(No Model.)

R. MEEK.

ELECTRIC CONNECTION FOR RAILWAY RAILS.

No. 303,537. Patented Aug. 12, 1884.

Fig. 1

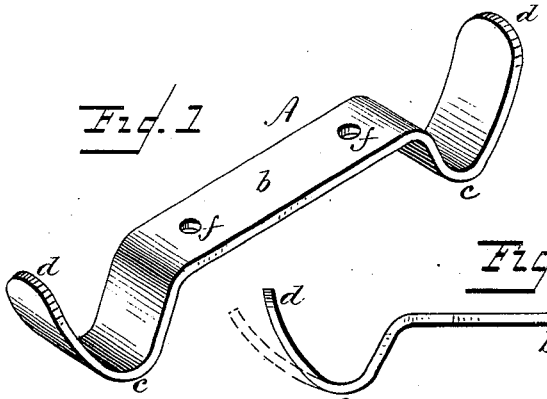


Fig. 2.

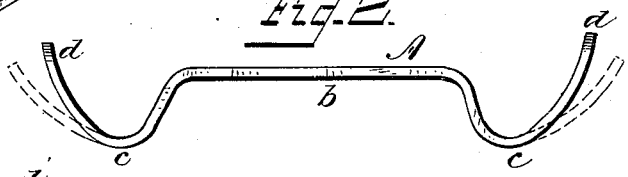


Fig. 3.

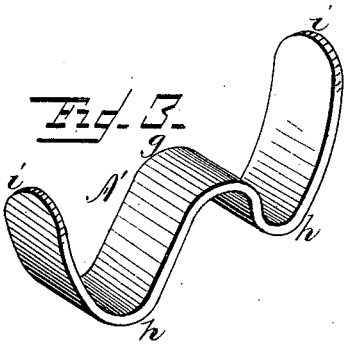


Fig. 4.

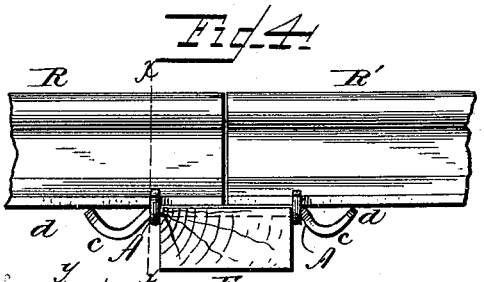


Fig. 5.

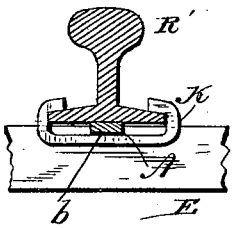


Fig. 6.

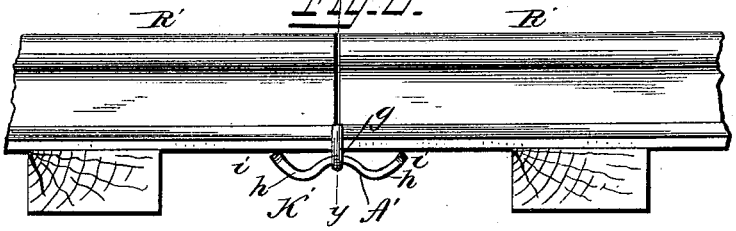


Fig. 7.

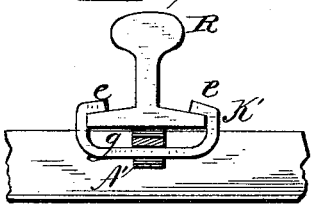
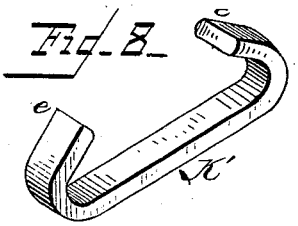


Fig. 8.



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ELECTRIC CONNECTION FOR RAILWAY-RAILS.

SPECIFICATION forming part of Letters Patent No. 303,537, dated August 12, 1884.

Application filed February 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MEEK, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Electric Connections for Railway-Rails, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to means for electrically connecting the adjacent ends of rails in a line of railway-track, the object being to form of the rails and connections a continuous line of conductors for electric currents used for operating signals or other purposes.

My invention consists in a connecting-spring of novel construction, and in the combination therewith of means for supporting it in contact with the rails, all as will be fully understood from the following particular description, in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a rail-connecting spring constructed according to my invention, and adapted for application to a joint where two rails meet on a cross-tie, or what is commonly known as a "solid joint." Fig. 2 is an edge view of the same. Fig. 3 is a perspective view of a spring of modified construction, adapted for application at the joint of two rails meeting between two cross-ties, or a "suspended joint." Fig. 4 is a side elevation of portions of two adjacent rails having their ends electrically connected by a spring, such as shown in Fig. 1. Fig. 5 is a cross-section on line *x x* of Fig. 4. Fig. 6 is a side elevation of portions of two rails connected by a spring of the form shown in Fig. 3. Fig. 7 shows a section of the spring in the plane indicated by line *y y* in Fig. 6, and a view in elevation of the clamp and the end of a rail. Fig. 8 is a perspective view of the clamp used for supporting the spring in contact with the rails at a suspended joint.

Referring to Figs. 1, 2, and 4, the letter A designates a rail-connecting spring, consisting of an elastic bar of steel having an intermediate straight portion, *b*, while its end portions, *c c*, are both bowed or arched in the same direction, and have their tips *d d* extended above the upper surface of the part *b*. This part *b* is intended to lie across and preferably let in flush with the surface of a tie, under the ends of two rails meeting on said tie, as shown in Fig. 4, in which E indicates the tie, and R R′ the rails, and when in this position the tips *d d* of the two bowed end portions strike the bottoms of the rails, respectively, on opposite sides of the tie, and said end portions are flexed downward, as indicated by the dotted lines in Fig. 2, by the weight of the rails, being thus put under a tension which causes their tips to bear with great force against the bottoms of the rails and maintain a good electrical contact therewith. By the vibration of the rails under the weight of passing cars the bowed portions *c c* are caused also to have a tremulous vibratory motion, which produces a scraping of their tips against the bottoms of the rails, with the result of keeping clean and bright those areas of the rail-bottoms against which said tips impinge, so that a reliable electrical connection always subsists between the two rails and their connecting-spring. The spring is preferably about three-sixteenths to three fourths of an inch thick and, say, an inch and a half to two inches wide, with rounded tips, though its tips may be notched or made straight, if desired.

While I prefer to make the spring of steel, on account of its high resilience, I of course do not confine myself to steel, as it is obvious that I might use iron or brass, or any other material having suitable resilience and electrical conductivity. If desired, the spring may be secured to the tie by means of screws or nails driven through suitable holes, as shown at *f f;* but when it is let in flush with the surface of the tie the walls of the groove or mortise in which it is laid will prevent it from shifting laterally, and the downwardly-bowed portions will serve as stops, which prevent its endwise movement by striking the tie.

In order to prevent the rail from breaking contact with the spring by bounding upward, or on account of lateral shifting, I use at each end of the straight portion of the spring a clamp, K—such as shown in Fig. 5—the inter-

mediate portions of said clamps lying under the spring, while their hooks *k k* take over the edges of the rail-flanges.

In the modification shown in Figs. 3, 6, and 7, I usually make the spring A′ somewhat shorter than when in the form shown in Fig. 1, and instead of having an intermediate straight portion its intermediate portion, *g*, is bowed reversely to its end portions, *h h*, its tips *i i* normally projecting above the tops of the part *g*. This connecting-spring is intended, as before stated, to be applied for electrically connecting two rails at a suspended joint, and the manner of its application, is illustrated in Figs. 6 and 7. In these figures it will be seen that the spring is held to contact with the rails by means of a clamp, K′, which is simply a short and stout bar of iron, somewhat curved, and having its ends bent to forms hooks *e e*, which take over the flanges of the rails at the joint, as shown. The intermediate portion of the clamp lies under and directly supports the bowed portion *g* of the spring, while it is itself supported by the engagement of the hooks with the rail-flanges.

In applying the form of spring shown in Figs. 3 and 5, the clamp is to be slipped upon the flanges of one of the rails before the next adjacent rail is brought into line, and the spring is then inserted endwise between the clamp and rail, bringing the concave surface of its bowed portion *g* upon the clamp. In order to so insert the spring, it must be passed obliquely under the rail, and when the bowed portion *g* reaches the clamp and one tip impinges against the bottom of the rail the other tip will project above the level of the bottom of the rail, as shown in dotted lines, Fig. 6. Now, supposing rail R to have been first placed in position and the clamp and spring arranged as explained, the following rail R′ is laid upon the upwardly-projecting tip of the spring, and by its weight forces said tip downward, so that the ends of the last rail will come in line with the other, and may be brought properly up to the same. The entire spring, it will be seen, is thus placed under a tension, which causes both of its tips to press strongly against the bottoms of the two rails, and the vibratory motion of the rails under passing cars will cause said tips to keep the contact areas of the rail-bottoms clean and bright—the same as the tips of the spring first described. When both rails have been secured in position, the clamp may be driven along, carrying the spring with it, until the bowed portion *g* comes directly under and the clamp-hooks lie directly over the joint. Where flanged or angle fish-plates are used, the clamp-hooks will take over the fish-plate flanges, or those portions of said plates which are bent outward and lie flat upon the rail-flanges.

It will be readily understood that when a series of rails are connected by springs, such as described, said rails and springs will form a continuous line of conductors, which may be connected in any suitable manner for conveying electrical currents to operate signals, or for any other desired purpose.

I do not, of course, confine myself to the precise construction shown in my drawings, but may vary the same in any manner for better carrying out my invention without departing from the essential principle thereof.

I am aware that bowed springs have been used for bridging rail-joints, said springs being applied to the vertical sides of the rails behind the fish-plates, and I do not claim such springs or their combination with the rails and fish-plates, as stated.

What I claim is—

1. A railway-rail electric connection consisting of a metallic bar having elastic tips bent in the same direction beyond an intermediate portion, adapted to rest upon a suitable support, substantially as described.

2. The combination, with two adjacent railway-rails, of a connecting device consisting of a metallic spring-bar arranged below the rail-joint, and having its tips bent into contact with the bottoms of the rails, respectively, and an intermediate support beyond which the bent portions of the bar extend in opposite directions, substantially as described.

3. The combination, with two endwise-adjacent rails and the metallic spring-bar having an intermediate portion lying under the joint between said rails, and having its tips bent toward and contacting with the rails, respectively, of one or more clamps engaging the flanges of one or both rails and passing under said metallic spring-bar, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT MEEK.

Witnesses:
I. B. DABNEY,
W. L. LYONS.