(No Model.)

E. E. RIES.

ELECTRIC RAILWAY CROSSING.

No. 409,756. Patented Aug. 27, 1889.

Fig. 1

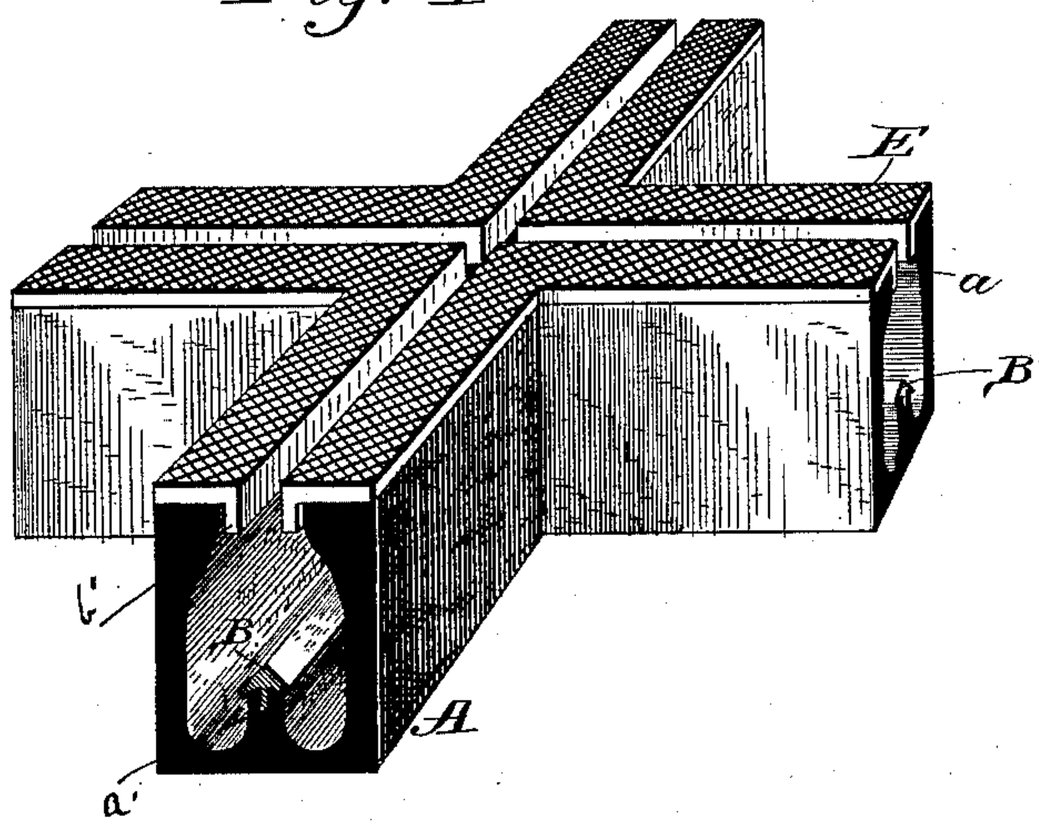


Fig. 5.

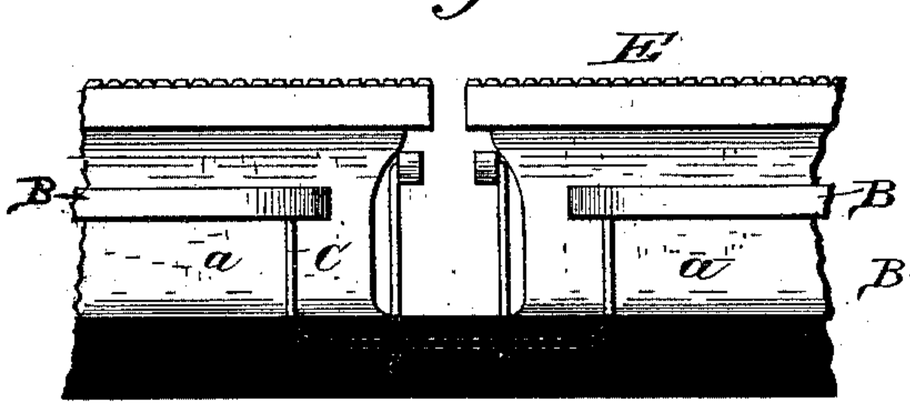


Fig. 2.

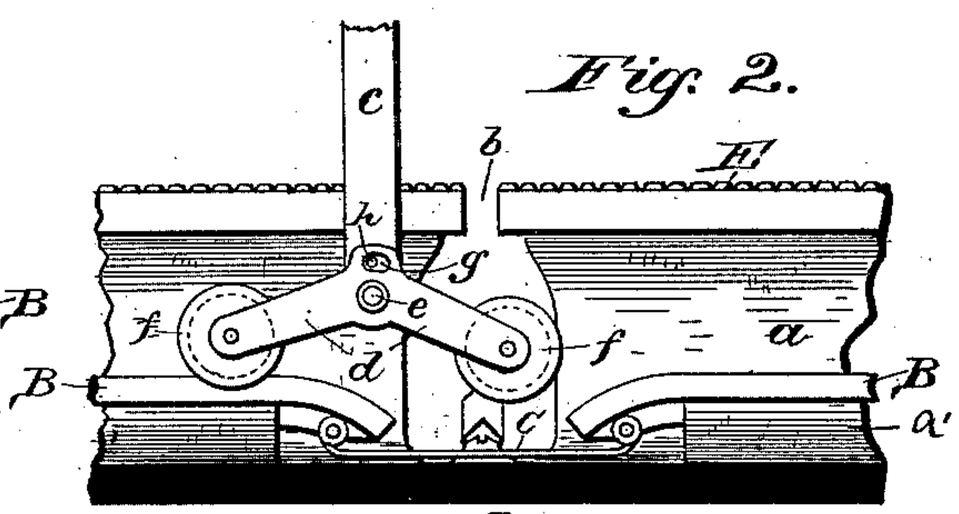


Fig. 3.

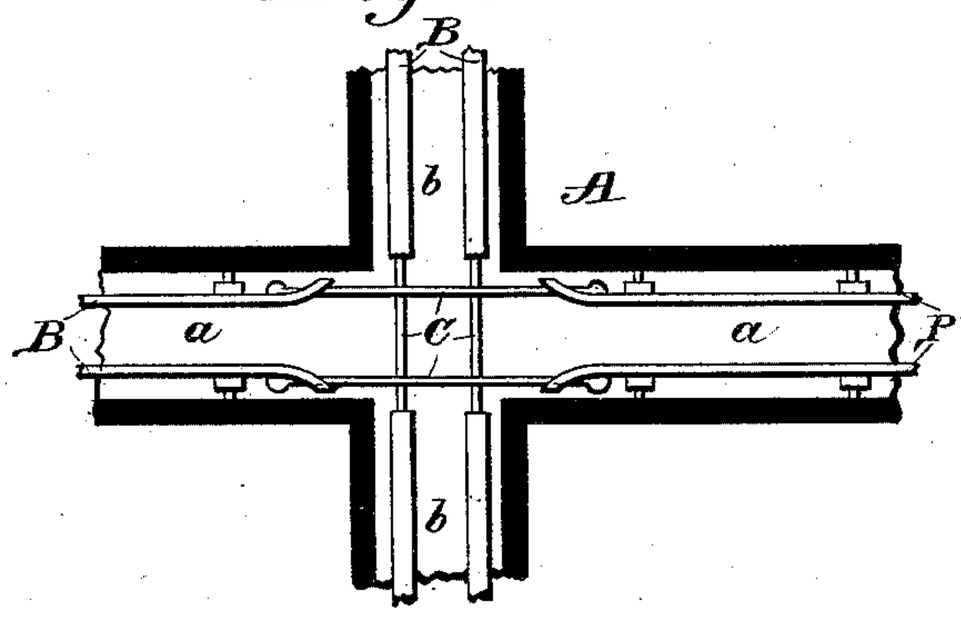
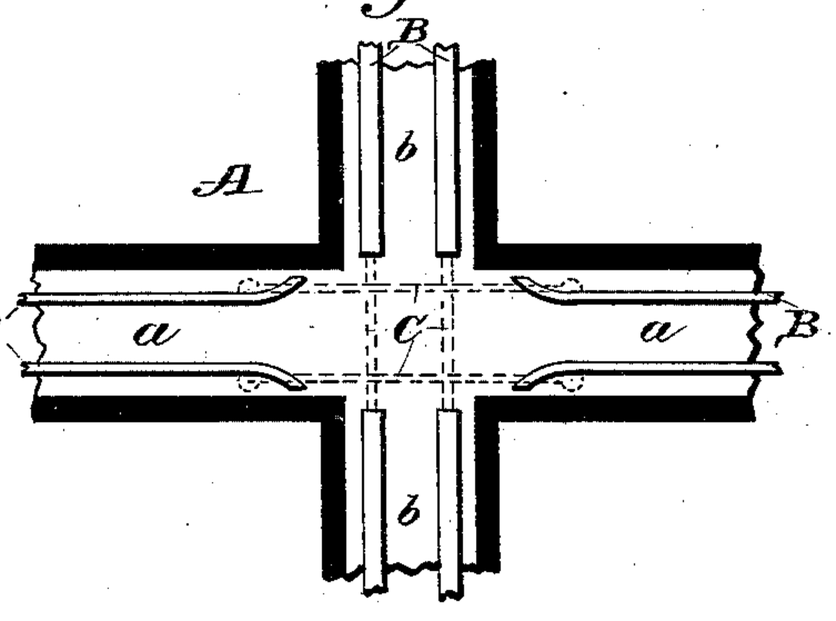


Fig. 4.



ATTEST:

Percy C. Bowen.

Josh Berker

INVENTOR:

Elias E. Ries.

By Harding & Ticknor

his Attorneys.

UNITED STATES PATENT OFFICE.

ELIAS E. RIES, OF BALTIMORE, MARYLAND, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO RIES & HENDERSON, OF SAME PLACE.

ELECTRIC-RAILWAY CROSSING.

SPECIFICATION forming part of Letters Patent No. 409,756, dated August 27, 1889.

Application filed October 8, 1885. Serial No. 179,316. (No model.)

To all whom it may concern:

Be it known that I, ELIAS E. RIES, of the city of Baltimore and State of Maryland, have made certain Improvements in Electric-Railway Crossings, of which the following is a specification.

This invention consists in means whereby the continuity of the conducting rail or rails of an electric railway is preserved at crossings, or at points where two or more such railways cross each other, in such manner that the current flowing through the conducting rail or rails of one railway is not conveyed to the conducting-rails of a crossing railway by the contact devices of either road.

It further consists in certain improvements in the contact devices carried by the motor to prevent interruptions or breaks in the current supplied to the motor, and consequently "sparking," during the passage of the said contact devices across the space between the ends of the interrupted rails.

It further consists in improvements in the details of construction and arrangement of the mechanism employed, all of which will be hereinafter fully described.

In the drawings forming a part hereof, Figure 1 is a perspective view of a crossing, showing the conduit and rails arranged in accordance with my invention. Fig. 2 is a longitudinal section of Fig. 1. Fig. 3 is a sectional plan of the crossing, showing double conducting-rails, together with the means for effecting the continuity of the same. Fig. 4 is a sectional plan illustrating a modification of Fig. 3—viz., the embedding of the conducting-cables in the body of the conduit. Fig. 5 is a longitudinal section of Fig. 4.

The said drawings show the crossing as applied to an underground conduit; but the invention is equally applicable to electric railways in which the conducting-rails are situated above the surface of the roadway.

A is a conduit arranged for a crossing, to which end it is constructed in two parts or sections *a* and *b*, angularly placed with reference to each other. In the drawings the whole crossing is shown as formed in one piece; but I do not limit myself to such an arrangement, as the sections of the conduit can be made separate and united together in any appropriate manner; neither do I limit myself to any peculiar construction of the conduit proper, nor to the material of which it is made, although I prefer that the conduit be formed of some insulating material—such, for instance, as non-conducting concrete or cement—so that the conducting-rails may be more effectually insulated, substantially as shown.

B B are the conducting-rails, interrupted at the crossing in order that the rail in the conduit *a* will not interfere with the one in the other section *b*. The interrupted rails terminate just within the line or at the sides of the crossing-space formed by the conduits, so that the contact devices traversing the interior of one conduit cannot come in contact with the conducting-rails of the other and cross or short-circuit the current.

In Figs. 1 and 2 a single conducting-rail is employed, which is mounted upon a central ridge or support *a'* in the bottom of the opening of the respective sections *a b* of the conduit-crossing, while in Figs. 3, 4, and 5 double rails are used, the rails in section *a* being shown as secured to the sides and those in section *b* to the top of the conduit. In Figs. 1 and 2 the ends of the interrupted rails are turned downward, and in Figs. 3, 4, and 5 in the sections *a* and *b* outward and upward, respectively, for a purpose hereinafter described.

C C are connections between the ends of the rails at the crossing, arranged on a lower plane than the rails, so that they may be out of the way of the contact devices projecting from the cars or motors. These connections are preferably made of flexible insulated conducting-cables properly united to the rails, as shown in the drawings, and when the conduit is made of cement, concrete, or other non-conducting material, as hereinafter described, the connecting-cables are embedded in the material of which the conduit is formed, as shown in Figs. 4 and 5. With this arrangement the cables cannot be injured by foreign matter entering the conduit-slot, and the conduit can be cleaned of foreign matter whenever necessary by means of brushes or scrapers attached to the motors without danger of their coming in contact with the cables.

A contact device is shown only in Fig. 2, where it is denoted by D, and it consists of an upright bar *c*, adapted for elevation and depression from the car or motor, and an adjustable yoke *d*, pivoted to the said bar at *e*, carrying the wheels or sheaves *f*. The yoke has a slot *g*, and the bar has a pin *h*, which enters the slot and serves to limit the vibratory motion of the yoke and its wheels. The distance between the wheels *f* is greater than the space between the ends of the rails. Consequently there is at all times one wheel in contact with a rail and sparking is entirely obviated. By curving or inclining the ends of the rails as shown, the contact of the wheels with the rails is made gradually at the crossing and concussion prevented, while in having the yoke carrying the wheels pivoted to the upright bar the wheels more readily adapt themselves to irregularities in the rails, and at the same time insure better contact therewith.

It is evident that brushes instead of wheels can be employed to give the proper contact between the upright bar *c* and the rails without departing from the spirit of the present invention.

The conduit is shown as provided with roughened surface-plates, which are denoted by E; but I do not restrict myself to their use in connection with the conduit or the interrupted rails with their connections, and the said slot-irons or surface-plates are made in one single piece and are provided with dependent flanges *b'*, which form the edges or sides of the surface slots, and serve to deflect any water which might enter through the slot away from the sides or walls of the conduit-opening when the rails B B are arranged as shown in Figs. 3 and 4.

It will be apparent that in case of two or more streets intersecting at an obtuse or acute angle instead of a rectangle the form of the crossing would have to be modified to meet this requirement, which modification would be a mere expedient.

I claim as my invention—

1. A crossing for an electric railway having two intersecting interior conduit-openings containing electric conductors interrupted at the point of the said intersection, said conductors being bent or looped away from the line of travel, in combination with a dependent bar provided with a yielding adjustable yoke carrying current-collectors, as specified.

2. A conduit-crossing provided interiorly with two intersecting conduit-openings merging gradually into longitudinal intersecting surface slots on the surface of the crossing, and containing electric conductors interrupted at the common point of intersection, in combination with a dependent traveling bar provided with a yielding adjustable yoke carrying the current-collectors.

3. An X-shaped conduit-crossing formed in one single piece and provided with interior conduit-openings intersecting each other at or near the center of said crossing, and each merging vertically into a longitudinal surface slot on the upper surface of said crossing.

4. An X-shaped slotted conduit-crossing for electric railways formed in one single piece and provided with interior conduit-openings having each a central ridge or support for a current-supply conductor.

5. An X-shaped slotted conduit-crossing formed in one single piece having two interior conduit-openings intersecting at or near the center of said crossing.

6. A conduit-crossing formed of a non-metallic substance having two interior conduit-openings intersecting at or near the center of said crossing, in combination with metal protective surface-plates, as set forth.

7. In an electric railway, the combination of an interrupted rail with its ends connected, substantially as described, a bar dependent from a car or motor, and a rigid yoke pivoted to the said bar carrying wheels situated one in the rear of the other, substantially as and for the purpose specified.

8. The combination, with the interrupted conducting-surfaces of the rails of an electric railway crossing or switch, of a dependent contact-bar having a pivoted yoke and two contact wheels or brushes, one in the rear of the other, said contact-wheels being adapted to adjust themselves to inequalities in height of the interrupted conducting-rails, substantially as specified.

9. A crossing for an electric railway, which consists of two or more intersecting sections of an underground conduit, said sections being formed in a single piece and provided with electric conductors or contact-surfaces extending through them with their conducting-surfaces terminating at or near the point of intersection of the sections of the conduit and their ends connected, substantially as specified.

10. A crossing for an electric railway, formed of two or more intersecting conduit-sections formed of insulating or non-electricity-conducting material, conducting-rails or contact-surfaces having their continuity interrupted or broken at or near the intersection of the conduit-sections, and connecting-cables or conducting-loops connecting the ends of the interrupted conductors partially embedded in the material of which the conduit is formed, substantially as and for the purpose specified.

11. A crossing for an electric railway, comprising two or more intersecting conduit-sections formed of insulating or non-conducting material and containing interrupted conducting-rails or contact-surfaces partially embedded in the material of which the conduit is formed, substantially as set forth.

ELIAS E. RIES.

Witnesses:
WM. T. HOWARD,
DANL. FISHER.