No. 615,176. Patented Nov. 29, 1898.

H. T. HILLISCHER.

ELECTRIC RAILWAY.

(Application filed July 8, 1898.)

(No Model.)

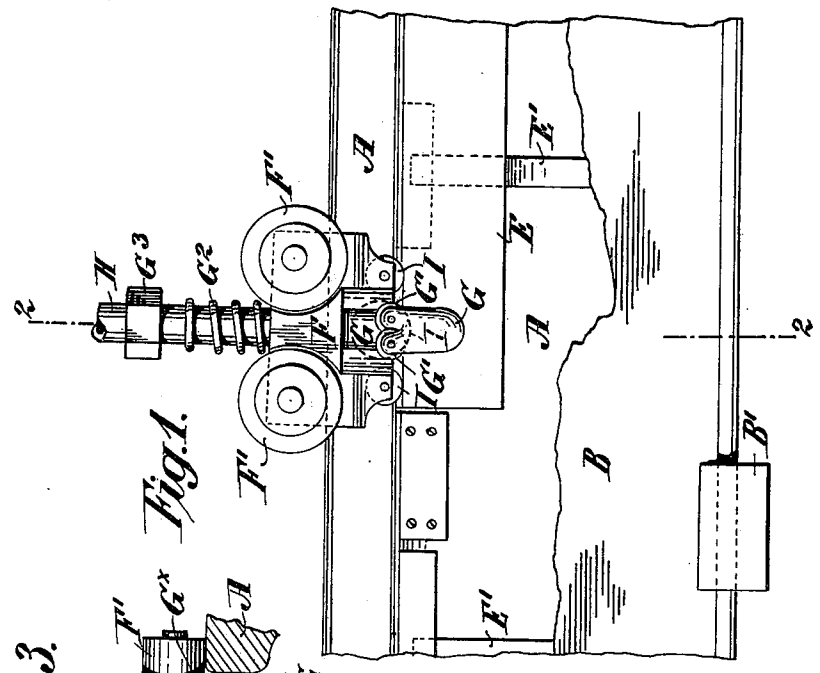


Fig. 1.

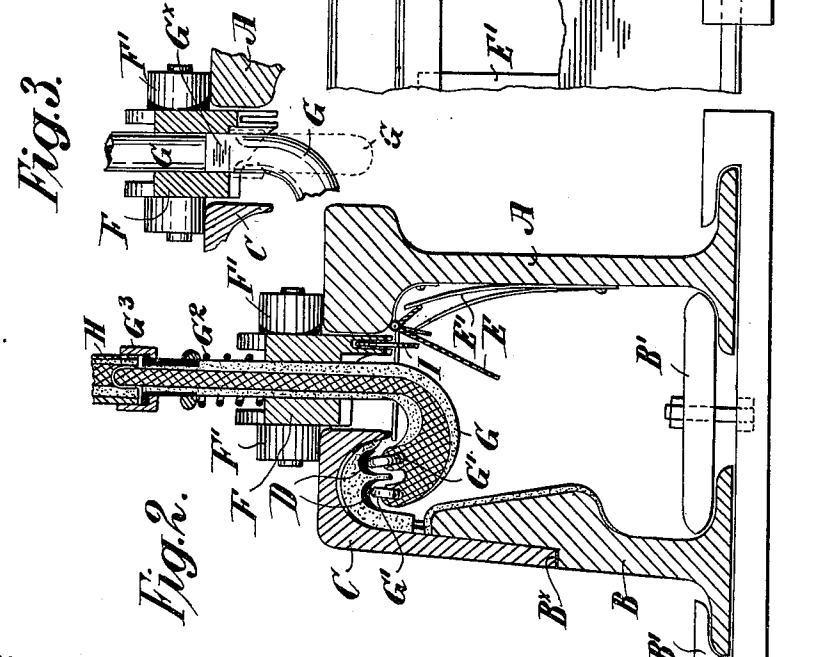


Fig. 3.

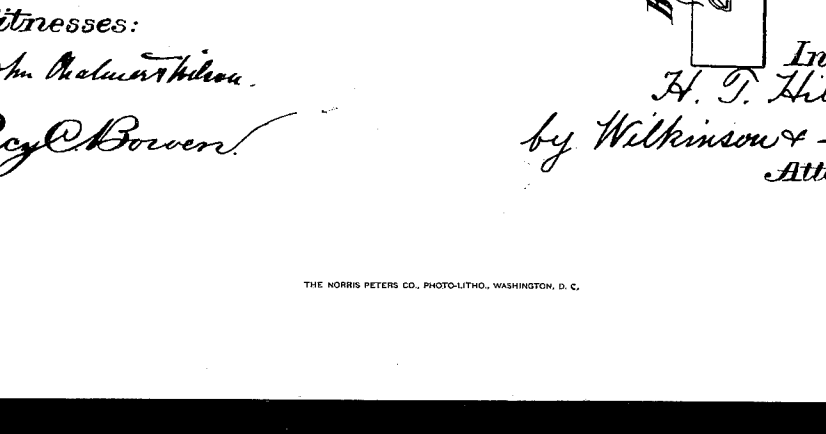


Fig. 2.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HERMANN THEODOR HILLISCHER, OF VIENNA, AUSTRIA-HUNGARY.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 615,176, dated November 29, 1898.

Application filed July 8, 1898. Serial No. 685,437. (No model.)

To all whom it may concern:

Be it known that I, HERMANN THEODOR HILLISCHER, dentist of the imperial court, a subject of the Emperor of Austria-Hungary, residing at No. 11 Stephansplatz, in the city of Vienna and Empire of Austria-Hungary, have invented certain new and useful Improvements in Electric Railways; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of electric railways in which the current-supplying conductor is arranged in a channel running along the rails in the permanent way and a contact-making device or trolley secured to the car or vehicle slides along such current-supplying conductor. The object of my invention is to improve the construction of the channel and the trolley and the working conditions of such railways.

In the accompanying drawings, Figure 1 is a side elevation of my improved construction, the upper part of the contact-rail being broken off. Fig. 2 is a transverse section on line 2 2, Fig. 1. Fig. 3 is a front elevation, partly in section, of the trolley and some adjacent parts of the rails.

A is the running-rail of the ordinary type used in railways. Its foot is connected by transverse connecting-pieces B′ with the head of a T-rail B, having the web turned upward. Such web is reinforced at its upper portion and pressed toward the running-rail, so that a step or shoulder B* is formed at the outer side of this web.

C is a U-rail, with sides of unequal height, which is secured bottom upward on the T-rail, the higher side of the U-rail being fastened to the outside of the web of the T-rail, so that its free edge rests against the step or shoulder in the web of the T-rail B. The other side of the U-rail is turned toward the running-rail B.

D D are the current-supplying conductors. They are secured to the U-rail between its sides and carefully insulated therefrom. The slot formed by the head of the running-rail and the lower side of the U-rail C is normally closed by plates or flaps E, pivoted to the head of the running-rail and held against the bottom edge of the inner side of the U-rail by springs E′. By this means a channel is formed along the running-rail, in which the current-supplying conductors D D are protected from dust, moisture, &c. Moreover, by the above-described construction of the channel the advantage is obtained that the running-rails and T-rails may be laid first, and then the U-rails, with the conductors on them, may be secured to the T-rails, whereby the construction of the line is cheapened and repairs are materially facilitated.

The trolley or contact device consists of a carriage F, supported by rollers F′, running on running-rails A and U-rails C.

G is a contact-arm guided in but insulated from the carriage. The outer curved end of the contact-arm G enters from below into the hollow of the U-rail and is provided with contact-rollers G′ G′, running along the conductors D D.

G^2 is a spring on the carriage tending to raise the contact-arm for the purpose of making a good contact between the rollers G′ and the conductors D D.

G^3 is a nut for attaching the free outer end of the contact-arm G to the lower end of a rod H, projecting downward from the car or vehicle, which rod is adapted to be electrically connected to the motor on the car.

I are rollers journaled on horizontal axes in the carriage, such axes being at right angles to the rails. The said rollers run on top of the plates or flaps E. These rollers are arranged symmetrically with relation to the contact-arm, and when a plurality of such rollers are used the diameters of the same are the larger the nearer they are to the contact-arm.

The operation of the device above described is as follows: The rod H of a car or vehicle being connected with the contact-arm G of a trolley or contact-making device and the motor-circuit being completed, the car or vehicle, together with the trolley, is set in motion. The rollers I of the said trolley on reaching a flap or plate E depress it, so that the contact-arm G may pass freely past it, as shown in Fig. 2, and when the rollers have left such flap or plate E the latter is forced upward by its springs E′, thereby closing the channel, so that only those flaps or plates E are in the

open position over which the trolley is just running. Therefore at all times only a comparatively very small portion of the channel is not closed by the said flaps or plates, whereby dust, moisture, &c., are very efficiently excluded from the interior thereof.

Obviously the car, together with the trolley, may be run forward or backward. At the end station the trolley may be separated from the car by simply loosening the nut G^3 and another car may be connected with the trolley, which is left in the channel, or the trolley may be lifted out of the channel. For this latter purpose the lower portion $G^\times$ of the vertically-guided straight shank of the contact-arm G is made polygonal, preferably square in cross-section, and the upper part is made circular in cross-section, as shown in Fig. 3, and the guides in the body of the trolley are shaped to correspond. After depressing the contact-arm against the action of the spring G^3 so far that the lower square portion $G^\times$ of the same comes out of engagement with the square portion of its guide in the body of the trolley the said contact-arm may be turned so that its curved bottom portion is in line with the channel, as shown in dotted lines in Fig. 3. The trolley may then be lifted out of the channel.

I claim—

1. In an electric railway, the combination of the running-rails, an inverted-U rail arranged parallel thereto; an electric conductor carried in the hollow of said U-rail but insulated therefrom, a channel or conduit between said rails, a slot between the said rails leading to said channel or conduit; a trolley-frame mounted upon rollers running upon said rails, a curved contact-arm having an upright portion loosely mounted in said trolley-frame, and having a squared portion thereon fitting a correspondingly-shaped portion in the trolley-frame; a spring normally holding said squared portion of the contact-arm in engagement with the trolley-frame, said contact-arm being capable of being depressed against the action of said spring and turned in said trolley-frame, substantially as described.

2. In an electric railway, the combination of the running-rails, an inverted-U rail arranged parallel thereto; an electric conductor carried in the hollow of said U-rail but insulated therefrom, a channel or conduit between said rails, a slot between the said rails leading to said channel or conduit; a trolley-frame mounted upon rollers running upon said rails, a curved contact-arm having an upright portion loosely mounted in said trolley-frame, and having a squared portion thereon fitting a correspondingly-shaped portion in the trolley-frame; a spring normally holding said squared portion of the contact-arm in engagement with the trolley-frame, said contact-arm being capable of being depressed against the action of said spring and turned in said trolley-frame, plates pivoted to the track-rail along the conduit, springs acting upon said plates and tending to hold the same across said slot, and a pair of rollers carried by said trolley-frame, one in front of and the other behind the contact-arm, depending into said conduit and adapted to strike said pivoted plates, substantially as described.

3. In an underground-railway system, the combination with a trolley-frame mounted upon rollers running upon said rails, a curved contact-arm having an upright portion loosely mounted in said trolley-frame, and having a squared portion thereon fitting a correspondingly-shaped portion in the trolley-frame, a spring normally holding said squared portion of the contact-arm in engagement with the trolley-frame, said contact-arm being capable of being depressed against the action of said spring and turned in said trolley-frame, substantially as described.

4. In an electric railway, the combination of the running-rails, an inverted-U rail arranged parallel thereto, an electrical conductor carried in the hollow of said U-rail but insulated therefrom, a channel or conduit between said rails, a slot between the said rails leading to said channel or conduit, plates pivoted to the track-rail along the conduit, springs acting upon said plates and tending to hold the same across said slot, a trolley running upon said rails, a curved contact-arm carried thereby and running in said conduit, and rollers mounted in said trolley-frame for depressing said pivoted plates *seriatim* to allow the said contact-arm to pass along said slot, substantially as described.

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

HERMANN THEODOR HILLISCHER.

Witnesses:

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CHAS. E. CARPENTER.