W. ROBINSON.

Connectors for Electric Track Circuits.

No. 166,225. Patented Aug. 3, 1875.

Fig. 6

Fig. 7.

Fig. 8.

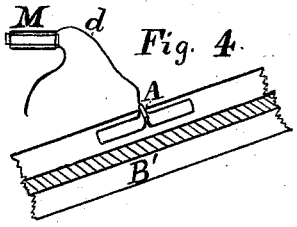

Fig. 4.

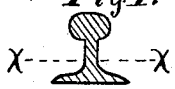

Fig. 1.

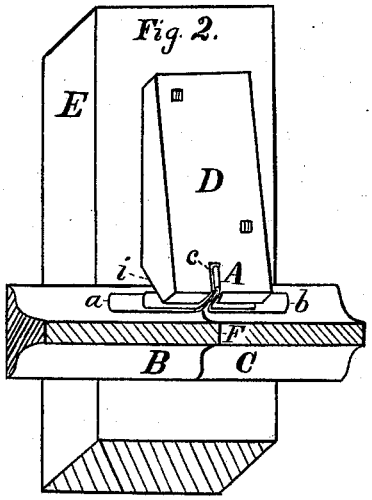

Fig. 2.

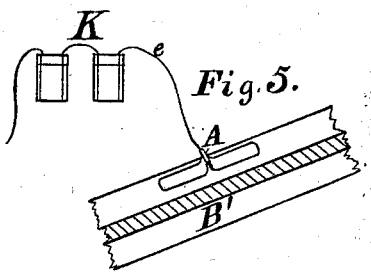

Fig. 5.

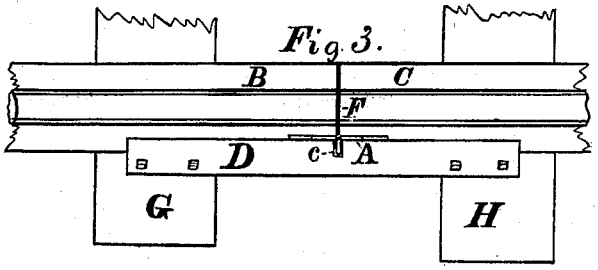

Fig. 3.

Witnesses:

Chas. Lehman

N. A. Cannieff.

Inventor:

William Robinson.

UNITED STATES PATENT OFFICE.

WILLIAM ROBINSON, OF ST. PETERSBURG, PENNSYLVANIA.

IMPROVEMENT IN CONNECTORS FOR ELECTRIC TRACK-CIRCUITS.

Specification forming part of Letters Patent No. **166,225**, dated August 3, 1875; application filed March 6, 1875.

To all whom it may concern:

Be it known that I, WILLIAM ROBINSON, of St. Petersburg, in the county of Clarion and State of Pennsylvania, have invented a new and useful Improvement in Rail-Connections for Electric Track-Circuits, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which forms a part of this specification.

The invention relates to rail-connections for railroads, its object being to secure perfect electrical connections between the adjacent rails of a rail-section, and between the rails and the magnet or battery, when the rails of the track are used to conduct the electric current in railway-signaling.

Before describing the invention, it may be premised that it is extremely difficult to secure good electrical connections for an indefinite period between the adjacent rails, by the mere contact of iron plates or fish-bars with said rails. The reason of this is that rust gradually forms between the surfaces of the metal, thus interposing, when dry, a non-conductor, which often, practically, destroys electrical conductivity between the rails. To obviate the above difficulty and secure perfect electrical connection between the adjacent rails is the object of the present invention.

Referring to the drawing, Figure 1 is an end view of a railroad-rail; Fig. 2, a perspective view of the invention as applied for the purpose of electrically connecting two adjacent rails of the track, and Fig. 3 a modification of the same. Figs. 4 and 5 show the mode of connecting the magnet and battery to the rails. Fig. 6 is an edge view of the spring-plate; Fig. 7, a modification of the same, and Fig. 8 a further modification of the same.

The rails B C, Fig. 2, are shown with the rail-heads cut off by a horizontal section through the line *x x*, Fig. 1.

A, in the drawing, represents the connecting spring-plate; B and C, adjacent rails abutting at F. The plate A, bent in the middle, fits into the slot *c* of the block or plate D, which, spiked to the tie E, holds the said spring-plate A in contact with the upper surface of the flanges of the rails B C, as shown at *a b*, Fig. 2, thus making reliable electrical connection between said rails B C. When the rail-joint F occurs between the ties G H, Fig. 3, the block or plate D is extended between said ties, its ends being spiked to said ties respectively, as shown. It will be observed that the weight of passing trains deflects the rails B C more or less. As this deflection takes place the ends *a b* of the spring-plate A follow said rails downward, whereby a rubbing contact between said rails and spring-plate is secured. The expansion and contraction of the rails also tends to produce a rubbing contact. This rubbing keeps the points of contact bright, whereby reliable electrical connection between the rails B C is always maintained. The points of contact are also preferably oiled, for the purpose of preventing the formation of rust.

In Figs. 4 and 5, respectively, the magnet M and battery K are connected by the wires *d e* to the plates A, preferably by soldering. The plate A is held in electrical contact with the rails by the block or plate D, as already described. The spring-plate A is shown in Fig. 6 as made of a single leaf. In practice I prefer, however, to make said spring of two leaves, as shown in Figs. 2, 3, and 7, in which case the upper leaf is made shorter than the under one, and tends to stiffen the bearing of the latter upon the rails, or of two, three, or more small springs placed alongside of each other, in the same plane, as shown in Fig. 8, and each having an independent bearing upon the rails. The advantage of the latter method is that in case one spring or leaf should break, the others will still maintain electrical connection between the rails. The plate A is preferably made of steel, little, if any, heavier than ordinary clock-spring steel, except when the method shown in Fig. 8 is used, in which case narrow plates, similar to hoop-skirt steel, may be used to advantage, or wires of suitable temper will answer the same purpose. The form of the spring, before being applied to the rails, is shown in Figs. 6 and 7, in which the legs of said spring are represented as standing at right angles to each other or nearly so. In inserting the spring A in the slot *c* of the block D, care should be taken that the spring may fit so firmly in said slot that in making application to the rails the strain may not

come on the apex *h* of said spring. The under side, at the inner end of the block D, is beveled, as shown at *i*, so as to overlap the flange of the rail. The block D is preferably made of hard wood, but it may consist in a thin iron plate of suitable form when deemed desirable.

I have described the spring A as consisting of a plate or plates. The spring may, however, be of any suitable form or construction. For instance, it may be of wire, curved or coiled, in the latter case forming a coiled spring, having its ends bearing on the adjacent rails. The essential feature of the invention consists in a spring, held in position, by a suitable block or plate, provided for the purpose, in contact with the adjacent rails of the track, in such manner that the deflection of the rails will produce a rubbing contact.

What is here claimed as new, and desired to be secured by Letters Patent, is—

1. The combination, with the adjacent rails of the track, of the spring A, having a bearing upon or against said rails, so that the rails being deflected by the weight of a passing car or train frictional contact will be secured between the spring and rails, for the purpose of maintaining reliable electrical connection between said rails, essentially as described.

2. In combination with the adjacent rails B C, the spring A and the block or plate D, the latter holding said spring in frictional contact with said rails, for the purpose of electrically connecting the same, substantially as described.

3. The spring A, making rubbing contact with the rail B′ when said rail is deflected, in combination with the magnet M or battery K, and electrically connecting said magnet or battery to said rail, essentially as described.

WILLIAM ROBINSON.

Witnesses:

D. S. HERRON,

JAS. ROBINSON.