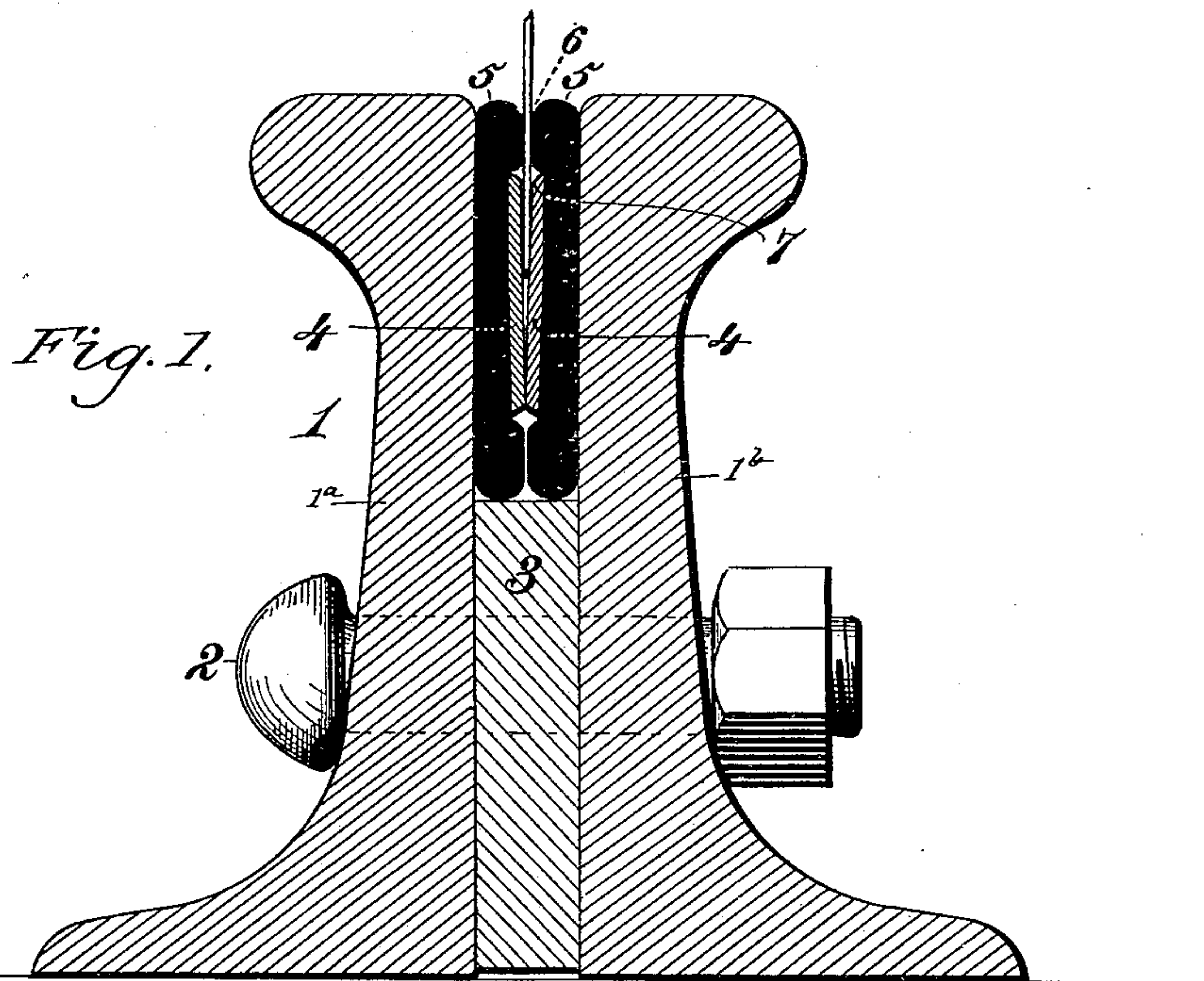


(No Model.)

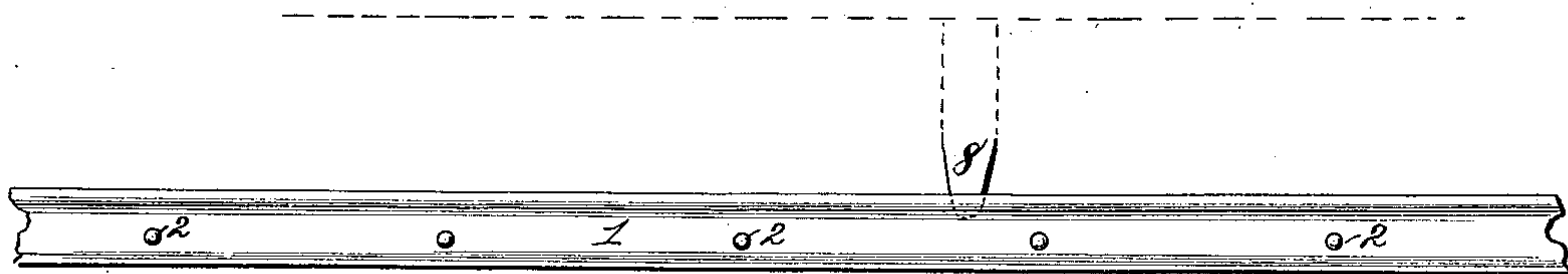
W. I. LUDLOW.  
ELECTRIC RAILWAY.

No. 377,397.

Patented Feb. 7, 1888.



*Fig. 2.*



*Witnesses.*

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# UNITED STATES PATENT OFFICE.

WASHINGTON I. LUDLOW, OF CLEVELAND, OHIO.

## ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 377,397, dated February 7, 1888.

Application filed May 16, 1887. Serial No. 238,379. (No model.)

*To all whom it may concern:*

Be it known that I, WASHINGTON I. LUDLOW, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Electric Railways, of which the following is a specification.

My invention relates to electrical conductors and conduits for that class of railroads in which the cars are propelled by an electric motor.

It is the purpose of my invention to provide a simple, durable, and convenient conduit for the electric cable by which the current is conveyed to the motor, and to so construct and arrange the parts that they shall be easily and readily accessible for repair or renewal, said results being accomplished at a reduced expense.

The invention consists in the several novel features of construction and new combinations of parts, hereinafter fully set forth, and definitely pointed out in the claims which follow this description.

Referring to the accompanying drawings, Figure 1 is a transverse section of a conduit constructed according to my invention. Fig. 2 is a side elevation showing the manner of inserting the conductor leading to the motor.

In the said drawings, the reference-numeral 1 designates one of the rails of the road, which is composed of steel and constructed in two separate sections, 1<sup>a</sup> 1<sup>b</sup>, of substantially equal dimensions. These sections are united by tie-bolts 2, which pass through the rail-sections at suitable intervals, and also through interposed washers 3, which serve to separate the rail-sections. These washers extend a little above the line of bolts, leaving a space above. Within the space thus formed I place the electrical conductors 4, consisting of two continuous copper plates or strips laid face to face. These strips are insulated by rubber strips 5, which fill the space between the rail-sections above the washers 3. Each insulating-strip is provided with a cavity capable of accommodating one of the conductors, and the edge is rounded, as shown in Fig. 1, a shallow trough, 6, being formed by the meeting of the two rounded edges. The edges of the copper conductors 4 are beveled off inwardly, as shown

at 7, Fig. 1, for a purpose presently to be shown.

The current is conveyed to the car-motor by means of a thin metallic plate, 8, Fig. 2, which is carried by the motor and slides between the copper strips 4, the circuit being interrupted in any suitable manner. If the conductor 8 is to be withdrawn from between the copper plates for this purpose, the beveled edges 7 of the latter will greatly facilitate its reinsertion, since said edges act as guides and carry the end or edge of the conductor directly between the strips. The rounded edges 6 of the insulating-strips also serve a similar purpose. It will be seen that by this construction ready access may at any time be had to the conducting-strips simply by removing the bolts 2 and withdrawing the insulating-conduit, or by removing one of the rail-sections and one of the insulating-strips.

It will be understood, of course, that the two copper plates form a single conductor, the return-circuit being through a similar cable in the other rail.

It will be understood that sufficient space is allowed within the conduit to permit the slight lateral yield of the copper strips necessary to permit the insertion of the collector. The latter being a thin flat plate, as shown in Fig. 1, but slight displacement is necessary for this purpose.

Having thus described my invention, what I claim is—

1. In an electric railway, a T-rail constructed in two substantially equal vertical sections, in combination with an electrical conduit laid in a space between said rail-sections, substantially as described.

2. In an electric railway, a T-rail composed of two substantially similar vertical sections and tie-bolts uniting said sections and passing through interposed washers, whereby the sections are separated to form a space for the electrical conductors, substantially as described.

3. In an electrical railway, a T-rail composed of two substantially similar sections, tie-bolts uniting the same and passing through interposed washers, insulating rubber strips each having a similar cavity in its inner face, and an electric conductor consisting of two flat

strips of copper lying in the cavities of the insulating-strips, substantially as described.

4. In an electrical railway, a conduit for the electric conductor by which the energy is conveyed to the motor, said conduit consisting of a pair of insulating-strips and flat conducting-strips laid between, the whole being contained in a channel formed in the tread of the rail, substantially as described.

5. In an electric railway, a rail having a channel formed in its tread, in combination with an electric conductor insulated in said channel, substantially as described.

6. In an electric railway, two flat conduct-

ing-strips laid face to face and having their edges inwardly beveled, two insulating rubber strips laid face to face and within which the conducting-strips are inclosed, and a rail formed in longitudinal sections between which said insulating-strips are contained, substantially as described.

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

WASHINGTON I. LUDLOW.

Witnesses:

WM. JOHNS, Jr.,

EDWARD MALONEY.