(No Model.)

# T. A. EDISON.

## ELECTRICAL RAILROAD.

No. 273,494. Patented Mar. 6, 1883.

Fig. 1.

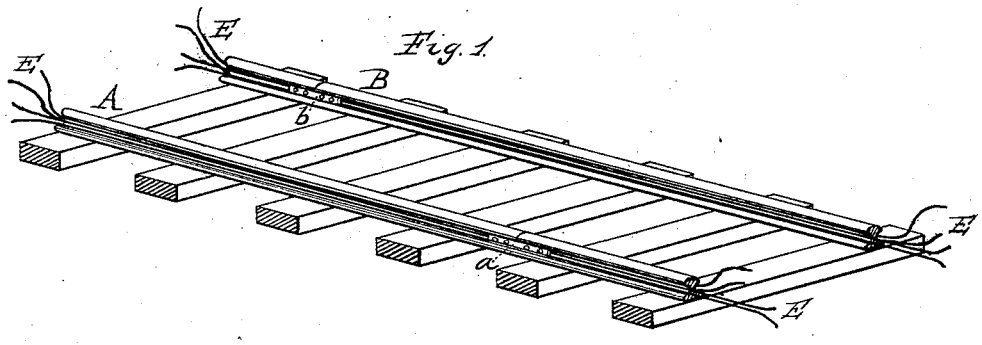
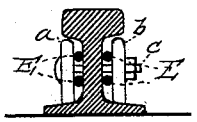



Fig. 2.




WITNESSES:

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# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

## ELECTRICAL RAILROAD.

SPECIFICATION forming part of Letters Patent No. 273,494, dated March 6, 1883.

Application filed August 14, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Electrical Railroads, (Case No. 467;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Heretofore in electrical railroads wherein the two lines of traffic-rails have been used as part or all of the conductors for carrying the current to and from the motor, or wherein a third or central line of rails has been used for one-half of the circuit, it has been attempted to lessen the resistance and secure good conductivity by perfecting as far as possible the joints between the ends of the rails; but this has been only partially successful, from the fact that loose joints have to be provided at the ends of the rails to permit of expansion and contraction, and the surfaces of the parts in contact becoming oxidized the contact becomes bad, making the combined resistance of the large number of joints in any section of the railroad considerable.

The object of the present invention is to reduce the resistance of the circuit to the minimum. This is accomplished by providing each line of rails used as a conductor with two or more continuous conducting-wires on one or on each side of the line of rails, which continuous wires pass beneath the fish-plates at the joints of the rails, and are clamped by such fish-plates against the rails. These wires may be bare copper wires, or they can be insulated between the fish-plates and left bare where they pass under such fish-plates. The insulation is scraped from the web of the rails at the ends, and the surfaces so scraped are cleaned, and may be electroplated with nickel or silver or other metal not easily oxidized by exposure to air and moisture, in order to make good contact with the continuous wires. One of the conductors from the electrical generators is connected with the continuous wires of the line of rails and with the rails directly or with the wires only. It will be seen that the resistance of the lines of rails provided with the continuous conducting-wires will be greatly reduced thereby, since the wires will form a continuous metallic circuit to and from the rails over which the motor is passing, no matter where the motor may be on the track, more or less of the current being conducted through the lines of rails according to the resistance at the joints.

In the drawings, Figure 1 is a perspective view of a portion of two lines of rails having the continuous conducting-wires; and Fig. 2, a cross-section of a rail near the end of the same, showing the fish-plates in elevation.

A and B represent two lines of T-rails. The rails of each line are connected together by fish-plates *a b* and bolts *c*, passing through the fish-plates and rails, as usual. The rails are used as conductors of the current, and are insulated as described in my application No. 466.

E represents continuous conducting-wires, which are placed on one or on each side of the rails of each line, and are clamped by the fish-plates against the ends of the rails. The continuous wire may be bare copper wire, or it can be insulated, except where it passes beneath the fish-plates. The webs of the rails at their ends have the insulation removed therefrom, and are cleaned and preferably electroplated with nickel, silver, or other metal not easily oxidized by exposure to air and moisture, in order to make as good contact as possible with the continuous wires. The conductors from the electrical generators are connected with the wires and also with the rails or with the wires alone. The current is conducted to and from the motor through wheels resting on the rails, and a continuous metallic circuit will be formed to and from the rails over which the motor is passing by the conducting-wires, while part of the current will pass through the rails themselves.

What I claim is—

1. In an electrical railroad, a line of connected rails having its conductivity increased by means of one or more continuous conductors attached thereto, substantially as set forth.

2. In an electrical railroad, the combination, with a line of connected rails, of one or more

continuous conductors attached to such rails and making contact therewith at the joints of the rails, substantially as set forth.

3. In an electrical railroad, the combination, with a line of connected rails, of one or more continuous conductors extending on one or on each side of the rails and clamped by means of the fish-plates against the ends of the rails with which they make electrical contact, substantially as set forth.

This specification signed and witnessed this 7th day of July, 1882.

THOMAS A. EDISON.

Witnesses:
RICHD. N. DYER,
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