

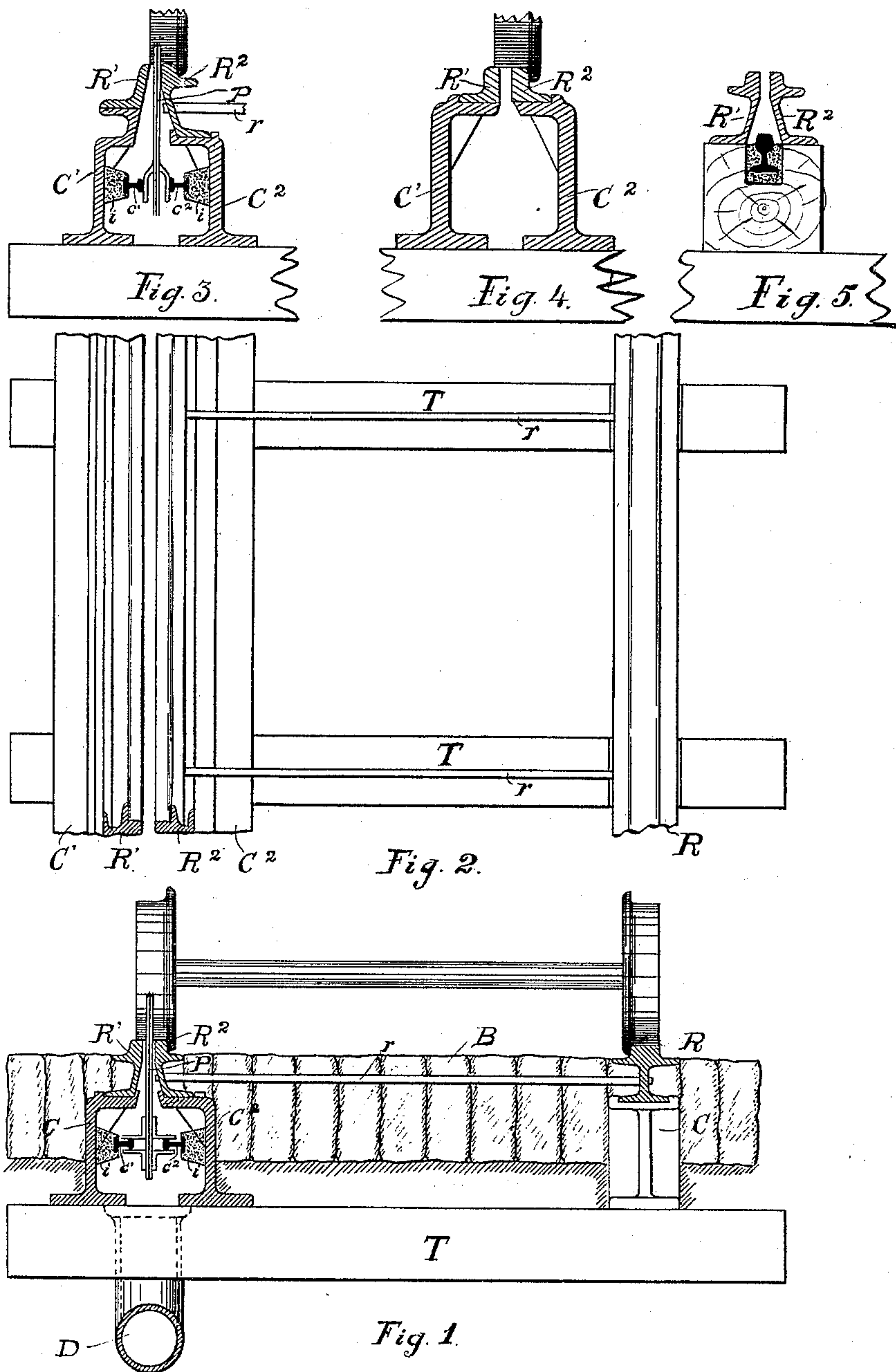
(No Model.)

F. H. REED.

UNDERGROUND CONDUIT FOR ELECTRICAL RAILWAYS.

No. 401,515.

Patented Apr. 16, 1889.



WITNESSES:

E. G. Thomas.
Chas. Taylor Snyder.

INVENTOR

Fred H. Reed,
BY
Fowler & Fowler
ATTORNEYS

UNITED STATES PATENT OFFICE.

FRED. H. REED, OF JERSEY CITY, NEW JERSEY.

UNDERGROUND CONDUIT FOR ELECTRICAL RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 401,515, dated April 16, 1889.

Application filed October 6, 1886. Serial No. 215,472. (No model.)

To all whom it may concern:

Be it known that I, FRED. H. REED, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Underground Conduits for Electrical Railways, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The object of my invention is to reduce the cost of building underground conduits for railways, to offer as little obstruction in the streets or ways in which a railway may be laid, to prevent as much as possible drainage and dirt from reaching the conduit, and to afford facilities whereby the conduit may be readily reached for repair without interfering with the carrying capacity of the railway.

The invention consists in a two-part conduit made up of continuous walls of metal and having each wall of the conduit support half of the rail which sustains the weight of a passing vehicle, the parts of the rail forming a single tread and being separated, so as to form a slot in the middle of the same for the conduit, so that the rail can be reversed—that is, turned end for end—making in fact a combined rail and conduit, each half of the rail supporting its own share of the weight and sustained by its own conduit-wall.

In the accompanying drawings the same letters of reference are employed to designate the same parts throughout the several views.

Figure 1 represents a cross-section of an arrangement embodying my invention; Fig. 2, a plan view of Fig. 1, with a portion of the road-bed removed; and Figs. 3, 4, and 5, cross-sections of modified arrangements embodying my invention.

T T are cross-ties beneath the surface of the road-bed, upon which rest two portions of my conduit, C' C^2 , of iron or other suitable material, forming continuous metal walls of the form shown, having bolted thereto two sections of a split rail, R' and R^2 , with its rib or tread above the surface of the way upon which the wheels of a railway-vehicle are adapted to travel. The two parts of

the conduit C' and C^2 are separated, as shown, leaving a longitudinal slot between the parts, and the two parts of the rails R' and R^2 are separated in the same manner, so as to form a longitudinal slot between the tread of the rail corresponding with the slot in the conduit.

It will be observed that my arrangement forms a combined conduit and rail, with the slot for the conduit through the middle of the rail, each part of the divided rail forming a part of the tread of the rail and sustaining the two parts together, the weight of passing vehicles, each conduit-wall supporting its own half of the divided rail and sustaining its part of the weight, making a compact, strong, and economical construction.

The conduits are provided with conductors c' and c^2 , forming a direct and return wire of an electrical circuit, and are supported at intervals by blocks of insulating material, *i.*

Depending from the vehicle or motor of railway-carriage is a plow, P, consisting of two metal plates which are insulated from each other by an insulating-plate. Each of said plates have springs of conducting material attached thereto for embracing the conductors c' and c^2 , for completing the circuit to the motor.

Beneath the conduit shown in Fig. 1 I place a drain, D, for conveying away any drainage or dirt that may happen to reach the conduit through the orifice of the rail above the surface of the way.

The other rail, R, of the railway is supported upon chairs C, resting upon cross-ties T, and of the same height as the conduit. The two rails are joined by a rod, r, to prevent spreading. Upon the cross-ties T is placed concrete or any other suitable material, forming the foundation for the paving-blocks B.

In Fig. 3 I have shown a modification of the rail in which the part R^2 forms the principal part of the rail, and the part R' forms simply a wall of the conduit. In this figure, also, the conducting-springs upon the plow P are modified in form, as will be seen in the drawings. In the modification shown in Fig. 4 a modified form of rail and conduit is illustrated, which will be evident from an inspection of the drawings.

My conduit may be used for various other purposes than electrical railways—as, for instance, a cable railway, &c.—and I do not wish to confine myself to its use with an electrical railway.

It will be seen by reference to Fig. 1 that the slot in the rail R' and R^2 being at its center allows it to be reversed, so that when this rail is worn at one side by the flange of the wheels its other side can be used.

Instead of having both conductors in one conduit, I may split both rails and place one conductor in each conduit; or, indeed, the conduits can be dispensed with and the two split rails on each side of the way be secured to a longitudinal stringer resting upon the cross-ties, in which case the conductors would be suitably insulated from the longitudinal stringer and the split portions of the rail, all of which is clearly shown in Fig. 5. In this arrangement a plow would be used on each side of the railway-carriage to make contact with the conductors. This would afford practical use of the rails as conductors, as it dispenses with the conduit proper without having the disadvantage of persons or animals receiving shocks when crossing the rails.

It will be seen from the construction that the rail R' and conduit-wall C' and the paving outside of the track may be removed without interfering with the carrying capacity of the split rail, and that the railway could be used as a steam-railway or ordinary tramway when one portion of the rail, as R' , is removed for repairing the electrical part of the road. It will be seen, also, that my conduit may be put down section for section without interfering with the traffic of a pre-existing railroad.

It is generally the custom to have the conduit midway between the rails and to support each rail upon the conduit as a base. This is expensive, inasmuch as it takes an enormous quantity of metal; and it has also the disadvantage of putting three obstructions in the way, in place of two—the ordinary rails.

In my invention I have reduced the quantity of metal of the conduit to a minimum and place no more obstruction in the street

than an ordinary tramway offers. I also raise the orifice above the surface of the roadway, and thereby prevent drainage and dirt from reaching the conduit and obstructing its successful operation.

Having now fully set forth my invention, what I wish to claim, and secure by Letters Patent of the United States, is—

1. The combination of the rail portions R' and R^2 , supported continuously throughout their length, forming together a single tread with a slot in the middle thereof and constituting a track-rail, one or more electrical conductors suitably insulated therefrom, and means for completing the circuit from the same to a passing vehicle, substantially as described.

2. The combination of the flanged rail portion R' and R^2 , forming together a single tread, with a slot intermediate thereof having its orifice above the level of the way, as shown and described, one or more electrical conductors insulated therefrom, and means extending into said slot for completing the circuit.

3. A track-rail having a single tread with a slot in the middle thereof, rendering the same reversible, and a conduit thereunder, as and for the purpose described.

4. The combination of the following devices forming a combined conduit and rail for an electrical railway, to wit: two conduit-walls continuous throughout, forming the conduit proper, in which one or more conductors are arranged for conveying the current, and a ribbed rail above the level of the way, with a slot in the middle thereof, forming two parts, R' R^2 , each secured to and supported by one of said conduit-walls and forming together a single tread for a wheel adapted to travel thereupon.

In testimony whereof I have hereunto set my hand, this 29th day of September, 1886, in the presence of the two subscribing witnesses.

FRED. H. REED.

Witnesses:

A. C. FOWLER,
E. G. THANDS.