(No Model.) 2 Sheets—Sheet 1.

S. H. SHORT.

UNDERRUNNING TROLLEY FOR ELECTRIC RAILWAYS.

No. 589,624. Patented Sept. 7, 1897.

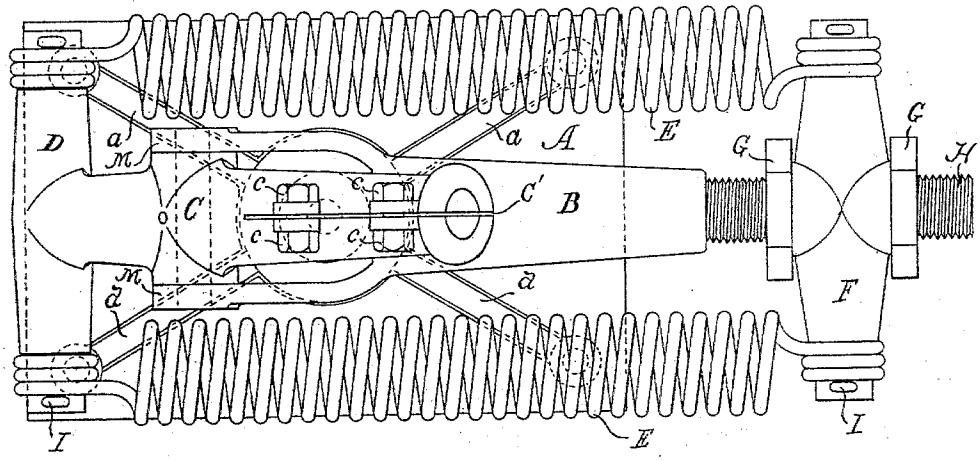


Fig. 1.

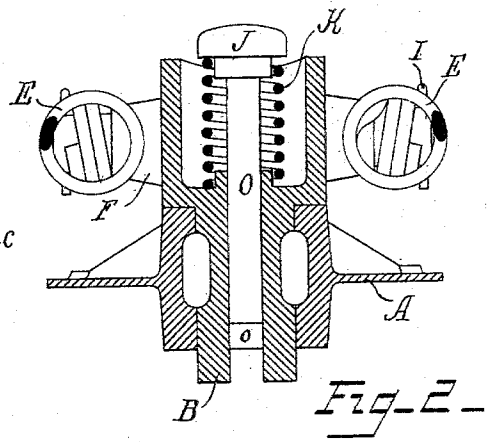


Fig. 2.

Fig. 3.

Witnesses:

David T. Marantette

James McCallum.

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Sidney H. Short

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

(No Model.) 2 Sheets—Sheet 2.

S. H. SHORT.

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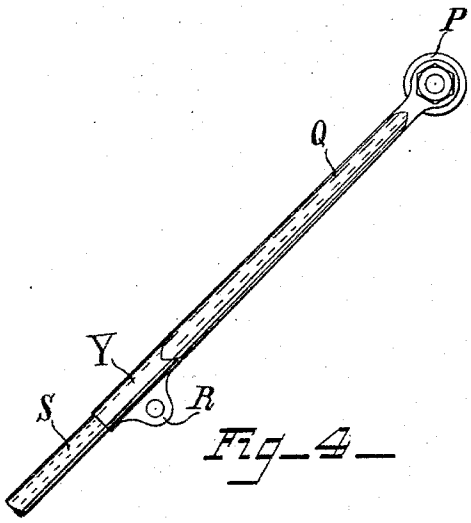


Fig. 4.

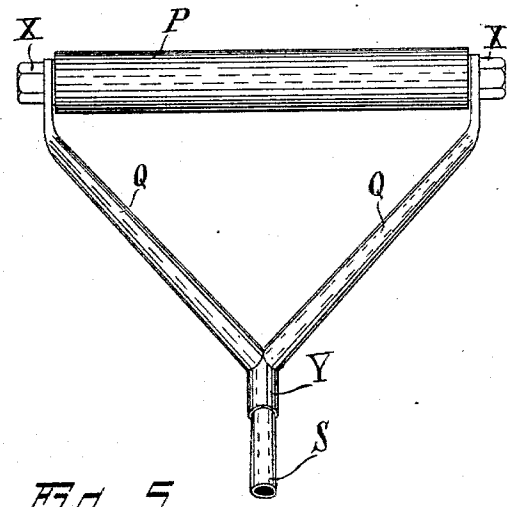


Fig. 5.

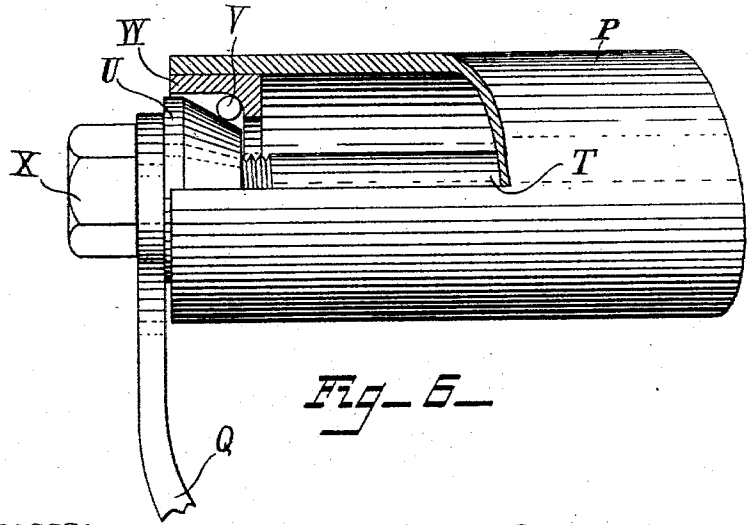


Fig. 6.

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UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF CLEVELAND, OHIO.

UNDERRUNNING TROLLEY FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 589,624, dated September 7, 1897.

Application filed July 29, 1896. Serial No. 600,924. (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 a new and useful Improvement in Underrunning Trolleys, of which the following is a specification.

My invention consists in an improvement in underrunning trolleys for electric railways, hereinafter fully described and claimed.

Figure 1 is a top plan view of the trolley-base; Fig. 2, a vertical central section through the pivot and locking device; Fig. 3, a side elevation of the trolley-base with the lower part in vertical central section; Fig. 4, a side elevation of the upper end of the trolley-pole; Fig. 5, a front elevation of the same; and Fig. 6, a front elevation of the contact-roller, partly in section, to show the bearings.

A represents a plate adapted to fasten to a suitable support on the roof of a car, provided with ribs *a* and with a central hub.

B is an arm which has a downward projection B′, adapted to fit and turn in the hub of plate A and having two upwardly-projecting lugs M, between which is hinged a socket C, which is split and provided with bolts *c* to receive and clamp the lower end of a trolley-pole S.

At the lower end of socket C is a cross-head D, to the ends of which are secured two springs E E, the other ends being fastened to a cross-head F, moving on a threaded bolt H, set in the end of arm B, and upon each side of cross-head F are nuts G, by which said cross-head may be moved to tighten or loosen the springs E.

O represents a bolt set firmly in the central portion of the arm B and extending down through that portion of said arm which swivels in plate A and at its lower end is provided with a lug *o*, adapted to engage with a notch in plate A, as clearly shown in Fig. 3.

J represents a head on bolt O, and K a spiral spring which encircles said bolt and holds it normally upward, thus keeping lug *o* engaged with the notch in plate A and preventing said arm B from turning or swiveling on its pivot until bolt O is depressed, so as to free lug *o* from engagement with plate A.

I I represent cotter-pins, by which the springs E are held in the cross-heads D and F.

The outer end of the trolley-pole S fits in a socket Y, formed at the base of a triangular frame Q, preferably built of bicycle-tubing, the upper end of which carries a long contact-roller P, the ends of which are preferably provided with ball-races W, between which and a cone U on an axle T lies a set of balls V, so that contact-roller P turns very freely. This roller P is made of considerable length, long enough to compensate for the slight irregularities which exist in parallelism between the track and an ordinary overhead wire, and at its ends is made plain, as shown in the drawings, so that should the car be derailed the roller P will not catch the overhead wire, but said wire will slip freely over its ends.

X X represent nuts on the ends of the axle T.

R represents a clip, to which may be secured a rope running down to a point within convenient reach of the conductor.

The operation of my invention is as follows: The trolley being mounted on a car underneath an overhead wire, the roller P is pressed up against said wire by the springs E, and as said roller is mounted on ball-bearings and as, moreover, the roller does not follow the wire, as in the ordinary trolley, the upward pressure can be much lighter than in the ordinary grooved trolley, such as the "Nuttall," in which the upward pressure must be sufficient to give the wire a good hold on the grooved wheel and enable it to move the trolley-arm sidewise. The spring tension can be regulated by nuts G G. With this form of trolley there is the additional advantage that where heavy currents are used more than one overhead wire may be used and the roller P will make contact with several wires instead of with only one, as is the case with the grooved contact-wheel.

As this trolley has no lateral motion, but is held firmly in the longitudinal plane of the car, I have provided means for reversing it when the direction of the car is to be reversed, as follows: If the trolley-pole be drawn down by a rope attached thereto, it will in its motion eventually strike the head J of the bolt O, and a boss L may be formed on the socket C for that purpose. Continued downward motion of the trolley-pole after it reaches a point below which it will ever go in actual service depresses bolt O until lug *o* re-

leases its engagement with plate A, when the trolley may be swung bodily around until it reaches a point one hundred and eighty degrees from its former position, when on being released bolt O will again engage with another notch in plate A and hold the trolley firmly in its new position. Intermediate notches may be formed in plate A, if desired.

A further great advantage of this trolley is that it entirely obviates the necessity for the boxes or switches now so largely in use and which are a source of great trouble and expense both in erection and maintenance. With this trolley it is only necessary to bring the switch-wire up to the main trolley-wire and clamp or fasten the two together without any switch whatever. Where a road is fitted with switch-boxes, this trolley will operate perfectly upon them and will not cut the boxes, as does the grooved contact-wheel.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An underrunning trolley comprising a base-plate having a central hub, a casting arranged to be seated in said hub, a trolley-pole carried by said casting, said trolley-pole being pivotally mounted to swing vertically, a movable lock for normally locking said hub and casting against relative rotation, said lock arranged in the path of vertical swing of said trolley-pole, whereby, when said pole is depressed, said lock is encountered thereby and disengaged from locking position, thereby permitting said casting to rotate in its seat in said hub, and an elongated contact-roller carried by said trolley-pole, as and for the purpose set forth.

2. In an underrunning trolley, a base-plate provided with a central hub, a casting having a sleeve arranged to be received in said hub, a trolley-pole pivotally mounted on said casting to swing vertically, a movable bolt arranged in said sleeve and normally engaging said hub, whereby said sleeve is locked against axial rotation in said hub, said bolt arranged in the path of vertical movement of said pole, whereby, when said pole is depressed, said bolt is engaged thereby and depressed out of locking position, and an elongated contact-roller carried by said trolley-pole, as and for the purpose set forth.

3. In an underrunning trolley, a base-plate provided with a central hub, a casting arranged to be seated in said hub, a trolley-pole pivotally mounted on said casting to swing vertically thereon, a longitudinally-movable bolt mounted on said casting and in the path of vertical swing of said pole, a spring normally acting to maintain said bolt in position to lock said casting against rotation in said hub, whereby, when said pole is depressed, said bolt is engaged thereby and projected against the action of said spring to unlock said casting, and an elongated contact-roller carried by said pole, as and for the purpose set forth.

4. In an underrunning trolley, a base-plate provided with a central hub having a seat or recess formed in the under edge thereof, a casting arranged to be seated in said hub, a bolt mounted in said casting and having a bent lower end, a spring arranged to normally maintain said bolt in position for the bent end thereof to be seated in said recess, a trolley-pole pivotally mounted on said casting to swing vertically, said bolt arranged in the path of vertical swing of said pole, whereby, when said pole is depressed, said bolt is engaged thereby and projected against the action of said spring in a direction to disengage the locked end thereof from the seat in said hub, and an elongated contact-roller carried by said pole, as and for the purpose set forth.

5. In an underrunning trolley, a base-plate provided with a central hub, an arm having a projection adapted to be received and seated in said hub, a socket pivotally mounted on said arm to swing in a vertical plane, a cross-head carried by the lower end of said socket, a bar adjustably mounted on said arm, springs respectively connected at the ends thereof to said bar and cross-head and normally acting to maintain said socket in vertical position, a lock arranged in the path of vertical movement of said socket and adapted to lock said projection against rotation in said hub, whereby, when said socket is depressed, said lock is engaged thereby and unseated, a trolley-pole mounted in said socket and an elongated contact-roller carried in the free end of said arm, as and for the purpose set forth.

SIDNEY H. SHORT.

Witnesses:
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CHAS. B. KELLEY.