into the concrete and lie against the sleepers *g*, shifting of the rails in any direction whatever is prevented.

What we claim is—

1. Railway superstructure for preventing displacement of the rails, formed by two continuously running concrete track supports *a a*, which are made of cast concrete blocks, secured by dove-tail wedges *d*, and the sleepers *g* which serve for stiffening, as also the concrete layer *e* and the two lugs *h* of the fish-plates *l* let into the blocks, as set forth.

2. A railway superstructure consisting of continuous concrete supports as *a a*, having drainage openings, the concrete layer *e*, and the intermediate filling of gravel, or light material, substantially as described.

3. A railway superstructure consisting of continuous, longitudinal supports beneath the rails, and of impervious material having openings for drainage, and a water tight bottom or flooring of the space between said supports and a filling, to the surface, also between said supports of gravel or some other porous material, substantially as described.

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Witnesses:

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