(No Model.)

S. H. SHORT.

TROLLEY FOR ELECTRIC RAILWAYS.

No. 457,377. Patented Aug. 11, 1891.

Fig. 1.

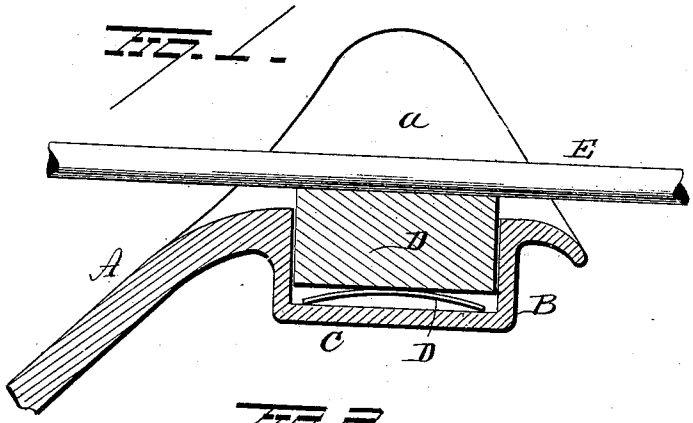


Fig. 2.

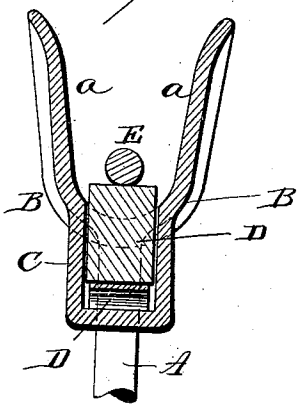


Fig. 3.

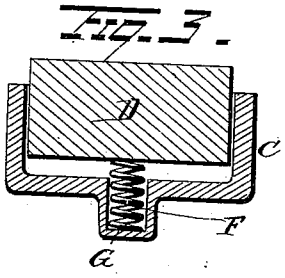
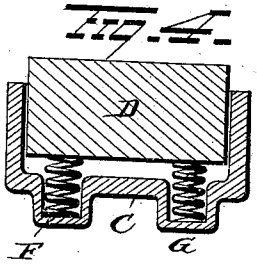


Fig. 4.



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UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF CLEVELAND, OHIO, ASSIGNOR TO THE SHORT ELECTRIC RAILWAY COMPANY, OF SAME PLACE.

TROLLEY FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 457,377, dated August 11, 1891.

Application filed November 6, 1889. Serial No. 329,463. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY H. SHORT, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Trolleys for 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 an improvement in trolleys for electric railways, the object being to provide a trolley of such construction that it shall insure an extended contact-surface with the conductor through which the electric current is transmitted to the motor, and which contact shall be self-adjustable to compensate for wear and readily renewable when unduly worn.

With these objects in view my invention consists in certain features of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

A further object of the invention is to provide a wearing surface or contact which is not liable to become rusted and have its conductivity impaired by exposure to the weather and which will also be durable, economical, and effective in maintaining an appropriate electric contact. To this end use is made for the contact of carbon, a non-metallic conducting material which does not rust and which is found to be sufficiently durable and conductive for the purpose under the conditions existing on electric railways. Heretofore, so far as I am aware, neither carbon nor any like non-metallic substance has been used in this connection. It has been used for the commutator brushes or rubbers of dynamo-electric machines; but such brushes or rubbers are essentially different from the trolley of an electric railway, since neither they nor the commutator-surface against which they rub are exposed to the weather, like the trolleys and supply-wires of electric railways. Moreover, in the dynamo-electric machine the rubbers are repeatedly brought into contact with only a limited surface, whereas in the electric railway the supply-conductors may be miles in length. Further, the contact of carbon has the advantage over a metallic contact in electric railways of giving greater smoothness and ease of running and having a better polishing effect on the supply-wire.

In the accompanying drawings, Figure 1 is a view in longitudinal vertical section of one construction of trolley embodying my invention. Fig. 2 is a transverse section of the same, and Figs. 3 and 4 are modifications.

A represents a trolley-pole, which may be of any construction and provided with suitable devices for forcing it upwardly against the trolley. B is the trolley-shoe, and consists of the upwardly-projecting side flanges or guards *a a* and the box or receptacle C. A contact-block B is loosely fitted within receptacle C and rests upon an elliptic spring D, the latter serving to feed the contact-block as it is worn away upwardly against the conductor E.

Instead of employing the spring D, I may use a spiral spring F and place it in a cylindrical chamber G, depending from the receptacle C, as shown in Fig. 3; or instead of using one spiral spring I may use two, as illustrated in Fig. 4, and thus secure an even pressure near the opposite ends of the contact-block, and thereby prevent the latter from binding in its receptacle. I prefer to make the contact-block of carbon, because this material is a good conductor, highly refractory, and when so made the blocks are of small initial cost, and also because it is not liable to rust or oxidation calculated to impair the conductivity, and is otherwise advantageous, as hereinbefore specified. However, I may make these blocks either of carbon, or carbon and copper or other good electrical conducting material, or of any suitable metal or metallic compound.

The wings or guards of the trolley-shoe, which embrace the supply-wire between them, serve to retain the trolley against accidental displacement, while the contact-block, owing to its extended contact with the wire and its capacity for self-adjustment, insures a good contact with the wire and almost wholly obviates the sparking at the contact, which is so noticeable in systems employing a rolling trolley. The contact-block is fed upwardly

against the conductor by its spring, and when sufficiently worn may be readily removed and replaced by a new block.

It is evident that many slight changes in the construction and relative arrangement of parts might be resorted to without departing from my invention, and hence I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a trolley-shoe constructed with a receptacle and a spring in said receptacle, of a contact-block located in the receptacle and adapted to be pressed against a trolley-wire by said spring, substantially as set forth.

2. The combination, with a trolley-shoe constructed with a receptacle and a spring in said receptacle, of a removable contact-block inserted loosely in the receptacle and adapted to be fed toward the trolley by said spring, substantially as set forth.

3. The combination, with a trolley-shoe consisting of a receptacle and upwardly-projecting guards or flanges, of a contact-block, and a spring (one or more) for feeding the contact-block to compensate for wear, substantially as set forth.

4. A trolley or traveler provided with wings or guards for embracing the supply-wire, and a separable contact or conducting block yieldingly supported between said wings or guards, substantially as described.

5. The combination, with a trolley-shoe having a receptacle therein, of a renewable block of carbon in said receptacle and adapted to bear against a trolley-wire, substantially as set forth.

6. The combination, with a sliding trolley-shoe having upwardly and outwardly flaring wings, of a self-adjustable and removable contact-block located between said flanges, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SIDNEY H. SHORT.

Witnesses:
J. C. WILLIAMS,
E. H. MORRISON.