

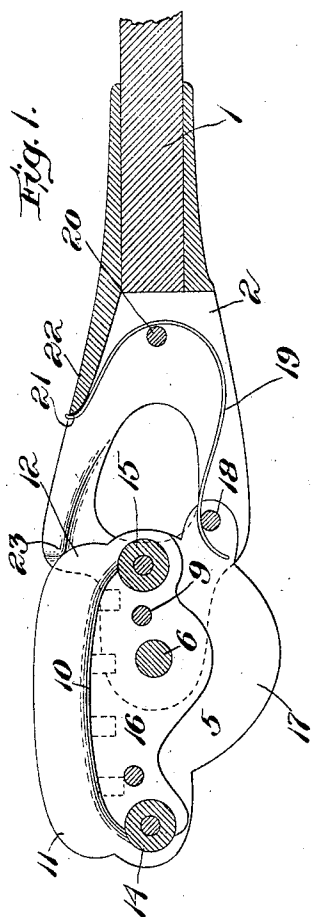
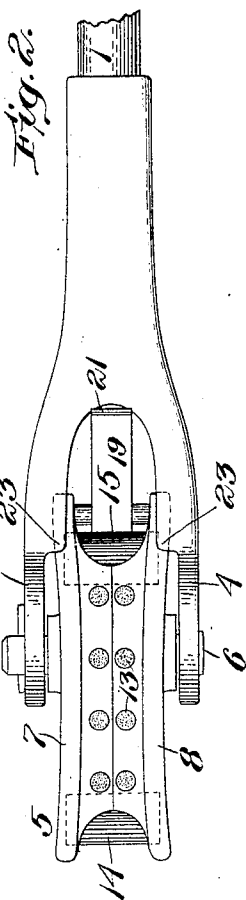
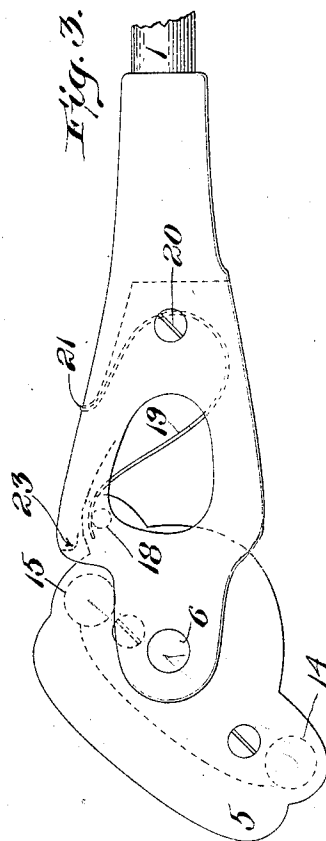
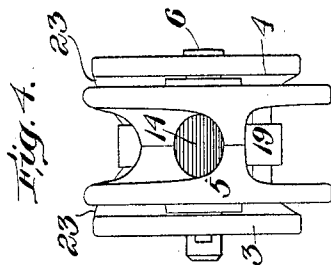
No. 810,069.

PATENTED JAN. 16, 1906.

J. MILLER, JR.

OVERHEAD TROLLEY HARP AND SHOE FOR ELECTRIC RAILWAYS.

APPLICATION FILED MAR. 17, 1906. RENEWED DEC. 18, 1906.



Witnesses:

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UNITED STATES PATENT OFFICE.

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OVERHEAD TROLLEY HARP AND SHOE FOR ELECTRIC RAILWAYS.

No. 810,069.

Specification of Letters Patent.

Patented Jan. 16, 1906.

Application filed March 17, 1905. Renewed December 18, 1905. Serial No. 292,160.

To all whom it may concern:

Be it known that I, JOHN MILLER, Jr., a citizen of the United States, residing at Amesbury, in the county of Essex and State of Massachusetts, have invented an Improvement in Overhead Trolley Harps and Shoes for Electric Railways, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

My invention is intended to take the place of the usual rotary trolley-wheels, which, as is well known, rapidly wear out and are subject to various other objections, my present invention being a shoe for sliding on the trolley-wire.

In carrying out my invention I provide in the upper end of the trolley-harp a pivoted contact-block spring-held normally in upright position, but capable of tipping into more or less horizontal position, according to the requirements of use, said block yielding at all times to the special obstacles met with—such as an overhead switch, guy-wire, or the like—and yet being capable of wearing evenly over the entire wearing-surface, thereby giving long life, the construction being such also as to permit of a light harp and adjacent parts.

The constructional details of my invention will be apparent from the following description, in which I have set forth a preferred embodiment of the invention, reference being had also to the appended claims, in which the invention is further defined.

In the drawings, Figure 1 is a central vertical longitudinal sectional view. Fig. 2 is a top plan view thereof. Fig. 3 shows the same in side elevation, and Fig. 4 is an end view looking toward the right in the other figures.

Fastened on a suitable trolley-pole 1 is a harp 2, between whose arms 3 4 I pivot the shoe 5, which constitutes the main feature of my invention. This shoe is shown as pivoted on an axle 6 and for convenience of manufacture is made in two parts 7 8, secured by rivets or bolts 9. The upper surface of the shoe is semicylindrical or hollowed out in transverse section, as clearly shown at 10, Fig. 4, so as to retain the trolley-wire properly, the surface being not quite flat, but slightly curved or arched upwardly viewed longitudinally, as best shown in Fig. 1, and the side

walls of the groove 10 extend forwardly at 11 and rearwardly at 12. I also preferably form pockets along the contact-surface and fill them with graphite or other solid lubricant 13, as shown in Figs. 1 and 2.

At the front end of the bearing-surface 10 I preferably provide a transverse roller 14, and at the rear end of said surface 10 I provide a similar roller 15. The roller 14 is provided for enabling the shoe to run freely backward and the front roller 15 is provided to strike against the end of an overhead switch or other obstruction of a similar nature in running forward. The shoe has a deep solid body portion 16 and at either side thereof a depending cheek or flange 17 for lateral bracing effect, and at the inner end thereof I provide a cross bar or stud 18, adapted to be engaged by the free end of a leaf-spring 19, which is looped under a bolt 20 of the harp 2 and its opposite free end 21 engaged with a yoke 22 of said harp. The harp is provided with opposite stops 23 for limiting the swinging movement of the harp in both directions. By making the shoe in two parts the rolls 14 and 15 are conveniently retained in sockets provided therefor in said halves. I am aware that the various mechanical embodiments of my invention may be widely altered without departing from the spirit and scope of the invention, the construction herein shown and described being the preferred construction as at present practiced by me.

In use the trolley-pole normally occupies a slanting position, as usual, and the spring 19 permits the shoe to yield, as shown in Fig. 3, so that its bearing-surface assumes a horizontal position parallel to the wire. The purpose of this spring is threefold. It prevents undue wear on the front end of the shoe by tending to tip the rear end of the shoe upwardly, as it is obvious that otherwise the friction of the shoe upon the wire would turn the front end of the shoe up against the wire continually, whereas by reason of the spring the shoe tends to rock longitudinally more or less, thereby equalizing the wear over the entire surface of the shoe. This movement also facilitates the operativeness of the mechanism. The spring also maintains the shoe upright when out of contact with the trolley-wire, so that it is always in position to yield upon striking a

guy-wire, and therefore cannot catch upon a guy-wire or the like. Also the spring construction gives superior electrical contact. The arrangement of the spring permits its
5 ready removal and insertion without disturbing any part.

I have made the forward end of the shoe shorter with relation to the axle 6 than the rear end thereof for the purpose of permitting
10 a longer spring, and hence a freer swinging movement, and also to permit a lighter and shorter harp.

It will be understood that within the scope of certain of my claims various portions herein shown and described may be
15 omitted, as my invention is capable of various subcombinations useful and practical in themselves and with other different parts without containing all the preferred features
20 which go to make up the more complete embodiment of my invention.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

25 1. An overhead device of the kind described, comprising a trolley-pole, a harp mounted thereon, a shoe pivoted between the arms of said harp, and having a hollowed-out contact-surface along its upper edge, and
30 means for normally maintaining said shoe with its said contact-surface tipped upwardly at its rear end approximately in line with said trolley-pole.

2. An overhead device of the kind described, comprising a harp, a shoe pivoted
35 intermediate its ends in said harp, and having a contact-groove along its upper edge, the side walls of said shoe extending rearwardly and upwardly beyond said groove at
40 the rear end thereof for maintaining contact with the wire under abnormal conditions, and means for normally maintaining said shoe tipped upwardly at its rear end in longitudinal alinement with said harp.

45 3. An overhead device of the kind described, comprising a trolley-harp, a shoe pivoted intermediate its length in said harp, said harp being provided with a stop for engaging said shoe and limiting its forward
50 swinging movement.

4. An overhead device of the kind described, comprising a trolley-harp, a shoe

pivoted intermediate its length in said harp, said harp being provided with a stop for engaging said shoe and limiting its rearward
55 swinging movement.

5. An overhead device of the kind described, comprising a trolley-pole, a harp at the upper end thereof, an elongated contact-shoe pivoted intermediate its ends between
60 the arms of said harp, said shoe having a continuous arched contact-surface extending lengthwise thereof to its opposite ends, and means for normally tipping said elongated shoe lengthwise of said pole and harp, there-
65 by extending said contact-surface lengthwise above said pole and harp to a greater distance than when pressed down in running engagement with the trolley-wire.

6. An overhead device of the kind described, comprising a trolley-harp, a shoe
70 pivoted intermediate its length in said harp, and means for normally swinging the rear end of said shoe upwardly.

7. An overhead device of the kind described, comprising a trolley-harp, a shoe
75 pivoted intermediate its length in said harp, and a spring for normally swinging the rear end of said shoe upwardly.

8. An overhead device of the kind de-
80 scribed, comprising a trolley-harp, a shoe pivoted intermediate its length in said harp, and a leaf-spring engaging at one end the forward end of said shoe and at its other end engaging said harp.
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9. An overhead device of the kind described, comprising a trolley-harp, and a shoe
90 pivoted intermediate its length in said harp, said shoe having an antifriction-roller at the rear end of its contact-surface.

10. An overhead device of the kind described, comprising a trolley-harp, a shoe
95 pivoted intermediate its length in said harp, said shoe having an antifriction-roller at the rear end of its contact-surface, and an antifriction-roller at the forward end of said contact-surface.

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

JOHN MILLER, JR.

Witnesses:

GEO. H. MAXWELL,
WM. E. BIDDLE.